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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMONWEALTH EDISON COMPANY
(Byron Nuclear Power Station
Units 1 & 2)

Docket No. 50-454 OL
50-455 OL

Location: Rockford, Illinois

Pages: 8394 - 8519

Date: Monday, July 23, 1984

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY & LICENSING BOARD

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: In the matter of: :
: COMMONWEALTH EDISON COMPANY : Docket Nos. 50-454 OL
: (Byron Nuclear Power Station : 50-455 OL
: Units 1 and 2) :
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County Board Room
Winnebago County Courthouse
West State & Church Streets
Rockford, Illinois

Monday, July 23, 1984

Hearing in the above-entitled matter was convened
at 2:00 p.m., pursuant to notice.

BEFORE:

JUDGE IVAN SMITH,
Chairman, Atomic Safety & Licensing Board.

JUDGE A. DIXON CALLIHAN
Member, Atomic Safety & Licensing Board

JUDGE RICHARD F. COLE
Member, Atomic Safety & Licensing Board

MIA/mun

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APPEARANCES:

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On behalf of the Applicant:

3

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U.S. Nuclear Regulatory Commission

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12

On behalf of the Intervenor, DAARE SAFE:

13

DOUGLASS CASSEL, JR. ESQ.

14

HOWARD LEARNER, ESQ.

Business and Professional People for the
Public Interest

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Chicago, Illinois 60602

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C O N T E N T SWITNESSES: Direct Cross Redirect Recross Board

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3 Louis O. DelGeorge)
4)
5 Walter A. Shewsky) 8400 8466
6)
7 Richard B. Tuetken)

LAY-INSFOLLOWS PAGE NO.

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13 Intervenor's Motion to strike portions
14 of prefiled testimony of Edison witnesses 8412
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16 Written Testimony of Walter A. Shewski 8423
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22 respect to one allegor, within scope of
23 hearing 8445
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EXHIBITSIDENTIFIEDRECEIVED

18 Applicant's Physical Exhibit A 8426 8433
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31 Weld Traveler Form

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P R O C E E D I N G S

2 JUDGE SMITH: Ladies and gentlemen, it is
3 past the announced time for the commencement of the
4 hearing. We have been informed that although Mr. Cassel
5 left his office quite early, he seems to have been
6 delayed en route.

7 Let us begin to see if there are any
8 housekeeping matters that can be taken care of in
9 Mr. Cassel's absence.

10 This is the evidentiary hearing ordered by the
11 Appeal Board in their order of May 7, 1984, in ALAB 770.

12 Mr. Miller, do you intend to abide by the
13 order of presentation that you have given?

14 MR. MILLER: Yes, sir.

15 JUDGE SMITH: We will begin with Mr. DelGeorge
16 Shewski and Tuetken. There's no reason that they can't
17 take the witness stand, and we can see if their
18 microphones work.

19 MR. MILLER: I just might inquire of the Board,
20 Mr. Tuetken has brought with him a number of samples,
21 physical samples of welds, as well as weld traveler
22 and weld inspection forms for the Hatfield Electric Company.

23 I suppose it would be more appropriate to
24 wait until Mr. Cassel arrives, but would the Board wish
25 to have a demonstration, if you will, on the record,

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off the record, and at what point in the proceeding?

2

JUDGE SMITH: I guess it will come up rather soon in the testimony of the first panel, so whenever it is appropriate, we will do it then.

5

MR. MILLER: All right. Perhaps before these witnesses authenticate their direct testimony.

7

JUDGE SMITH: That might be a good time for it.

9

MR. GALLO: Judge Smith, there is one housekeeping detail that I have responsibility for. There's one housekepeeing matter; it involves the prefiled testimony of the witness who was replaced by Mr. Branch. That witness is Mr. Don Leone. The current state of the record is now that what we have filed is a copy of piece of testimony that is represented to be the testimony of Mr. Leone.

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We also filed a shorter piece of testimony of Mr. Branch, which contains his professional qualifications and personal history.

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At the moment, it seems to me that what ought to be appropriate is for us to consolidate this piece of testimony where Mr. Branch's questions and answers to the first six questions and answers are consolidated with the balance of the Leone vexstimony, which he is adopting as his, so that I hope to be able to hand that

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1 out to all the Board and the parties by recess time,
2 so that it will be convenient and the record won't be
3 confused, if that's acceptable.

4 JUDGE SMITH: Sure.

5 I think we can probably proceed even somewhat
6 further. Let's swear the witnesses and give any
7 modifications to their testimony and physically incorporate
8 it.

9 MR. LEARNER: Judge Smith, if I could be
10 heard for just a moment, we have a few short preliminary
11 motions we would like to make before the testimony.
12 Mr. Cassel is not here. We would like leave to bring
13 those motions after the swearing in when Mr. Cassel
14 arrives.

15 Whereupon,

16 LOUIS O. DEL GEORGE

17 WALTER A. SHEWSKI

18 RICHARD B. TUETKEN

19 were called as witnesses on behalf of the Applicant and,
20 having been first duly sworn, were examined and testified
21 as follows:

22 MR. MILLER: Judge Smith, would you prefer that
23 I proceed now with the preliminary questions and identify
24 any corrections to the testimony?

25 JUDGE SMITH: Yes, please do.

XXXX

1 DIRECT EXAMINATION

2 BY MR. MILLER:

3 Q Mr. Del George, would you state your name for
4 the record, please?5 A (Witness Del George) My name is Louis O. Del
6 George.

7 Q By whom are you employed, Mr. Del George?

8 A Commonwealth Edison Company.

9 Q What capacity?

10 A I am the Assistant Vice President for
11 Licensing and Engineering for Commonwealth Edison.12 Q Mr. Tuetken, would you state your name for the
13 record, please?

14 A Richard B. Tuetken.

15 Q By whom are you employed?

16 A Commonwealth Edison Company.

17 Q In what capacity?

18 A I am presently in the capacity of Startup
19 Coordinator for Byron Units 1 and 2.20 Q Mr. Shewski, would you state your name for the
21 record, please?

22 A Watler J. Shewski.

23 Q By whom are you employed, Mr. Shewski?

24 A Commonwealth Edison Company.

25 Q In what capacity?

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1 A I am the corporate Manager of Quality
2 Assurance.

3 Q Mr. Del George, do you have before you a
4 53-page document to which are attached Del George
5 attachments A through E?

6 A (Witness Del George) Yes, I do.

7 Q By whom was that document prepared? That
8 document is entitled "Testimony of Louis O. Del George"?
9 Is that correct?

10 A Yes, it is.

11 Q And by whom was that document prepared?

12 A It was prepared by me.

13 Q Mr. Del George, are there any changes or
14 alterations that you wish to make to the document?

15 A Yes. I have four minor changes.

16 Q All right, sir. Would you describe them for
17 the Board, please?

18 A On page 4 of the testimony, in the first line
19 of the first full paragraph, "1982" should be "1981."

20 JUDGE SMITH: Excuse me just a moment. Who
21 was speaking for the Intervenors a moment ago? Would
22 you identify yourself, please, sir?

23 MR. LEARNER: I'm Howard Learner on behalf
24 of the Intervenors.

25 JUDGE SMITH: Are you prepared to note these

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corrections in the testimony?

2

MR. LEARNER: Yes, I am.

3

JUDGE SMITH: Thank you.

4

5

WITNESS DEL GEORGE: On page 29 of the
testimony, there is a sentence addition and a number
change.

6

7

BY MR. MILLER:

8

Q Mr. Del George, let me just stop you there.

9

I would like to hand out to the Board and to the parties
a new page.

10

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What page is that?

12

A (Witness Del George) 29.

13

Q I apologize. It does not have a three-hole

14

punch. I will rectify that at the recess.

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(Document handed to Board and parties.)

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1 BY MR. MILLER

2 Q Mr. DelGeorge, do you have before you what should
3 be marked as a new page 29, which embodies the corrections?

4 A (Witness DelGeorge) Yes, sir. I do.

5 Q And are there any other corrections or additions
6 to your testimony you wish to make at this point?

7 A On page 44 and tne last line on the page, the
8 number 11 should be 12. It should read "affecting 12
9 hangers."

10 JUDGE CALLIHAN: The final item on 44? Both of
11 that should be 12?

12 WITNESS DEL GEORGE: Yes, sir. On page 45, on
13 the third line, at the top of the page, the number 11 should
14 be 12. That concludes the changes.

15 BY MR. MILLER:

16 Q Mr. DelGeorge, as corrected by you --

17 JUDGE CALLIHAN: Excuse me, Mr. Miller.

18 Mr. DelGeorge, Appendix A, will you give us some
19 numbers for the major areas in the breakdown?

20 WITNESS DEL GEORGE: Yes, sir. In the case
21 of Blount Company --

22 JUDGE CALLIHAN: Excuse me, which one is that?

23 WITNESS DEL GEORGE: Blount is at the lower left.
24 The percentage is 21 percent. In the case of Hatfield,
25 which is in the quadrant at the upper left, I believe that

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1 number is also 21 percent. And on the right side of the
2 diagram, under Hunter, the number is 43 percent.

3 JUDGE CALLIHAN: Thank you.

4 JUDGE SMITH: Attachment A being the segmented
5 circle?

6 WITNESS DEL GEORGE: Yes, sir.

7 JUDGE SMITH: Mr. DelGeorge, on page 29, what
8 are the nature of the changes that were made?

9 WITNESS DEL GEORGE: There were two changes
10 made in the discussion of the certification packages
11 addressed in IE Report 50-454/80-01. Seven of the eight
12 certification packages were found acceptable and documented
13 in that inspection report. The last of the eight was
14 subsequently found acceptable and reported as such in
15 IE Report Number 50-454/80-08.

16 And in the third to the last line, in answer
17 25, there was a number -- the number four of eight was
18 changed to three of eight.

19 BY MR. MILLER:

20 Q Mr. De!George, with the changes and corrections
21 that you have just described, is the testimony true and
22 correct?

23 A (Witness DelGeorge) Yes, sir.

24 MR. MILLER: Mr. Chairman, at this point in time
25 I ask that Mr. DelGeorge's prepared written direct testimony

1 be incorporated into the transcript as if read.

2 JUDGE SMITH: I understand that you've asked
3 that we defer -- Mr. Cassel?

4 MR. CASSEL: Doug Cassel, my apologies for
5 arriving late, sir. I do have three motions of a preliminary
6 nature and a comment on the motion that we are not yet
7 ready to present today, for reasons that I will explain. I
8 merely wanted to indicate that so that you can schedule them
9 at the point in the proceeding that you prefer.

10 JUDGE SMITH: Okay, we deferred everything,
11 preliminary business and everything, to take care of the
12 mechanical details of getting the witnesses seated, sworn,
13 and their testimony corrected.

14 MR. CASSEL: Very good.

15 JUDGE SMITH: So you have no objection? Are
16 there any objections to Mr. DelGeorge's testimony?

17 MR. CASSEL: Judge, may I just take a moment to
18 pull out one of the preliminary motions? I don't believe
19 it relates to Mr. DelGeorge's testimony, but I want to
20 check that.

21 No, sir. It does not relate to Mr. DelGeorge's
22 testimony. It does relate, in part, to Mr. Shewski's
23 testimony. I don't know whether we've reached the point with
24 Mr. Shewski, or not.

25 JUDGE SMITH: Mr. DelGeorge's testimony is

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received.

(The testimony of Louis O. DelGeorge follows:)

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
(Byron Station, Units 1 and 2)) 50-455-OL

TESTIMONY OF
LOUIS O. DEL GEORGE

Q.1. Please state your full name and place of employment.

A.1. My name is Louis Owen Del George. I am employed by Commonwealth Edison Company in its Corporate Offices in Chicago, Illinois.

Q.2. Please describe your job responsibilities.

A.2. I am an Assistant Vice-President, responsible for Licensing and Engineering activities related to the nine operating nuclear reactors within Commonwealth Edison's Nuclear Operations Division. I am also responsible for Licensing activities related to the four nuclear reactors which Commonwealth Edison is currently constructing, including the two reactors at Byron Station. In addition, the engineering organization that reports to me maintains functional oversight of the engineering activities related to the reactor facilities under construction to provide for the uni-

form application of Commonwealth Edison's engineering procedures at both our operating nuclear plants and nuclear plants under construction.

Q.3. Please state your educational background and work experience.

A.3. I received a Bachelor of Science Degree in Engineering Science from the Illinois Institute of Technology in 1970. I also received a Juris Doctor degree from the Chicago Kent College of Law of the Illinois Institute of Technology in 1977. I began my professional career at the Bettis Atomic Power Laboratory in 1969 where I held various positions of increasing responsibility related to the design and fabrication of nuclear reactor internals. While employed at the Laboratory, I was appointed to the The Shock and Vibration Design Review Committee which assessed the adequacy of vibration design practices for all pressurized water reactor plants designed at the Laboratory, including the Shippingport facility. I also attended the Laboratory's Reactor Engineering School which provided graduate level instruction in the design of nuclear power systems.

In 1974, I joined Commonwealth Edison and have held positions of increasing responsibility in the Station

Nuclear Engineering and Licensing Departments. In connection with my engineering experience, I managed numerous backfit projects related to the Dresden and Quad Cities Stations. These projects included structural, mechanical and electrical design and construction activities, and involved work governed by both the American Society of Mechanical Engineers (ASME) and American Welding Society (AWS) Codes.

In connection with my licensing experience, from 1978 to 1981 I managed all licensing activities related to the LaSalle County Station including development of the Company responses to all NRC questions concerning design and construction activities. In this regard, I participated in the development of corrective action programs some of which involved reinspection of work previously completed and included construction activities governed by the ASME and AWS codes. This includes a reinspection program for hanger welding performed in accordance with AWS D1.1. by the LaSalle County heating, ventilating and air-conditioning (HVAC) contractor, the sample reinspection of large and small bore piping supports and the reinspection of ASME bolting by the LaSalle County mechanical contractor, the sample reinspection of cable routing and separation by the electrical contractor, and a structural

steel sample reinspection program which included visual inspection of welding performed in accordance with AWS D1.1.

In 198¹ I was appointed Director of Licensing at which time I assumed responsibility for all licensing activities related to the Company's nuclear facilities both operating and under construction. In 1983 I assumed my present position of Assistant Vice-President, after acting for approximately one-year as staff assistant to my predecessor in this position. It was in this latter role as staff assistant to the Assistant Vice-President of Licensing and Engineering that I previously gave testimony in this preceeding.

Q.4. Did you participate in the development of the Reinspection Program at Byron Station concerning the quality of QC inspectors?

A.4. Yes.

Q.5. Please describe your responsibilities concerning the Reinspection Program.

A.5. My responsibility as Director of Nuclear Licensing included the development of the Company's response to NRC Staff inspection findings. In 1982, acting in that capacity, I managed the development of a program

for verifying the effectiveness of contractor practices for the qualification and certification of QC inspectors at the Byron site, hereafter referred to as the "Reinspection Program" or "Program". The affected Company departments were assembled under my direction. The principal contributors to the Program definition were the Project Construction Department, which had overall responsibility for site contractor activities; the Quality Assurance Department which maintained oversight of site contractor activities and had insight on the standards affecting these practices and their application at the Byron site; and the Nuclear Licensing Department, which provided technical guidance on methods for resolving the findings based on experience gained in the resolution of similar issues involving reinspection of completed construction work.

Q.6. What was the objective of the Reinspection Program?

A.6. The Reinspection Program undertaken at Byron was developed to verify the effectiveness of inspector qualification and certification practices utilized by site contractors prior to September, 1982. The Program examined, on a sampling basis, inspections performed by QC inspectors who were certified prior to September, 1982 under those practices. By demonstrat-

ing that the performance of previously certified inspectors could be reproduced at an appropriate acceptance rate through reinspections performed by inspectors whose qualification and certification met current standards, the qualification of inspectors previously certified under the former practices would be confirmed.

This objective is more easily understood when viewed against the background which preceded the Program. A special NRC inspection was conducted at Byron during the Spring of 1982 by an NRC Construction Assessment Team (CAT). One of the findings of the team, published in IE Report Nos. 50-454/82-05 and 50-455/82-04, questioned the adequacy of the on-site contractors' programs for qualifying, and thereby certifying QC inspectors. Specifically, the NRC inspectors found deficiencies in (1) the contractors' evaluations of initial inspector capabilities, (2) the documentation of initial certification, and (3) the criteria used to establish inspector qualification. Although there was no finding that these deficiencies had compromised the quality of construction, the NRC adopted the position that the site contractors' QC inspector qualification programs had to be upgraded and that the quality of the inspections already completed required verification.

The purpose of the Reinspection Program was to validate former inspector certification practices under ANSI N45.2.6 (1978), and not to confirm the adequacy of construction quality generally. With validation of certification practices the objective, the Reinspection Program focused on demonstrating the repeatability of inspections previously performed, from which the effectiveness of qualification and certification practices could be directly demonstrated. However, the large volume of inspection data associated with the Program does produce a strong inference of the adequacy of construction quality at the site.

Q.7. What is the purpose of your testimony?

A.7. My testimony will describe the structure of the Reinspection Program, and will discuss the results of the Program for Hatfield Electric Company ("Hatfield"), Hunter Corporation ("Hunter"), and Pittsburgh Testing Laboratory ("PTL").

Q.8. In general terms, identify the essential elements of the Reinspection Program.

A.8. The Reinspection Program consisted of four essential elements. These are: (1) Selection of Contractors, (2) Selection of Inspectors (3) Selection of Inspec-

tors' Work, and (4) Establishment of Acceptance Criteria.

Q.9. Were all the contractors who performed construction work at the Byron site subject to the Reinspection Program?

A.9. No. Eight of the 19 contractors who had performed or were performing safety-related work at the Byron Station were subjected to reinspection. These site contractors were:

- a. Blount Brothers Corporation - responsible for most structural work including concrete/masonry, installation of post tensioning tendons, miscellaneous structural steel, and fireproofing.
- b. Johnson Controls Incorporated - responsible for installation of Heating, Ventilating, and Air-Conditioning HVAC controls and instrumentation including tubing, hangers and instrumentation, and instrument panel installation.
- c. Hunter Corporation - responsible for mechanical erection activities associated with equipment setting, piping, component supports, and pipe whip restraints.
- d. Nuclear Installation Services Company - responsible for installation of the NSSS system including control rod drive mechanisms reactor vessel set-

- ting, reactor coolant pump setting, and miscellaneous fuel handling equipment erection.
- e. Hatfield Electric Company - responsible for electrical work on site including embedded and exposed conduit and underground duct, cable pan installation including hangers, ladders and covers, as well as cable installation and termination. This contractor was also responsible for installation of fire detection, fire protection and security systems.
 - f. Powers-Azco-Pope - responsible for installation of small bore instrument piping and miscellaneous small bore (2" and under) systems.
 - g. PTL - responsible for nondestruction testing of welds, concrete testing, aggregate testing, concrete expansion anchor testing, soils testing, calibration and structural steel bolting inspection.
 - h. Peabody Testing - responsible for same scope as PTL who succeeded Peabody in September, 1977.

The work inspected by these contractors amounted to approximately 93% of the safety-related work at the Byron Station. (See Attachment A).

These contractors all certified their QC inspectors using the guidance provided in ANSI N45.2.6. With

respect to the NRC questions concerning the adequacy of inspections performed between the start of safety-related construction in 1976 and September, 1982, the program proposed for resolving the matter was developed based primarily upon experience gained in the resolution of other NRC findings related to programmatic concerns where no construction defects had been identified. In that regard, a reinspection based on a focused sampling process was considered prudent because it allowed for the allocation of resources in a way that would most effectively uncover potential discrepancies.

Of the 11 contractors excluded from the Program, three were excluded because they were not subject to ANSI N45.2.6 (1978) and, hence, the qualification of their QC inspectors was not in question. Three other contractors were already undergoing extensive reinspection of their work, thereby rendering it unnecessary to address the question of their QC inspector qualification. The remaining five were excluded from the Reinspection Program because their work was neither accessible nor recreatable for purposes of reinspection. The procedures and practices for the qualification and certification of QC inspectors for these five contractors were established under the same guidelines

as was the case for the eight contractors included in the Reinspection Program.

Q.10. How were the inspectors who were the subject of the Reinspection Program selected?

A.10. All QC inspectors for two contractors (Powers-Azco-Pope and Johnson Controls) were reinspected to the extent their work included reinspectable items. This was responsive to broad concerns raised in the CAT Inspection Report.

The work of the QC inspectors of the six remaining contractors was reinspected by a sampling technique. To ensure a representative selection of inspectors from the total population, Commonwealth Edison compiled rosters of the six contractors' QC inspectors. The names of the inspectors were listed chronologically by date of certification. The first inspector on each roster was selected and every fifth inspector thereafter was included in the Program. After the original sample population was selected, the NRC Senior Resident Inspector (who had conducted the CAT review) reviewed the sample and added two to four names to each contractor's group of inspectors. For example, four names were added to the sample population for Hatfield, three for Hunter, and three for

PTL. This NRC input was solicited to assure that any inspector whose certification might in any way be held suspect by the NRC would be captured by the initial reinspection sample.

Q.11. Was the sampling plan used to select the QC inspectors for reinspection adequate to assure that this group was representative of the total population of inspectors?

A.11. The Reinspection Program sampling scheme as described here was not designed on a formal statistical basis. Rather, it was a result of an engineering judgment that for small populations, a sample size of about 20% will provide a reliable indicator of the quality of the total population. In the Byron Reinspection Program, the selection of every fifth individual on a list chronologically ordered by initial certification date assures a wide ranging representation of inspection activities over the time period of the contractor's participation in the plant's construction. The addition of inspectors identified by the NRC as suspect would result in conservative bias to the sample if those suspicions were justifiable.

As shown in the following table, the inspectors whose work was reinspected span the entire period of inter-

est from the start of safety-related construction to September, 1982.

Distribution of Inspectors Reinspected
by Contrator by Year

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982*</u>	<u>TOTAL</u>
Blount Brothers	2/7	2/3	0/2	3/12		0/2	1/2	8/28
Johnson Controls					1/2	3/4	1/1	5/7
Hunter	1/2	2/6	1/6	2/7	4/19	9/31	3/13	22/84
NISCo			1/3		1/1	1/2	1/2	4/8
Hatfield Electric		1/3	2/4	1/1	2/5	15/60	2/13	23/86
Powers-Azco-Pope				2/2	5/5	9/10	3/4	19/21
Pittsburgh Testing		6/34	6/16	3/18	2/5	3/7	3/5	23/85
Peabody Testing	<u>1/23</u>	<u>5/14</u>						<u>6/37</u>
TOTAL	4/32	16/60	10/31	11/40	15/37	40/116	14/40	110/356

* to September 1982

Note: In the above table, the numbers shown as x/y indicate the number of inspectors reinspected versus the total number of inspectors certified.

Based on the above, it can be seen that the Reinspection Program included a reasonable distribution of inspectors over the timeframe of interest, and the sample size for each contractor was large enough to

provide assurance that the results of the Program are representative of each contractor's total inspector population.

The adequacy of the sample size can also be judged by comparison with those specified by Military Standard 105D (Military Standard 105D, "Sampling Procedures and Tables for Inspection by Attributes," Washington, D.C.; U.S. Government Printing Office, 1963. Also appears as ANSI/ASQC Z1.4-1981.) Military Standard 105D is a standard ANSI document containing sampling plans for performing inspection by attributes. The standard specifies sample size as a function of population size. The following table lists the total population of inspectors, number of inspectors who were reinspected, and the number of inspectors required to be sampled for each contractor, based on a Military Standard 105D single sampling plan and a normal inspection level.

Sample Sizes Used
in Reinspection Program vs. Those Required
in Military Standard 105D

<u>Contractor</u>	<u>Total Population of Inspectors</u>	<u>No. of Inspectors Reinspected</u>	<u>No. of Inspectors to be Reinspected per Military Standard 105D</u>
Blount Brothers	28	8	8
Johnson Controls	7	5	2
Hunter	84	22	13
NISCo	8	4	2
Hatfield	86	23	13
Powers-Azco-Pope	21	19	5
Pittsburgh Testing	85	23	13
Peabody Testing	<u>37</u>	<u>6</u>	<u>8</u>
	356	110	64

Note: All of the inspector population was reviewed for possible reinspection for Johnson Controls, Powers-Azco-Pope, and Peabody Testing. There were no reinspectable items for those inspectors not included.

Thus, I conclude that the sampling plan used to select the QC inspectors was adequate because its size captured a significant number of inspectors distributed over the entire period of interest. In addition, the samples compare favorably with those suggested for such plans in MIL STD 105D, which is recognized in the field of statistical quality control.

Q.12. How much of each inspector's work was subject to reinspection?

- A.12. The Program required that the first 3 months (i.e., 90 days) of each selected inspector's work be reinspected.
- Q.13. Why was only the first 3 months used?
- A.13. A random sampling of each selected inspector's total work was not judged adequate to indicate the inspector's initial qualification. Rather, the first 3 months of each inspector's work was judged to be a conservative measure of that inspector's qualifications because any deficient work by an inexperienced inspector is most likely to be performed during the early months on the job. This sampling approach introduced a conservative bias which would support the adequacy of the inspector sample discussed in response to Q.11.
- Q.14. Was there any requirement that an inspector have a minimum number of inspections before he qualified as a candidate for the Reinspection Program?
- A.14. Yes, in order to provide a baseline for assessing the performance of the selected inspectors, a minimum number of reinspections was incorporated into the Program guidelines. Generally, an inspector had to perform a minimum of 50 reinspectable inspections during the period subject to reinspection. In the case of independent testing agency personnel (Pittsburgh Testing

and Peabody Testing), 25 inspections were accepted because of the limited number of inspections for the typical inspector. When required, the next inspector listed chronologically was substituted. In those cases for which reinspection was initiated for the original inspector but a "minimum quantity" was not reinspectable, all reinspections actually performed for the original inspector were also included in the Program data base.

Q.15. What work performed by Hatfield, Hunter, and PTL was reinspected.

A.15. The work was categorized into discrete work activities called attributes. Each attribute was subdivided into more basic elements, wherein the inspection of an attribute encompassed inspection of its elements. All attributes of safety-related work inspected in the 90-day period were reinspected if they were both recreatable and accessible. Some attributes were not inspected in the 90-day period by any of the sampled inspectors. In the case of Hatfield, 9 of 11 inspection types were captured in the Reinspection Program, the remaining two (cable pan covers and cable pan identification) were not inspected by any inspector sampled in his first 90 days. In the case of Hunter 43 of 48 inspection types were captured in the Rein-

spection Program, the remaining five involving component support and equipment final inspection (Type 3 or 4 hardware and document reviews) had not been initiated prior to September, 1982. All of the attributes reviewed for incorporation in the Program are delineated in Attachment B.

Q.16. Is it your testimony that only accessible and recreatable attributes were reinspected?

A.16. Yes.

Q.17. Please explain the manner by which attributes were determined to be either accessible or recreatable.

A.17. An attribute inspection was considered to be recreatable if it could be identified to a specific inspector and the condition or state originally inspected was capable of reinspection at a later time. For example, an inspection was not recreatable if the attribute inspected was reworked at some time after the original inspection. An inspection was not recreatable if the attribute was subjected to inspection on a sampling basis without element specific documentation, such as conduit support bolting for which the inspection of a specific support could not always be identified to a specific inspector. In addition, certain attributes are only amenable to inspection at the time the origi-

nal work is being done, such as weld interpass temperature or equipment rigging hold points.

An attribute inspection was accessible for reinspection if extensive dismantling was not required to enable the reinspection to be performed. Thus, certain attributes were inaccessible due to their being embedded in concrete, or located within structural or mechanical enclosures which would require removal of hardware in order to make reinspection possible. Attribute inspections were deemed to be accessible, however, if reinspection could be accomplished through the erection of scaffolding or through the removal of paint, insulation or fireproofing.

Q.18. Were the attributes further categorized for purposes of the Reinspection Program?

A.18. Yes. For the purposes of the Reinspection Program basic attributes inspected were characterized as either "objective" or "subjective". This characterization was made based on the manner by which a particular inspection was carried out.

Q.19. What is the difference between a subjective and objective attribute?

A.19. An objective attribute is one for which its inspection is not significantly affected by qualitative interpretation. An element of such an inspection can usually be easily quantified or measured, such as material type, size, shape, traceability, dimensional configuration, etc.

A subjective attribute is one for which its inspection requires qualitative interpretation by the inspector. An example is visual weld examination without supporting gauges, for which an inspector is called upon to reach judgments on weld elements which cannot be readily quantified, such elements as overlap, porosity, lack of fusion, etc. Weld length was also considered a subjective feature if it was assessed qualitatively, i.e., without the use of a mechanical measuring device. Visual weld examination was the only subjective attribute in the Reinspection Program.

Q.20. How was it determined that original inspections were acceptable?

A.20. The focus of the Reinspection Program was to assess the qualifications of the site contractors' QC inspectors who had performed inspections during the 1976 to September, 1982 timeframe. This was accomplished by using QC inspectors to reinspect the original inspec-

tors' work who were qualified under the certification procedures accepted by the NRC in mid-1982 and approved for use by the site contractors beginning in September, 1982. The original inspection record and the reinspection record were compared and evaluated to determine whether any discrepancy between the two records existed.

Each contractor used its own QC inspectors as reinspectors and as indicated above, the reinspectors were properly qualified. Reinspections were performed to the same or in some cases more stringent criteria than had been used in the original inspection. Thus, even if design requirements or inspection criteria had been relaxed subsequent to the initial inspection, acceptability of the work performed by the original inspector was evaluated according to the earlier, stricter criteria. It was deemed important to recreate the conditions of the original inspection because the objective of the Reinspection Program was to evaluate the quality of the original inspector's performance.

Acceptable items were defined as those for which the reinspector agreed with the condition recorded on the original inspection record. Without that agreement, the item was graded as unacceptable. These statistics were compiled and recorded in such a way that correla-

tion to the original inspector could be accomplished. The grading was executed in this manner regardless of whether or not the installed item was in conformance with design drawing tolerances. If the original inspector recorded a value for a finite dimensional measurement and the reinspector could not obtain the same measured value, the item was graded as unacceptable (hence an observed discrepancy), even if the installed product dimensions were acceptable to design drawing tolerances. For example, if the original inspector identified the distance between two points as 3 feet 2 inches, but the reinspected value was 3 feet 1-5/16 inches (a difference of 1/16 inch), a discrepancy was recorded even though both measurements meet the requirements of the design drawings, i.e., they are within the design tolerance.

All observed discrepancies were recorded and tabulated and subsequently compared to the Program acceptance criteria. It is important to reiterate that all observed discrepancies were counted against the original inspector whether or not the observed discrepancy was later demonstrated to be a valid discrepancy when compared to current design or installation parameters and tolerances.

Q.21. What were the acceptance criteria?

A.21. For the purpose of this Reinspection Program, the following acceptance criteria applied:

1. For objective inspections - 95% agreement rate.
2. For subjective inspections - 90% agreement rate.

The agreement rate is the rate at which the reinspector agreed with the condition recorded by the original inspector on the original inspection record.

Q.22. What is the basis for the 95 percent acceptance level for objective attributes?

A.22. Acceptance criteria were established that Commonwealth Edison judged would provide reasonable assurance of the adequacy of the inspector's qualifications. For objective inspections, such as an inspection performed with calibrated instruments or the inspection of a material heat number, agreement between the reinspection and the original inspection was required to meet or exceed a rate of 95%. This acceptance criteria was considered a reasonably conservative acceptance level, that recognized that unintentional human error precludes 100% agreement. Moreover, many objective inspections require some subjective judgment on the part of the inspector, thereby reducing the likelihood of complete agreement between the original inspector and the reinspector.

The use of the 95% agreement rate should not be interpreted to mean that 5% of objective work can be defective. All discrepancies were evaluated for design significance. Although the situation did not present itself, had valid discrepancies with design significance been identified, a determination of the root cause of that discrepancy would have been made and further reinspection or other appropriate remedial action would have been implemented. This intent was contemplated within the expansion criteria defined for the Program.

Q.23. What is the basis for the 90 percent acceptance level for subjective attributes?

A 23. Subjective inspections were known from past experience to involve qualitative interpretation. Therefore, agreement between the reinspection and the original inspection was required to meet or exceed a rate of 90%. This acceptance criterion was applied only to visual welding inspections performed without supporting gauges. The 90% acceptance level recognized the likelihood for reasonable disagreement between inspectors and reinspectors where judgmental decision making was involved in the inspection.

For the case of visual welding inspection, Edison's extensive prior experience in the reinspection of similar welding features at other construction sites formed a basis for the 90% criterion. First, the Company was aware that such attributes, even if truly acceptable, are not amenable to a high agreement rate when reinspected. This is supported by the discussion of inspector activities in the Quality Control Handbook (J. M. Juran, et. al., McGraw Hill, 1962), to which reference was made at the time the Byron Program was developed. Second, Edison's experience clearly indicated that inspectors are inherently more conservative in their judgments when they are participating in a reinspection program which is subject to close outside scrutiny. Although that conservatism cannot be quantified, we considered a difference between the expected agreement rates for objective and subjective attributes of 5% to be a reasonable bound.

In order to further ensure that visual weld inspection results were consistent and accurate, the Reinspection Program accepted by the NRC staff provided for a third-party review of identified discrepancies. The third-party review found that the reinspectors were often overly conservative in their interpretations. This judgment was confirmed by the NRC-Region III Staff.

As in the case of observed discrepancies identified for objective attributes, all observed subjective discrepancies were evaluated for design significance. This gives evidence of the Program intent to assure with high confidence that defects of design significance did not go undetected.

Q.24. What action was taken, if any, if an inspector's work did not meet the acceptance criteria?

A.24. As was discussed in response to Q.12. and Q.13., a sampled inspector's first 3 months of inspections were reinspected. If an acceptance criterion was not met for that period, the inspector's certification was considered suspect. In order to determine whether the inspector should be deemed to be unqualified, an expanded sample covering the second 3 months of the individual's inspection tenure was reinspected for the attribute(s) found to fail the acceptance criterion. If the results of the second three month period alone did not meet the acceptance criterion, the inspector was judged to be unqualified. In this event, 100% of the inspections performed by that inspector of the type found to fail the acceptance criterion were reinspected. In addition, the original inspector sample population for the particular contractor involved was expanded by as much as 50% for the attribute in ques-

tion, depending on the number of inspectors still available for inclusion in the Program.

If an inspector had no inspections beyond 3 months and did not meet a Program acceptance criterion, the next inspector certified chronologically was substituted and his first 3 months of work was reinspected.* The qualification of the original inspector in such a case was considered indeterminate, but his results were retained in the Program data base, and all observed discrepancies were evaluated for design significance.

If expansion was required, Commonwealth Edison's selection of the inspectors to be added to the sample was made from an overall list of inspectors certified in the specific area where the unqualified inspector was identified. Thus, the expansion focused specifically on areas where qualification was suspect. This approach resulted in a very broad sampling of the potentially discrepant area of qualification when a single inspector failed to meet the Program acceptance criteria.

With respect to Hatfield, Hunter, and PTL the application of the Program criteria is shown in Attachment C. For objective attributes, the adequacy of certification for all inspectors was demonstrated

through the reinspection of the first 3 month period. No inspectors were adjudged unqualified and consequently no expansion of the reinspection sample was required. For the subjective attribute, both Hatfield and Hunter had one inspector whose qualification was indeterminate after reinspection of the first 3 month period. PTL had two such inspectors. Because these individuals had no further work, their qualification could not be assessed further. A substitution was made for each of these individuals and the substitute's reinspected work was shown to meet program acceptance criteria. Therefore, no expansion resulted.

PTL had one other inspector whose performance did not meet the subjective program acceptance criteria for either the first 3 month period or for the second 3 month period. Therefore, PTL was subjected to an inspector sample expansion. In this case the failure of just one inspector resulted in an expansion that captured the first 3 months of work for the attribute in question (visual welding inspection) of all remaining inspectors whose work was accessible. Each of the 4 additional inspectors passed the Program acceptance criterion.

A Program flow chart that describes the logic path for Program expansion is provided as Attachment D.

Q.25. What were the results of the Reinspection Program with respect to the qualification of the QC inspectors for Hatfield Electric Company?

A.25. The primary result of the Reinspection Program was the demonstration that all Hatfield Electric inspectors samples, for whom sufficient work could be reinspected to assess their qualifications, passed the Program acceptance criteria. This result demonstrates that the procedures implemented by Hatfield Electric Corporation for the qualification and certification of QC inspectors prior to September 1982 were effective. Thus, the uncertainty raised by the NRC CAT inspection concerning the qualification of Hatfield inspectors is resolved. Moreover, the Reinspection Program results support the conclusion reached by the NRC Staff in 1980 that the Hatfield program for qualification and certification of QC inspectors was adequate. The 1980 judgment is set forth in IE Report No. 50-454/80-01. The NRC Staff indicated that all Hatfield inspector certification packages that were reviewed (8 in total) were found to be acceptable. Although a comment was made concerning the adequacy of the experience of 1 of the 8 inspectors whose certification package was reviewed, this comment was resolved to the satisfaction of the NRC inspector, and closed in IE Report No. 50-454/80-08. This inspector's work was sampled in the Reinspection Program. His work met the Program acceptance criteria. I note that 3 of the 8 inspectors whose documents were reviewed in 1980 were included in the Reinspection Program and met the Program acceptance criteria.

Q.26. Have you drawn any other conclusions from the Hatfield results?

A.26. Yes. I can also conclude with high confidence that all other inspectors certified in accordance with these same practices and procedures were also adequately qualified. This opinion is based on the number of inspectors whose qualifications were demonstrated, the significant number of inspectors whose work was actually reinspected (27%) and the concomitant statistical significance of this sample (see response to Q.11.), the extremely large and diverse data base upon which the conclusion is founded (87,783 inspections total; 60,245 objective and 27,538 subjective), and also the fact that although a limited number of discrepancies were found, no discrepancy was identified which had design significance.

Q.27. What were the results of the Reinspection Program with respect to the qualification of the QC inspectors for Hunter Corporation?

A.27. The primary result of the Reinspection Program was the demonstration that all Hunter inspectors sampled, for whom sufficient work could be reinspected to assess his qualification, passed the Program acceptance criteria. This result demonstrates that the procedures implemented by Hunter Corporation for the qualification and certification of QC inspectors prior to September 1982 were effective. Thus, the uncertainty

raised by the NRC CAT inspection concerning the qualification of Hunter inspectors is resolved. Moreover, the Reinspection Program results support the conclusion reached by the NRC Staff in 1980 that the Hunter program for qualification and certification of QC inspectors was adequate. The 1980 judgment is set forth in IE Report No. 50-454/80-01.

Q.28. Have you drawn any other conclusions from the Hunter results?

A.28. Yes. I can also conclude with high confidence that all other inspectors certified in accordance with these same practices and procedures were also adequately qualified. This opinion is based on the number of inspectors whose qualifications were demonstrated, the significant number of inspectors whose work was actually reinspected (26%) and the concomitant statistical significance of this sample (see response to Q.11.), the extremely large and diverse data base upon which the conclusion is founded (73,349 inspections total; 69,624 objective and 3,725 subjective), and also the fact that although a limited number of discrepancies were found no discrepancy was identified which had design significance.

Q.29. What were the results of the Reinspection Program with respect to the qualification of the QC inspectors for PTL?

A.29. The primary result of the Reinspection Program was the demonstration that all but one of the PTL inspectors sampled, for whom sufficient work could be reinspected to assess his qualification, passed the Program acceptance criteria. One individual, whose work ultimately was 100% reinspected, did not pass the Program subjective acceptance criteria for both the first and second 3-month period. This resulted in the expansion in the sample of inspectors reinspected as was discussed in response to Q.24. Thus, the uncertainty raised by the NRC CAT inspection concerning the effectiveness of the qualification and certification practices implemented by PTL is resolved.

Q.30. Have you drawn any other conclusions from the PTL results?

A.30. Yes. I can also conclude with high confidence that all other inspectors certified in accordance with these same practices and procedures were also adequately qualified. This opinion is based on the number of inspectors whose qualifications were demonstrated, the significant number of inspectors

whose work was actually reinspected (27%) and the concomitant statistical significance of this sample (see response to Q.11.), the extremely large and diverse data base upon which the conclusion is founded (12,153 inspections total; 6,137 objective and 6,016 subjective), and also the fact that although a limited number of discrepancies were found, no discrepancy was identified which had design significance.

Q.31. Does the fact that certain inspections were inaccessible or not recreatable affect your conclusions on the reinspection program regarding inspector qualifications?

A.31. No. One must keep in mind the fundamental objective of the Reinspection Program which was to verify by reinspection the adequacy of the qualification and certification practices for contractor QC inspectors. The Program demonstrated the effectiveness of those practices for a representative sample of inspectors from which it can be inferred that the same practices were effective as applied to the remaining inspectors and, therefore, as to all inspection work performed by the entire inspector population.

The fact that certain inspection elements were either not recreatable or were inaccessible does not affect

my conclusion for several reasons. First, the data base developed within the Reinspection Program is extensive. Hundreds of thousands of inspections were recreatable and accessible, providing an enormous data base from which to assess the effectiveness of qualification and certification practices. Second, the qualification of inspectors for many of the attributes with inaccessible or not recreatable elements can be inferred from the fact that identical accessible elements in other attributes were reinspected and the qualification of the inspectors has been verified. For example, the amount of pipe, conduit or duct run encased in concrete is small by comparison to and is directly represented by the pipe, conduit, and duct run in air subjected to reinspection in the Program. The primary elements of inspection are the same so the results of reinspection of the accessible inspections can be used to draw conclusions regarding the non-reinspectable work. This is further demonstrated by the summary discussion of these attributes contained in Attachment B.

The qualification and certification programs for these inaccessible and not recreatable attributes are the same as those verified by the Byron Reinspection Program. In fact, many of the inspectors whose work was

reinspected in the Program also performed inspections in areas not reinspectable. Generally, inspectors were qualified for many attributes. The requirements imposed for prior experience, job training, and performance demonstration have the same general scope and technical content for each of these attributes, and those attributes not reinspected are similar in many respects to those captured for reinspection.

For these reasons, I am convinced that the conclusions reached in the Reinspection Program based on the scope of attributes actually reinspected are valid and defensible.

Q.32 In your previous answers concerning the results of the Reinspection Program for Hatfield, Hunter and PTL you indicate that discrepancies were uncovered as a result of the program. How were these discrepancies dispositioned?

A.32. Before the reinspection effort was undertaken, Commonwealth Edison recognized that, in all probability, discrepancies would be found. In order to create a data base sufficient to determine whether the discrepancies were either non-critical or critical to the design basis requirements, the contractors were directed to record all the reinspection results but not to imple-

ment corrective action immediately. This approach was taken so that the "as found" physical conditions could be observed at a later date for possible detailed analysis. As the Reinspection Program progressed the various contractors were directed to incorporate the unacceptable conditions into their particular non-conformance systems in order to implement corrective action, including trending of the discrepant conditions.

All discrepancies that were determined to exceed an ASME Code examination acceptance criteria were repaired, even though they were also determined by evaluation not to have design significance..

All other valid discrepancies were either repaired or dispositioned as acceptable "as-is" based on engineering evaluation results. Although physical rework in these latter cases was not mandatory because the discrepant condition did not compromise the design basis, some rework was performed. For example, all objective discrepancies related to documentation were corrected.

Q.33. In response to Q.32. you indicate that discrepant conditions were reviewed for trends. Describe this process, and the results, if any, for Hatfield, Hunter and PTL.

A.33. A brief review of the overall Program data trends is instructive. First, the Program identified 3,247 observed discrepancies associated with 156,926 objective inspections (2% discrepancy rate). The results for Hatfield, Hunter and PTL are given below.

Summary of Objective Discrepancies by Contractor

<u>Contractor</u>	<u>Number of Inspections</u>	<u>Observed Discrepancies</u>	<u>Valid Discrepancies</u>
Hatfield	60,245	2,115	432
Hunter	69,624	684	70
PTL	6,016	66	65

From this it is clear that the general acceptance rate for objective attributes was exceptionally high. When the observed discrepancies for Hatfield, Hunter and PTL were screened to eliminate those observations that are not valid discrepancies, the discrepant population for Hatfield, Hunter and PTL is approximately 1% of the total of inspections performed. In the case of Hunter, only 0.1% of the objective population inspected was shown to have a valid discrepancy associated with it. This includes those discrepancies identified that involved documentation, none of which displayed an apparent trend.

Second, the Program identified 4,001 observed subjective (visual weld) discrepancies associated with

45,858 subjective inspections (9% discrepancy rate). The specific results for Hatfield, Hunter and PTL are given below.

Summary of Weld Discrepancies by Contractor

<u>Contractor</u>	<u>Number Inspected</u>	<u>Observed Discrepancies</u>	<u>Valid Discrepancies</u>
Hatfield	27,538	1,986	1,978
Hunter	3,725	109	84
PTL	6,137	905	904

Although the discrepancy rate is somewhat higher for subjective than for objective attributes, it must be remembered that these visual weld discrepancies are more likely to occur due to the inherently subjective nature of the inspection attribute. However, although the discrepancy rate is higher, the ultimate issue is whether these discrepancies are systematic and significant enough to compromise the design. As was indicated in previous responses, no visual weld discrepancy was found to have design significance.

The results for all attributes were evaluated on a contractor-by-contractor basis to determine whether any trends existed in the observed discrepancies (i.e. reject rates) that might warrant further review. This evaluation involved a sorting of the observed discrepancies into discrete elements with a comparative

assessment made of these elements. If any element demonstrated a significant contribution to the discrepancy total, its significance was reviewed and any inspection practice ramifications were considered. With this preliminary discussion complete, I will turn to the specific trends uncovered within the Reinspection Program data concerning Hatfield, Hunter and PTL.

1. For the subjective attribute of visual weld inspection, the results for each contractor were analyzed using approximately five elements. PTL had a minor problem in reproducing the original visual weld inspection report. The requirements for the welds in question were not specific as to the acceptable tolerance range. Therefore, agreement rates between inspectors were predictably lower due to the fact that the applicable drawing requirement was strictly applied on reinspection. This was complicated by the fact that the feature being inspected, i.e., small fillet welds, were inspected for leg and length dimensions without gauges, thereby increasing the subjectivity of the inspection. Because the fillet leg dimension in question was typically small, it was difficult to reproduce inspection results. Currently, both dimensional tolerances and weld gauges are being used to make these inspections more objec-

tive than was the case at the time the original inspections were done.

In addition, PTL showed an undesirable discrepancy rate for the attributes of undercut and overlap. Constant training during the visual weld inspectors' tenure has much improved the consistency of their judgments made in the areas of undercut and overlap. Discrepancies of this type were shown to be insignificant.

2. In evaluating observed discrepancies associated with Hatfield visual weld inspections, it was noted that a disproportionately large fraction of the discrepancies were related to the inspection of sheet steel welds. This is not necessarily an indication of a specific problem with a particular inspector but rather a manifestation of an issue pertinent to the entire industry, related to visual inspection of sheet steel welds. This trend is not unexpected.

The standard applied in the past and which was used in the reinspection program was AWS D1.1., a structural steel code. That code makes no specific provision for welding the light gauge sheet steels at issue here. A modified code has been developed specifically for sheet steels, AWS D1.3. That code is now being imple-

mented at Byron. Most surface finish discrepancies previously recordable under AWS D1.1 have been eliminated by this new sheet steel code.

From a design impact standpoint, these discrepancies are insignificant. Not only were these discrepancies specifically evaluated and determined to be of no consequence but also sheet steel welds generally have very low load requirements. The strength afforded by even a code rejectable weld is almost always much greater than that needed to fulfill the design requirements. This conclusion has been validated by actual tensile tests previously performed on a similar sample of rejected welds on another project. The tests showed that welds which would be rejectable under AWS D1.1 criteria had margin in excess of what is required by design. In fact, in almost all cases, the failure under load resulted in failure of the sheet metal rather than the weld itself.

In summary, all observed discrepancies have been assessed for possible trends. Except for the two discussed above, none was identified.

Q.34. Has the NRC Staff reviewed the results of the Reinspection Program, and have they reached any conclu-

sions relative to the adequacy of work performed by site contractors at Byron.

A.34. Yes. The review of the results of the Byron Reinspection Program by the NRC Staff is documented in IE Report Nos. 50-454/84-13 and 50-455/84-09. In those reports it is stated that contractor inspectors did not overlook significant safety-related hardware deficiencies and that safety related work done by the Byron contractors is of acceptable quality. Although the classification of weld length as a subjective inspection feature was commented on by the NRC Staff when it accepted the program in March, 1983 and in testimony before this Board, the Staff has not communicated any further concern regarding this issue. The Staff has closed the item of noncompliance which gave rise to the Reinspection Program.

Q.35. Since the completion of the Byron Reinspection Program, has the NRC Staff reported on any other matters concerning the QC inspector activities of Hatfield, Hunter, or PTL.

A.35. Yes. Two sets of inspection reports which relate to Hatfield Electric QC activities have been issued.

Q.36. Would you please summarize those reports.

A.36. First, IE Report Nos 50-454/84-27 and 50-455/84-19 were issued on June 9, 1984. That report identified two apparent items of non-compliance.

(1) A design drawing notation (Note 47 on S&L Drawing 6E-0-32378, Rev. L) was not incorporated into procedures which required the electrical contractor to install cable tray covers, whether or not explicitly specified, if field conditions resulted in a violation of cable pan separation requirements without the covers. This was considered a Level V violation (minor safety-significance). Although training of Hatfield personnel including QC inspectors was conducted to review this drawing requirement, appropriate procedures controlling the installation of pan covers under these special circumstances had not been implemented. As a result, a limited number of cable pan inspections had been performed (126 cable pan inspection reports) without documentation of a review against the drawing notation. The necessary procedural revisions have since been made and implemented and a 100% reinspection of the affected cable pan previously installed was undertaken, with completion of the reinspection scheduled for July 13, 1984.

(2) Certain cable tray hangers were identified as discrepant after an extensive reinspection of similar

hangers had been completed. This was considered a Level IV violation (more than minor safety-significance). Hatfield Electric had reinspected over 4000 cable tray hangers to verify hanger configuration because the Hatfield QA manager identified a documentation deficiency in 1982. The connection between the structural steel and certain hangers (345) were judged to be inaccessible for reinspection because of fire-proofing or encasement in walls. In 1982, it was determined that if these hangers had valid weld traveler records including weld inspection records, no further reinspection was considered to be necessary. In 1984, at the request of the NRC inspector the hangers within this class were reinspected with the fire-proofing removed, and 129 apparent discrepancies were observed involving 119 hangers. It has since been established that 91 of the observed discrepancies, affecting 91 hangers involved gaps in the fit-up between the hanger and the auxiliary support steel to which the hanger was attached. An inspection for this fit-up gap was not introduced as an inspection requirement until February, 1984, and all of the fit-up gap discrepancies identified were found to have no design significance. Of the remaining observed discrepancies only ~~11~~ affecting ~~11~~ hangers were valid

12

12

discrepancies; the remainder having been shown to be in conformance with current design requirements. Each of the ¹²~~11~~ discrepant hangers are being evaluated to determine whether remedial action is required.

Second, IE Report Nos. 50-454/84-09 and 50-455/84-07 were issued on March 19, 1984. That report identified one apparent item of non-compliance involving a single Hatfield discrepancy report (DR-3382) that dealt with the removal of a cable from a conduit. The discrepancy report inaccurately described the pulling force applied in the removal of that cable, resulting in a deficient engineering evaluation. This was considered a Level IV violation (more than minor safety-significance). This event was determined to be an isolated occurrence based on a review of all other discrepancy reports involving cables pulled out of conduit, and was closed by the NRC in IE Report 50-454/84-27. This item is discussed in some detail in testimony filed by Mr. J. O. Binder of Commonwealth Edison and Mr. B. G. Treece of Sargent & Lundy.

Q.37. Do the facts underlying those NRC reports affect your opinion relative to the effectiveness of the Hatfield Electric QC inspector qualification and certification program.

A.37. No. The matters addressed in those inspection reports are not significant. This is true whether viewed individually or collectively.

With respect to the first item involving the failure to incorporate a drawing requirement concerning cable pan cover installation into the inspection procedure, the affected contractor personnel had been trained on the drawing requirement and are believed to have properly implemented it. The procedural deficiency which should be and has been resolved will provide objective evidence that the requirement is being implemented.

There is no apparent basis to conclude that inspectors who were trained did not effectively monitor the pan cover installation activities.

The second item involving cable pan hangers identified a very limited number of discrepant hangers attributable to deficient inspector activity. The majority of the observed discrepancies involved an inspection element only recently applied (fit-up gap) and does not, therefore, compromise the integrity of previously performed inspections. The valid discrepancies were shown not to be significant.

The third item involving cable pull tension has been the subject of extensive review by both Commonwealth

Edison and the NRC Staff. The isolated violation involving a single cable rework event has been dispositioned and closed to the satisfaction of the NRC Staff. No like violation has been identified after reviewing all cable pulls of a similar type.

Taken together, these events do identify an apparent weakness in translating design requirements into inspection procedures. However, this fact alone does not compromise the integrity of inspector qualification and certification programs. These procedural discrepancies have not resulted in major rework on the affected safety-related components, which further supports my opinion that the events are not significant.

It remains my conviction that the QC inspection activities of Hatfield were and are effective and that those activities were implemented in a way that systematic problems of design significance have not gone undetected.

Q.38. Do you have an opinion with respect to the quality of the work performed by Hatfield and Hunter?

A.38. It is my opinion that the Hatfield and Hunter work is adequate, and that reasonable confidence exists to conclude that equipment and systems associated with

this work will not compromise the safe operation of Byron Station.

Q.39. What is the basis for that opinion?

A.39. As I previously stated, it is my opinion that the work performed by Hatfield and Hunter is adequate and that reasonable confidence exists to conclude that the equipment and systems associated with this work will not compromise the safe operation of Byron Station. In this regard, PTL was not responsible for any underlying construction work and will not be further discussed here.

My opinion is based upon the results of the Byron Reinspection Program and the inferences that can be drawn from the results of that Program. It is further supported by my belief in the general effectiveness of the programs implemented by Commonwealth Edison at Byron to assure the adequacy of construction activities.

First, the vast majority of inspectors whose work was reinspected in the Byron QC inspector Reinspection Program passed the Program acceptance criteria. On this basis the effectiveness of Hatfield and Hunter QC inspector programs were revalidated. The effective-

ness of these programs ensures that work performed by these contractors was adequately inspected, from which it can be inferred that the contractors construction work is of adequate quality. Although some uncertainty has been expressed relative to the procedures for documenting work, those uncertainties are resolved by the demonstrated adequacy of the actual work. Recalling the conservatism in the agreement rate calculation, wherein all observed discrepancies were counted against the original inspector, the demonstrated effectiveness of these programs provides reasonable assurance that no systematic problem was left undetected.

As can be seen from the table below, a significant number of items were reinspected in this Program. The rate at which these items were found acceptable is also quite high. Although some discrepancies were found, none were determined to have design significance. This determination is discussed in detail by the SSL witnesses, and gives added support to my conclusion that construction defects of significance have not gone undetected.

Reinspection Program Summary

<u>Contractor</u>	<u>No. of Objective Inspections</u>	<u>Objective Inspection Results Acceptable</u> ¹	<u>No. of Subjective Inspections</u>	<u>Subjective Inspection Results Acceptable</u> ^{2,3}	<u>Total Objective and Subjective Inspections</u>
Hunter	69,624	99.0%	3,725	97.0%	73,349
Hatfield Electric	60,245	96.5%	27,536	92.0%	87,781

Notes for Table ES-1:

1. Program acceptance criterion is 95%.
2. Program acceptance criterion is 90%.
3. Includes concurrence by third-party inspector.

Second, building upon my first point, the extensive and diverse data base developed for Hatfield and Hunter allows me to infer that the quality of work is adequate over the full range of plant work items that were the responsibility of Hatfield and Hunter. Because of the broad Reinspection Program undertaken at Byron, I am convinced that the general work quality of Hatfield and Hunter is adequate. This conviction is based upon my review of the type and number of discrepancies attributable to these Byron contractors. Previous reinspections of similar items at other sites have, in my opinion, yielded similar results. This is

particularly true of the fillet weld attribute which was found to have the highest observed discrepancy rate in the Program. With this perspective I have high confidence that the plant-wide reliabilities that can be derived from the Reinspection Program data base are extremely high and conservatively bound the actual reliability of work performed by these contractors. The data base developed for Hatfield, Hunter and PTL is summarized in Attachment E. The data for each inspector by attribute are tabulated, and the cumulative average of this data by attribute for each of the contractors is provided.

My judgment in this case also takes account of the fact that certain work attributes could not be reinspected in the Reinspection Program. However, as shown in Attachment B, many of the inaccessible and not recreatable attributes had related indicia of acceptability.

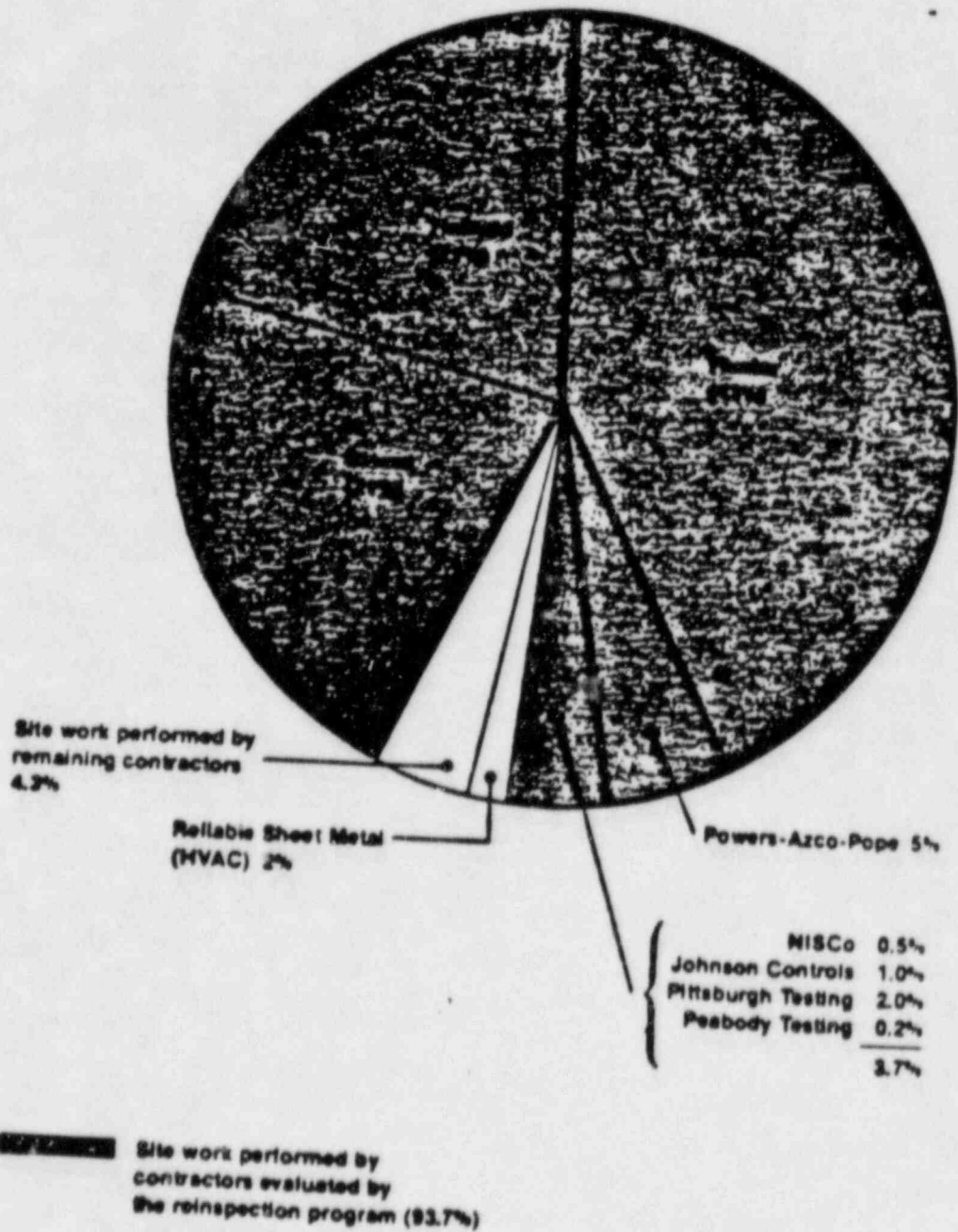
Third, there have been many independent layers of inspection and review of field installations implemented at Byron for both Hatfield and Hunter. The most obvious of these are the multiple tiers of audits and inspections conducted by the contractors, Commonwealth

Edison, and the NRC Staff. I am familiar with these reviews and believe them to be effective.

My own personal involvement has been more closely connected to reinspection and reverification programs which are the outgrowth of those reviews. In that regard, Hatfield has implemented several reinspection programs over the course of its tenure at Byron. These involved concrete expansion anchor verification in 1979, cable routing reinspection in 1981, 100% weld traveler card validation and 100% cable pan hanger configuration and dimension reinspection between 1982 and 1984, as well as the Byron QC inspector Reinspection Program. In addition, Hunter has also implemented several reinspection programs. These involved a 100% reinspection of all hangers installed prior to 1980, concrete expansion anchors installed prior to 1979, as well as the Byron QC inspector Reinspection Program. From these various programs an extremely large and diverse cross-section of work was reinspected. Although some discrepancies were identified and some rework was required, those remedial actions are not inconsistent with comparable actions taken by the electrical and mechanical contractor at LaSalle County Station with which I have had extensive experience

Also of significance to me in this regard is the broad program of overinspection conducted by the Commonwealth Edison Quality Assurance Department, which is referred to as the Unit Concept Inspection (UCI) Program. This program was instituted in September, 1982 and involves the reinspection of all items installed within specific spatial boundaries or in conjunction with specific equipment. The items are inspected for compliance to vendor and engineering design documents. More than 66 of these UCI inspections have been conducted at Byron encompassing a wide spectrum of electrical and mechanical work. For example, over 25,000 mechanical items, over 5000 linear feet of piping and insulation, over 25,000 electrical items, and 1,500 sections of cable pan and conduit have been inspected. The results of this program have not identified any significant construction discrepancies and, therefore, support the judgment that the underlying work quality is adequate.

**Percent of Safety-Related Site Work
Performed by Contractors Evaluated by
the Reinspection Program**



BATHFIELD ELECTRIC
Attorney Inspection Summary

<u>Procedure</u>	<u>Inspection Type</u>	<u>Inspection Condition</u>	<u>Primary Inspection Features</u>
#2	Embedded Conduit	Inaccessible	Size, Type, Location, Bends, Condition (Same as Procedure #20)
#3	Underground duct Fans	Inaccessible	Size, Type, Location, Bends, Condition (Same as Procedure #20)
#5	Material & Equipment Receiving	Not Recreatable	Shipping Damage (Same as Procedure #12 & #20; i.e. Condition)
#9A	Cable Pan Benders	REFUSED	Type, Configuration, Location, Bolt Torque
#9B	Cable Fans	REFUSED	Size, Type, Location, Radius, Separation, Pan Bolt Torque, Complete
#9C	Cable Pan Covers	Reinspectable, But No Inspections Captured	Type, Location, Condition (Same as Procedure #9B)
#9E	Cable Pan Identification	Reinspectable, But No Inspections Captured	Segregation Codes, Colors, Spacing (Like Procedure #20)
#10	Cable Installation	Not Recreatable & Inaccessible	Pan Condition, Conduit Condition, Cable Coiling, Cable Damage, Cable Bends, Cable Tension, Routing Points, Cable Entry Into Equipment, Vertical Cable Supports, Cable Training
#11	Cable Terminations	REFUSED	Log Size & Type, Bolt Size & Type, Taping Kit Size, Exposed Conductor, Minimum Bend, Entry Into Equipment, Training, Segregation

HATFIELD ELECTRIC
Available Inspection Summary

<u>Procedure</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Primary Inspection Features</u>
#12	Equipment Installation	REINSPECTED (1)	Type, I.D., Condition, Anchoring, Alignment, Level, Torque*
#12A	Equipment Modifications	REINSPECTED	Mounting, Location, Type/Model, Bolt Torque*, Wire Type, Termination Location, Lug/Connector, Weld Traveler
#12B	Non-Seq Bus Duct	Inaccessible	Equipment/Support ID's, Installation Configuration, Bolt Torque (Like Procedure #20)
#13AE	Visual Weld Inspection	REINSPECTED	Welding
#14	Material Handling	Not Recreatable	Finging, Tool Inspection, Operation Condition of Rigging Equipment
#20	Exposed Conduit	REINSPECTED	Size, Type, Location, Pends, Condition, Segregation Code Markers, Bolt Torque (1); Includes Inspection of Junction Boxes, Supports, Concrete Expansion Anchors
#25	A325 Bolt Installation	REINSPECTED	Bolt Type, Bolt Size, Condition of Surfaces, Bolt Tension by Turn-of-the-Nut (1)
#26	Stud Welding	Inaccessible	Bonding Adequate by Visual and Load Test (Like Procedure #13AE)
#27	Limit Switch Gasket Replacement	Not Recreatable	Verification of Parts (Note: All switches have since been replaced)

*Specific inspection feature inaccessible/not recreatable

(1) Reinspected and reported in Supplement 1. Additional inspections performed to increase data base.

WATFIELD ELECTRIC
Attribute Inspection Summary

<u>Procedure</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Primary Inspection Features</u>
#28	Removal of Heat Shrink Tubing On Coax Penetrations	Not Reinspectable	Conductor Not Damaged, Heat Shrink Removed, Gap Fills and Lugs Reinstalled (Like Procedure #11)
#30	Housekeeping	Not Reinspectable	
N/A	Conduit As Built	NOT INSPECTED	Dimensional, Location, Configuration

BETHB CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Inspection Condition</u>	<u>Primary Inspection Features</u>
(1) Visual Weld	Piping - Visual Weld Inspection	REINSPECTED	Contour, Reinforcement/Size, Surface Discontinuities
(1) Visual Weld	Whip Restraint - Visual Weld Inspection	REINSPECTED	Contour, Size, Surface Discontinuities
(1) Visual Weld	Component Support - Visual Weld Inspection	REINSPECTED	Contour, Size, Surface Discontinuities

HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Primary Inspection Features</u>
(2) Documentation	Piping - Mech. Jt. Documentation	REINSPECTED	Recording Data
(2) Documentation	Ferrite Inspection Documentation	Not Recreatable	Recording Data {Like other documentation activities}
(2) Documentation	Hydrostatic Test Documentation	REINSPECTED	Recording Data
(2) Documentation	Weld Interpass Temp. Documentation	REINSPECTED	Recording Data
(2) Documentation	Joules Test Documentation	Not Recreatable	Recording Data {Like other documentation activities}
(2) Documentation	Code Name Plate Change Documentation	Not Recreatable	Recording Data {Like other documentation activities}
(2) Documentation	Documentation of Weld Defect Removal Cavity	Not Recreatable	Recording Data {Like other documentation activities}

2

BUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Inspection Condition</u>	<u>Primary Inspection Features</u>
(2) Documentation	Piping - Weld Documentation	FI INSPECTED	Recording Data
(2) Documentation	Whip Restraint - Weld Documentation	FI INSPECTED	Recording Data
(2) Documentation	Component Support - Weld Documentation	FI INSPECTED	Recording Data
(2) Documentation	Piping - Component Inspection Documentation	FI INSPECTED	Recording Data
(2) Documentation	Whip Restraint - Component Inspection Documentation	FI INSPECTED	Recording Data
(2) Documentation	Piping - Fitup Documentation	FI INSPECTED	Recording Data
(2) Documentation	Whip Restraint - Fitup Documentation	FI INSPECTED	Recording Data
(2) Documentation	Piping - Bend Documentation	FI INSPECTED	Recording Data
(2) Documentation	Component Support Inspection - Documentation	FI INSPECTED	Recording Data
(2) Documentation	Dimensional Location of Field Welds	FI INSPECTED	Recording Data

BORTEL CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Primary Inspection Features</u>
(2) Documentation	Buried Pipe Covering Inspection - Documentation	PERISPECTED	Recording Data
(2) Documentation	Concrete Expansion Anchor - Documentation	PERISPECTED	Recording Data
(2) Documentation	Piping - Pre-Beat Insp. Documentation	PERISPECTED	Recording Data
(2) Documentation	Whip Restraint - Pre-Beat Inspection Documentation	PERISPECTED	Recording Data
(2) Documentation	Pipe Weld - Shield Gas Documentation	PERISPECTED	Recording Data
(2) Documentation	Component Support - Snubber Strapping Documentation	Not Recreatable	Recording Data (Like other documentation activities)
(2) Documentation	Piping & Component Support, Temporary Attachments Documentation	PERISPECTED	Recording Data
(2) Documentation	Bolting - Turn-of-Nut Documentation	Not Recreatable	Recording Data (Like other documentation activities)

1

BBTIF CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Inspection Condition</u>	<u>Primary Inspection Features</u>
(2) Documentation	Piping - Small Bore Final Inspection (Type 1) Documentation	FINISHED	Recording Data
(2) Documentation	Piping - Small Bore Final Inspection (Type 4) Documentation	FINISHED	Recording Data
(2) Documentation	Whip Restraint - Final Inspection (Type 3) Documentation	FINISHED	Recording Data
(2) Documentation	Whip Restraint - Final Inspection (Type 4) Documentation	FINISHED	Recording Data
(2) Documentation	Piping - Large Bore Final Inspection (Type 3) Documentation	FINISHED	Recording Data
(2) Documentation	Component Support - Final Inspection (Type 3) Documentation	Respectable, But No Inspections Captured	Recording Data (Like other documentation activities)
(2) Documentation	Component Support - Final Inspection (Type 4) Documentation	Respectable, But No Inspections Captured	Recording Data (Like other documentation activities)
(2) Documentation	Equipment Installation - Final Inspection (Type 3) Documentation	REJECTED	Recording Data

INDTEL CORPORATION
Available Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Primary Inspection Features
(3) Hardware	Piping - Rechg. In-Service	REINSPECTED	Condition, Alignment, Initial Torque*/Sequence*, Intermediate Torque*/Sequence*, Final Torque/Sequence*
(3) Hardware	Visual Inspection of Valve	Inaccessible	Internal Cleanliness, Condition (Like Piping/Weld Restraint Component Inspection)
(3) Hardware	Ferrite Inspection	Inaccessible	Using Ferrite Indicator Check Four Points on Welds (This was an abnormal, non-routine, special inspection.)
(3) Hardware	Piping Hydrostatic Test	Not Reinspectable	Inspection of Test Parameter Achievement, Visual Inspection of Welds
(3) Hardware	Piping Weld Interpass Temperature Inspection	Not Reinspectable	Inspection of Metal Temperature
(3) Hardware	Joules Test Inspection	Not Reinspectable	Loading Data From Instrument's, Calculating Heat Input
(3) Hardware	Code Base Plate Change	Not Reinspectable	Witnessing Removal of Code Nameplate (Like Temporary Attachment Removal)
(3) Hardware	Inspection of Weld Defect Removal Cavity	Not Reinspectable	Measurement, Mapping, Evaluation (Like Visual Weld Inspection)
(3) Hardware	Piping - Component Inspection	REINSPECTED	Identification, Damage, Internal Cleanliness, Proper Weld Preparation*

*Specific inspection feature inaccessible/not reinspectable

1

WORTH CORPORATION
Accelerator Inspection Summary

Accelerator Classification	Inspection Type	Feature/Condition	Primary Inspection Features
(3) Barware	Weld Restraint - Component Inspection	RESTRICTED	Identification, Number, Internal Cleanliness, * Proper Weld Preparation*
(3) Barware	Piping - Flange & Tank Weld	RESTRICTED	Internal Alignment, * Weld End Condition*
(3) Barware	Weld Restraint - Flange & Tank Weld	Not Recreatable	Alignment, Configuration Prior to Welding, Weld End Condition
(3) Barware	Piping - Bends	RESTRICTED	Radius, Quality, Surface Discontinuities
(3) Barware	Component Support Inspection	RESTRICTED	Identification, Configuration, Dimensions, Installation, Weld Completeness, Condition
(3) Barware	Dimensional Location of Field Welds	RESTRICTED	Dimensional Measurement
(3) Barware	Component Support Torque	RESTRICTED	Witness of Torqueing Operation
(3) Barware	Buried Pipe Covering Inspection	Inaccessible	Inspection of Protective Type Coating (like other Piping Features: i.e. surface discontinuities, damage)
(3) Barware	Concrete Expansion Anchor Inspection	RESTRICTED	Identification, Length, Diameter, Corroded Length, Thread Projection, Plumbness, Assembly
(3) Barware	Piping - Pre-heat Inspection	Not Recreatable	Measurement of Temperature (like other Measurement Activities: i.e. dimensional)

*Specific inspection feature inaccessible/not recreatable

1

INSPECTION REPORT
Asbestos Inspection Summary

Asbestos Classification	Inspection Type	Inspection Condition	Primary Inspection Features
(1) Bar-bare	Strip - Front - Face - Back Inspection	Not Detectable	Measurement of Temperature (All other Measurement Activities: i.e., dimensional)
(1) Bar-bare	Face - Back - Gas Verification	Not Detectable	Measurement of Inert Gas Flow Rate (All other Measurement Activities: i.e., dimensional)
(1) Bar-bare	Component Support - Smelter Structure	Insufficient	Verification of Operability
(1) Bar-bare	Piping & Component Support, Temporary Attachments	RETRACTED	Verifying Location, Surface Inspection After Removal
(1) Bar-bare	Boiling - Turn-of-Bar	Not Detectable	Witnessing of Establishment of Stop Tight and Required Rotation
(1) Bar-bare	Piping - Small Bone Final Inspection (Type 3)	RETRACTED	Complete, Unlabeled, Record Verification, Nonconformance Record Status
(1) Bar-bare	Piping - Small Bone Final Inspection (Type 4)	RETRACTED	In Place, Intact, Unlabeled
(1) Bar-bare	Strip - Front - Final Inspection (Type 3)	RETRACTED	Complete, Record Verification, Nonconformance Record Status
(1) Bar-bare	Strip - Front - Final Inspection (Type 4)	RETRACTED	In Place, Intact, Unlabeled

WONDER COOPERATIE
Bevindende Ingevoerde Summary

<u>Bevindende</u> <u>Classificatie</u>	<u>Ingevoerde Type</u>	<u>Bevindende</u> <u>Classificatie</u>	<u>Externe Ingevoerde</u>
111) <u>Bevindende</u>	Figuur - Ingevoerde Kans Ingevoerde (Type 1)	Bevindende Classificatie	Compleet, Bevindende Kans Ingevoerde
121) <u>Bevindende</u>	Componente Suggestie - Kans Ingevoerde (Type 2)	Bevindende, Bevindende Kans Ingevoerde Classificatie	Compleet, Bevindende Kans Ingevoerde
131) <u>Bevindende</u>	Componente Suggestie - Kans Ingevoerde (Type 4)	Bevindende, Bevindende, Kans Ingevoerde, Classificatie	In Plaat, Bevindende, Kans Ingevoerde
141) <u>Bevindende</u>	Eigenschap Ingevoerde	Bevindende, Bevindende, Kans Ingevoerde, Classificatie	Identificeerbaar, Bevindende, Kans Ingevoerde, Classificatie

*Specifieke Ingevoerde Ingevoerde/Bevindende

PERFORMANCE TESTING LABORATORY
Available for your use, summer of 2

Available Classification	Inspection Type	Inspection	Primary Inspection Features
CEB's - Blount CEB's - Hunter CEB's - Hot Field CEB's - F-B-P CEB's - RSM CEB's - JET	Supports, Columns Support, Hunter, Column / Cable Fan, Hunter Insulated Piping Hanger Ductwork Hangers Insulated Piping Hangers	RECORDED	Temperature, Length, width, thickness, anchor provision,
Field Inspection - Blount Hunter Hot Field F-B-P RSM JET	Hot Installation of CEB's	Not Recreable	Locate and verify 20 Day Cure
Blount - Turn-out-Blount Blount	Connections	Not Recreable	Witness & Record Data. (Like CEB's)
Callouts - Blount Hunter Hot Field F-B-P RSM JET RISG McBury	Support members, Thermometers, Freeze Gauges, Scales, Gauges	Not Recreable	Visual, Call/Verify per letter & procedure

PITTSBURGH TESTING LABORATORY
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Primary Inspection Features
Concrete - Blower	Rebar Curling	Not Reinspectable	Visual, Measure, Record Data (like CFA's)
Concrete - Blower	Rebar Fall	Not Reinspectable	Counting, moisture content, density,
Concrete Field - Blower	Placement	Not Reinspectable	Monitor pour, sample, slump, air, unit weight, cold specimens, temperature & sign off.
Concrete Field - Blower	Aggregate	Not Reinspectable	Sample: Top C-20, C-40, C-117, C-123, C-177, C-126, C-130, C-142, C-119, C-235 Monitor curling temps., Cap, Measure & Break Cures.
Visual Weld Inspection - Blower	Weld Inspection	REINSPECTED	Contour, Size, Surface Discontinuities

Program Results for Inspectors Performing
Objective Inspections

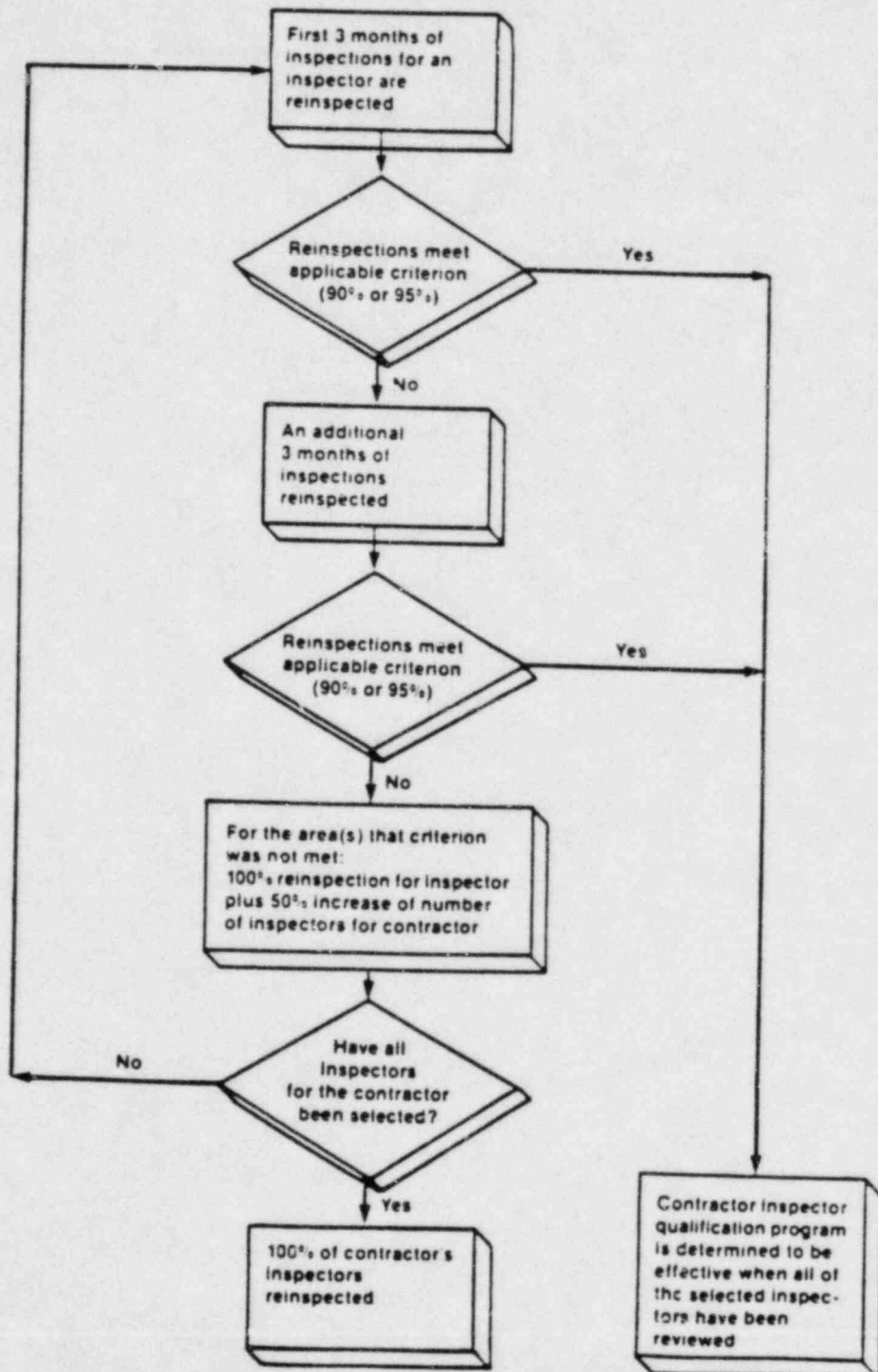
	<u>QC Inspectors Passing Acceptance Criteria</u>			<u>QC Inspectors Did Not Pass Threshold</u>	<u>Qualification Indeterminate</u>	<u>Total No. of Inspectors Reinspected for Subjective Inspections</u>
	<u>At</u>	<u>At</u>	<u>Total</u>			
	<u>3 Mo.</u>	<u>6 Mo.</u>				
Hunter	20	--	20	--	--	20
Hatfield Electric	17	--	17	--	--	17
Pittsburgh Testing	9	--	9	--	--	9

Program Results for Inspectors Performing
Subjective Inspections

	<u>QC Inspectors Passing Acceptance Criteria</u>			<u>QC Inspectors Did Not Pass Threshold</u>	<u>Qualification Indeterminate(1)</u>	<u>Total No. of Inspectors Reinspected for Subjective Inspections</u>
	<u>At</u>	<u>At</u>	<u>Total</u>			
	<u>3 Mo.</u>	<u>6 Mo.</u>				
Hunter	16	--	16	--	1	17
Hatfield Electric	7	--	7	--	1	8
Pittsburgh Testing	10	1	11	1(2)	2	14

- Note: (1) Inspectors failed to meet the acceptance criterion at the end of the first 3 month period and had no more reinspectable work. A substitution was made in accordance with Program requirements.
- (2) One inspector unacceptable for the first and second 3 month period. All his work was reinspected. Program expansion was implemented, resulting in all inspectors qualified to perform visual welding being reinspected (4 total). All of the added inspectors met the Program acceptance criterion for the first 3 month period.
- (3) The total of Hatfield Electric inspectors reinspected was 23 (15 with objective inspections only, 6 with subjective inspections only, and 2 with both objective and subjective inspections). The total number of Hunter inspectors reinspected was 22 (5 with objective inspections only, 2 with subjective inspections only, and 15 with both objective and subjective inspections). The total number of PTL inspectors reinspected was 23 (9 with objective inspections only and 14 with subjective inspections only).

Process for Determining the Effectiveness of a Contractor's Inspector Qualification Program



Reinspection Results
Hatfield Electric

A. Results by Inspection Type

Type	Reinspection Results (Acceptable/Total)	
	Level II Reinspection	Third-Party Review
Subjective	88.6% (24,402/27,538)	92.8% (25,552/27,538)
Objective	96.5%	(2)

B. Results by Inspection Attribute

Attribute	Initial Sample Period		Expansion Sample Period	
	No. of People Reinspected	Final % Acceptable	No. of People Reinspected	Final % Acceptable
1. Visual weld (Subjective)	8	92.8%	(1)	(1)
2. Conduit	6	97.6%	(1)	(1)
3. Terminations (Objective)	5	99.9%	(1)	(1)
4. Equipment setting (Objective)	0	0%	(1)	(1)
5. A325 bolting (Objective)	1	100.0%	(1)	(1)
6. Equipment modification (Objective)	3	100.0%	(1)	(1)
7. Conduit as-built (Objective)	8	95.9%	(1)	(1)
8. Cable Pan hangers (Objective)	2	95.5%	(1)	(1)
9. Cable Pan (Objective)	1	100.0%	(1)	(1)

Notes

*Results are cumulative. 3,136 observed discrepancies were reinspected by third-party inspectors.

(1) Not required

(2) Not applicable

Detailed Inspector Results
Hatfield Electric

Inspector	Attributes								
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
A	833/863	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-
C	630/712	-	-	-	-	-	4795/4974	-	-
D	-	80/80	638/638	(1)	8/8	-	-	-	-
E	10554/11501	187/188	48/48	-	-	-	-	-	-
F	-	178/179	72/72	-	-	-	-	-	-
G	1132/1211	386/401	544/546	-	-	2/2	-	-	-
H	-	-	-	-	-	1/1	-	-	-
I	4462/4701	-	-	-	-	-	3985/4112	-	-
J	-	639/661	-	-	-	-	-	-	-
K	-	1256/1284	-	-	-	-	-	-	-
L	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	705/742	-
N	3381/3489	-	-	-	-	-	10952/11457	-	-
O	50/50	-	-	-	-	-	-	-	-
P	-	-	-	-	-	-	-	-	-
Q	-	-	-	-	-	-	2001/2081	-	-
R	-	-	-	-	-	-	4818/5055	-	-
S	-	-	-	-	-	-	11734/12205	-	-
T	-	-	-	-	-	-	2753/2879	-	-
U	-	-	-	-	-	-	1917/2014	-	-
V	-	-	6473/6480	(2)	-	24/24(2)	-	-	-
W	4510/5011(3)	-	-	-	-	-	-	3854/4034	80/80
TOTAL	25552/27538	2726/2793	7775/7784	-	8/8	27/27	42955/44777	4559/4776	80/80

Notes

No expanded sampling was required; a substitution (W) was made for (C) in Attribute No. 1 because (C) failed the first 3-month period but had no further inspections to reinspect.

- Attribute 1 - Visual weld
- Attribute 2 - Conduit
- Attribute 3 - Terminations
- Attribute 4 - Equipment setting
- Attribute 5 - A325 bolting
- Attribute 6 - Equipment modification
- Attribute 7 - Conduit as-built
- Attribute 8 - Pan hangers
- Attribute 9 - Pan

NOTES:

1. Upon review of reinspection report for equipment setting for Inspector "D", it was found that the reinspection had been performed on an installation which has been reworked since the time of the original inspection, thereby making reinspection of the original inspector "not recreatable". As a result of this, the results for Attribute 4 reported in the January 12, 1984, report have been removed in accordance with Program requirements.
2. Upon review of reinspection reports for equipment modification, it was found that the summary tabulation for Inspector "U" had been entered into equipment setting rather than equipment modification tabulation. As a result of this, the results reported for Attribute 4 in the January 12, 1984, report have been removed and located appropriately in Attribute 6.
3. Upon completion of the initial accumulation of data, Inspector "W" failed to achieve the subjective acceptance criterion. Upon further review of reports rejected for "not per detail" and "arc-strikes" it was found that some reports had been improperly graded; for example, the "not per detail" was a condition where excess weld was present and "arc-strike" reported as a visual weld discrepancy was not present on the weld itself. After correction of these items, the results were accumulated as tabulated above.

Reinspection Results
Hunter

A. Results by Inspection Type

<u>Type</u>	<u>Reinspection Results (Acceptable/Total)</u>	
	<u>Level II Reinspection</u>	<u>Third-Party Review</u>
Subjective	96.8% (3604/3725)	97.0%* (3616/3725)
Objective	99.0%	(2)

B. Results by Inspection Attribute

<u>Attribute</u>	<u>Initial Sample Period</u>		<u>Expansion Sample Period</u>	
	<u>No. of People Reinspected</u>	<u>Final % Acceptable</u>	<u>No. of People Reinspected</u>	<u>Final % Acceptable</u>
1. Visual welding (Subjective)	17	97.0%	(1)	(1)
2. Documentation (Objective)	20	98.9%	(1)	(1)
3. Hardware (Objective)	17	99.3%	(1)	(1)

Notes

*Results are cumulative. 121 observed discrepancies were reinspected by third-party inspectors.

(1) Not required

(2) Not applicable

Detailed Inspector Results
Hunter

<u>Inspector</u>	<u>Attributes</u>		
	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>
A	47/48	-	-
B	14/14	134/138	-
C	34/34	1181/1186	-
D	33/33	101/102	-
E	283/301	2088/2144	-
F	203/214	40/41	61/64
G	116/129	161/161	253/265
H	49/55	19/19	21/21
I	315/319	47/47	12/12
J	-	2195/2269	129/133
K	334/344	280/284	7836/7893
L	273/273	366/366	186/190
M	-	126/130	204/206
N	-	289/294	331/339
O	-	416/442	903/921
P	249/263	8141/8214	1246/1253
Q	383/392	6315/6381	925/935
R	232/237	8503/8520	5355/5372
S	181/181	329/331	81/81
T	-	1789/1804	949/952
U	803/822	3671/3759	6248/6323
V	62/66	-	8004/8032
TOTAL	3616/3725	36191/36632	32749/32992

Notes

No expanded sampling was required; a substitution (V) was made for (H) because (H) failed the first 3-month period but had no further inspections to reinspect.

- Attribute 1 - Visual welding
- Attribute 2 - Documentation
- Attribute 3 - Hardware

Reinspection Results
Pittsburgh Testing

A. Results by Inspection Type

<u>Type</u>	<u>Reinspection Results (Acceptable/Total)</u>	
	<u>Level II Reinspection</u>	<u>Third-Party Review</u>
Subjective	83.7% (5,138/6,137)	85.3% * (3) (5,232/6,137)
Objective	98.9%	(2)

B. Results by Inspection Attribute

<u>Attribute</u>	<u>Initial Sample Period</u>		<u>Expansion Sample Period</u>	
	<u>No. of People Reinspected</u>	<u>No. of Final % Acceptable</u>	<u>People Reinspected</u>	<u>Final % Acceptable</u>
1. Visual welding (Subjective)	14	36.0	2	77.0 (3)
2. Concrete expansion anchor (Objective)	9	98.9	(1)	(1)

Notes

*Results are cumulative. 999 observed discrepancies were reinspected by third-party inspectors.

(1) Not required

(2) Not applicable

(3) 100% of the work was inspected for the two inspectors in the expansion sample period. Discrepancies had no design significance.

Detailed Inspector Results
Pittsburgh Testing

<u>Inspector</u>	<u>Attributes</u>	
	<u>No. 1</u>	<u>No. 2</u>
A	-	1759/2125
B	-	442/487
C	-	35/68
C(exp)	-	27/28
D	-	18/18
E	522/524	-
F	-	506/616
G	-	11/12
H	-	7/7
I	-	517/558
J	-	749/929
J(exp)	-	377/497
K	299/300	-
L	377/381	-
M	1057/1058	-
N	859/874	-
O	975/1008	-
P	933/935	-
Q	883/890	-
R	46/46	-
S	-	125/131
T	-	68/69
U	-	482/482
V	-	78/79
W	-	31/31
TOTAL	5951/6016	5232/6137

Notes

*Expanded sampling was required. T, U, V, and W were added in Attribute 2 due to failure of J.

The "exp." designation represents the expansion of an inspector's sample period when the acceptable threshold was not met.

Attribute 1 - Concrete expansion anchors

Attribute 2 - Visual welding

1 MR. MILLER: Thank you.

2 BY MR. MILLER:

3 Q Mr. Teutken, do you have before you a 31 page
4 document to which is attached documents that are
5 identified as Attachments A and B?

6 A (Witness Tuetken) I do.

7 Q Does that document bear, on the first page,
8 the words testimony of Richard B. Tuetken?

9 A It does.

10 Q By whom was this document prepared, Mr. Tuetken?

11 A Myself.

12 Q Do you have any changes or corrections **that** you
13 wish to make to your testimony at this time?

14 A There are some corrections and typographical
15 changes that need to be made..

16 Q Describe them for us, please?

17 A Page 16, last line, spelling as corrected is
18 E-C-O-K-E-L, Ecokel. Page 24, sixth line, Shewski,
19 S-H-E-W-S-K-I. Page 29, both the second line from the
20 top and second line from the bottom, third party is two
21 words. And there's one additional one, which I can't find
22 marked in my copy.

23 Q I call your attention to page 23 of your prepared
24 testimony, Mr. Tuetken. Look in the fifth line of
25 answer 36 on that page.

21b6

1 A After the word required, add the word that. It
2 then reads that "The issue required, that the contractor's
3 implementation."

4 JUDGE SMITH: May I have that again, please?
5 You're on answer 36?

6 WITNESS TUETKEN: Fifth line in the answer. After
7 the word required, enter the word that.

8 JUDGE SMITH: Is it your testimony or Mr. Shewski's
9 that has a table with the wrong caption on it? It's
10 Mr. Shewski's, okay.

11 BY MR. MILLER:

12 Q With those changes and corrections, Mr. Tuetken,
13 is this document true and correct?

14 A (Witness Tuetken) Yes, it is.

15 MR. MILLER: Judge Smith, I ask at this time
16 the prepared direct testimony of Mr. Tuetken be bound
17 into the transcript as if read.

18 JUDGE SMITH: Are there objections?

19 MR. LEARNER: No objection.

20 MR. LEWIS: No objection.

21 JUDGE SMITH: Testimony is received.

22 (The testimony of Richard B. Tuetken follows:)
23
24
25

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
(Byron Station, Units 1 and 2)) 50-455-OL

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. Klingler 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. Klingler 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 Re-inspection 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-est~~ a Byron contrac-

Ecoke,

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 ^{that} 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. Shepski.

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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, third[#]party 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 third[#]party 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, 1934. 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 (SCI)
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 (CEG)
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

454 82-05 Sheet
455 82-0A 2 of 2

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

RAIPIED IN SUPPLY COMPANY

CAVCO MEMORANDUM #730

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

INTERPRETATION
TO BE USED DURING
REINSPECTION
Bill
CELO PCD

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 Connauglar of the U.S.N.R.C.

J.K. Buchanan
J.K. Buchanan

NOTE

File 1.108
cc: R.B. Klingler

only related to dimensional data verification
i.e. don't provide the reinspection inspector with dimension
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

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

Interpretation 2
Methodology Acceptable
should be used
consistently by all
contractors in
Inspection
BLH/ha
4/12/83

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

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

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.

On type 3/4 inspections damage will be considered inaccessible. If we are verifying a type 3 inspection and a type 4 was performed, it will be shown as inaccessible. If we are verifying a type 4 inspection and another type 4 (45 day) was performed, it will be shown as inaccessible. 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

Delta
after R-7
by Reto
torque &
designer
val.

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

**JOHNSON
CONTROLS**
Systems Engineering & Construction
Division

Interpretation 3
CECO RD
Concurs
BL/ln
5/2/83

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 inaccessible.

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

REPLY IN WRITING
 BY TELEPHONE
815) 234-5095

IMMEDIATELY
 AS SOON AS ABLE
 NOT NECESSARY
BY 5-7 1002m Date 5-2

SENDER'S NAME

• Don. L. Smith

TO:

• Bob Klingler

Interpretation A
CELO PSD
concur
RB Klingler
5/2/83

SUBJECT:

STRUCTURAL Bolting

DATE SENT:

DATE RECEIVED:

DATE ACTED UPON:

DATE RETURNED:

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

[Signature]

CELO PSD CONCURS, DO NOT REINSPECT STRUCTURAL BOLTED CONNECTIONS

FOLD

A-6

5/2/83

SIGNED

[Signature]



Commonwealth Edison
 Byron Generating Station
 P.O. Box 8
 Byron, Illinois 61010

May 11, 1983

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

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

ATTN: B. Krasawaski

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. Luetken 5/11/83
 R. Luetken
 Assistant Superintendent
 Project Construction Dept.

RPT:bg

Attachment

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

TORQUE
 Reinspection
 INTERPRETATION
 TO BE USED during
 Reinspection
 AB Klingler
 CSC
 Sheet 1 of 1

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

Date: June 1, 1983

To: Bob Klinger

From: Lee E. Hadick

Subject: NRC Reinspection

INTERPRETATION 6
to be used during
Reinspection
OB Klinger
CSG PCO

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-9

Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #876

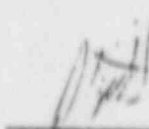
TO: R. Klingler, CECO P.C.D.
FROM: J. T. Hill, QA/QC Manager
DATE: 6-20-83
SUBJECT: Removal of Transco Firestops for reinspection of Conduit Hanger

INTERPRETATION?
To be used
during
reinspection
B. W. Hill
CECO

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 reinspection program? Known hanger population at this time is 27. Removal of this material could possibly damage cables encased 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.
M. Kowalovich
6/20/83.

FROM: PITTSBURGH TESTING LABORATORY
Byron Station
P.O. Box 418
Byron, IL 61010

SENDER'S NAME

M.R. Tallent, Jr.

CH-3850

TO:

R.B. Klingler
CECo PCD

REPLY IN WRITING
 BY TELEPHONE
(815) 234-5095

IMMEDIATELY
 AS SOON AS ABLE
 NOT NECESSARY

BY _____ Date _____

SUBJECT:

Reinspection

DATE SENT:

June 7, 1983

DATE RECEIVED:

DATED ACTED UPON:

DATE RETURNED:

INTERPRETATION IS
TO BE USED DURING
REINSPECTION
RB Klingler
CECO PCD

FOLO

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.

dth

SIGNED

[Signature] 6-7-83

FOLO

Method Accepted

A-11

SIGNED

[Signature] 6/14/83



Commonwealth Edison
 Byron Generating Station
 P.O. Box 8
 Byron, Illinois 61010

July 7, 1983

TO: Hatfield Electric
 Attn: T. Hill

Pittsburgh Testing Lab/Peabody
 Attn: M. Tallent

Hunter Corp.
 Attn: L. Hadick

NISCO
 Attn: K. Jackson

Blount
 Attn: W. Wills

Johnson Controls Inc.
 Attn: B. Shan

Powers-Azco-Pope
 Attn: R. Larkin

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

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

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

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

<u>Contractor</u>	<u>Minimum Items</u>
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 Δ : 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

Date: July 8, 1983
To: Bob Klinger
From: Lee E. Hadick
Subject: NRC Reinspection

*Interpretation. 10
Reinspection Program*

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 Structures*

*RB Klinger
7/18/83*

A-14

PTL - CHICAGO
D. A. DUNN, P.E.
Manager



**Pittsburgh
Testing
Laboratory**

July 11, 1983
Letter #70-83-040

*Interpretation II
Reinspection Program
RB Klyden*

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 invoke 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

Mr. R.P. Tuetken
Asst. Construction Superintendent
COMMONWEALTH EDISON COMPANY
Byron Station
July 11, 1983
Page -2-

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

Mr Tallent

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

d1h
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 underrun 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~~ reinspection program*
M. Stawick 7/17/00

FROM

PITTSBURGH TESTING LABORATORY

Byron Station
P.O. Box 418
Byron, IL 61010

BY TELEPHONE
(815) 234-5095

SENDER'S NAME

M.R. Tallent, Jr.

CH-3850

- IMMEDIATELY
- AS SOON AS ABLE
- NOT NECESSARY

BY _____ Date _____

TO:

R.B. Klingler
CECO PCO

SUBJECT:

Torque Inspection of CEA's

DATE SENT:

July 6, 1983

DATE RECEIVED:

DATED ACTED UPON:

DATE RETURNED:

*interpretation
12
REINSPECTION
PROGRAM
RB Klingler
8/5/83*

FOLD

We propose to categorize CEA torque inspection as a non-reproducible 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-reproducible.

Please advise as to your acceptance of this proposal.

d1h

SIGNED

Mr. Tallent

FOLD

unknown as of 7/15/83

CEA bolt torque is not reinspectable

*RB Klingler
CECO PCO
see attached
5/6 letter*

SIGNED

RECIPIENT

SARGENT & LUNDY
ENGINEERS
FOUNDED 1891

55 EAST MONROE STREET

CHICAGO, ILLINOIS 60603

(312) 269-2000

TWX 910-221-2807

O.T.
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.

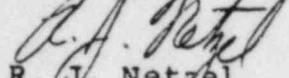
SARGENT & LUNDY
ENGINEERS
CHICAGO

Commonwealth Edison Company
Mr. R. Tuetken

July 28, 1983
Page 2

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

JTH/klh

cc: File 9.07
0212C

*Use $\pm 3"$ 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
1/14
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 concurrence to classify these cases as inaccessible. 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.

dth

SIGNED

MR Tallent

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

FOLD

A-22

SIGNED

B Klingler 8-31-83
CFCO PCD

RECEIVED

Area NRC REINSPECTION **FI** DAILY INSPECTION REPORT Inspector MARK M. TABER

Shift Day **3/12** HUNTER CORPORATION BYRON PROJECT Date **3/12/83**

Inspection Interpretation 15 RBVL

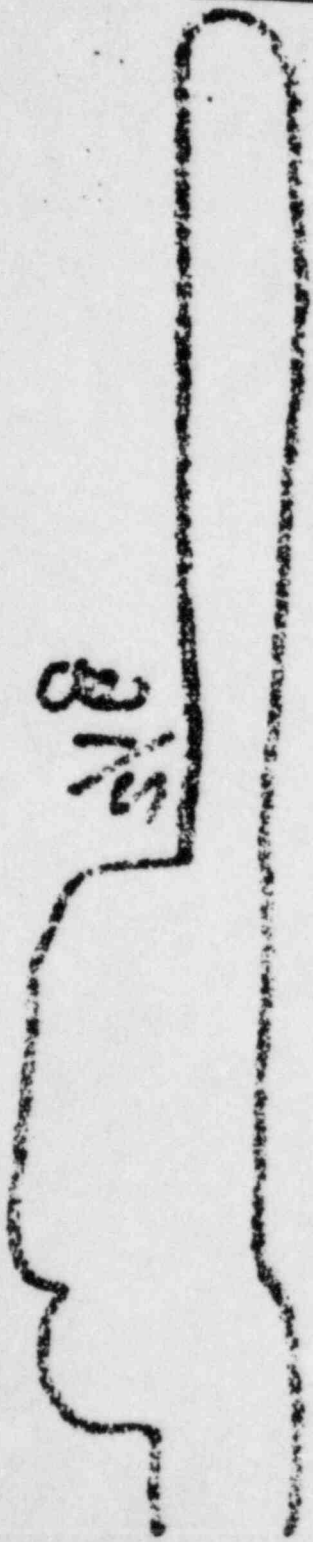
3/12/83

"INACCESSIBLE INSPECTIONS, NOT PERFORMED BECAUSE OF POOR ACCESS"

INSP.	WELDS			DIMENSIONALS			TORQUES		
	3	79	3	0	6	0	0	0	10
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 LEVEL I	0			0			0		52
1041 LEVEL I	0			0			0		1
TOTAL	110			12			6		55

Handwritten marks/signatures at bottom of page.

8 3/2



HUNTER CORPORATION

3600 - 179TH STREET, HAMMOND, INDIANA 46323. (219) 845-8000 (312) 731-8000

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
Quality Control Supervisor

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

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

cc: M. L. Somsag
K. Selman
file

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

LEH/pb

R. Tuetken
9/15/83

Reinspection
Interpretation
16
RB Klavick
9-15-83
page 1 of 2

A-25

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

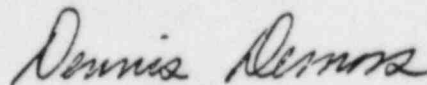
Dear Mr. Sorensen:

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
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

Reinspection
Interpretation
17
R. Klingler
9-19-83

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 inaccessible - not recreatable.

R. Tuetten
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

R. Klingler
9-19-83

A-27



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
 RB 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.

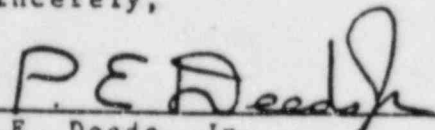
I am submitting the following information to clarify this situation.

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 si, 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. Tautman
 10/3/83



HUNTER CORPORATION

3800 - 179TH STREET, HAMMOND, INDIANA 43323. (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 $\pm .025"$. 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
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 gages employed the reinspection measurement shall allow variance up to $.025"$ undersize to be acceptable. R. Tuetken 12/16/83

A-29

4/DESIGN OF WELDED CONNECTIONS

(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 of 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.

G.A.L. Gage Co.

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

ATTACHMENT 2

interpretation
19
Page 3 of 5

November 23, 1982

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

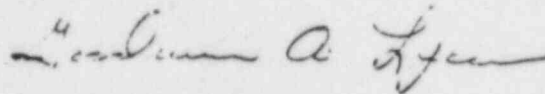
Subject: 72 Partial Sets Fillet Weld Gage
P. O. #265003

Dear Mr. Hadick,

The manufactures tolerance of the Fillet Weld Gage on your
P. O. #265003 are within the $.025_{\pm}$ range.

The welding gage is intended for general dimensional inspection
of welded fabrication where close tolerances are not expected.
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

MANUFACTURERS
OF THE "HI-LO"
WELDERS GAGE



AN INDISPENSIBLE
TOOL FOR FIT-UPS
AND RADIOGRAPHED WELDS.

A-31

Interpretation 19 page 4 of
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

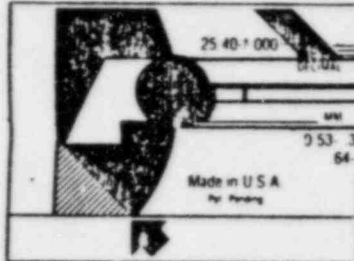
32nds, with metric equivalents given, so you get more accurate readings. Four screws hold the offset arm in position for future adjustments.

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

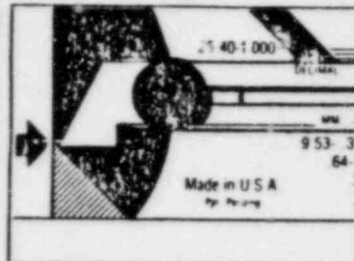
pointer in position for future reference. If the weld is concave, more filler material can be added to build the weld throat up to standard.

The G.A.L. Adjustable Fillet Weld Gage is made of durable, rust resistant stainless steel. Its 2 1/4" x 3" slim design weighs only 1 1/2 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.

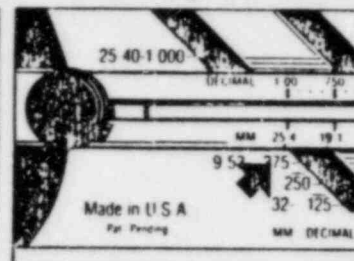
G.A.L. Adjustable Fillet Weld Gage is easy to use.



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.



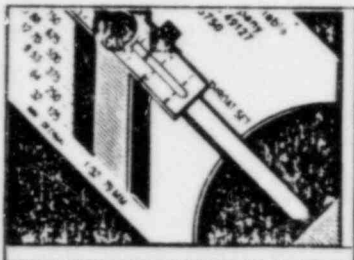
Adjust the offset arm up or down along the diagonal slots until the tip of the arm touches the top of the weld.



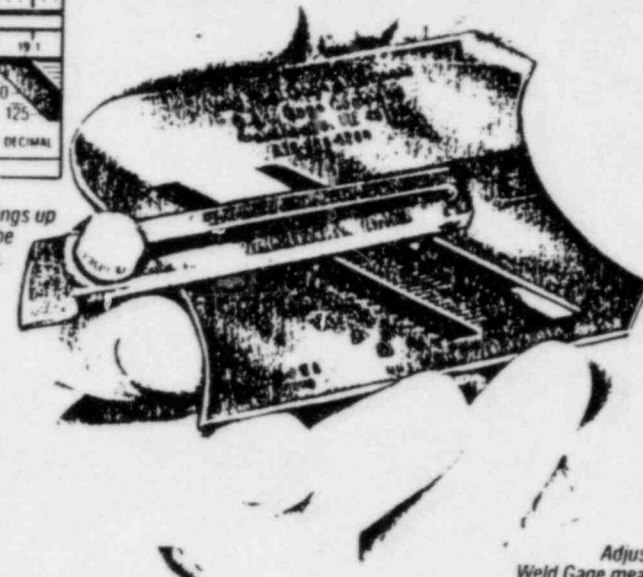
Read the weld size indicated. The increments are in 1/32" and 1/16" markings up to 1". All numerals are etched into the surface and filled for easier reading.



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.



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-3a

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

Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #1135

Interpretation 20
Reinspection Program
B. Klingler
1-25-84

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

In HECO's Procedure 13AE, Rev. O, 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. O, Issue I, dated 6-1-78, paragraph 5.8.5, states that cracks or blemishes ^s 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.
B. Klingler 1-25-84

J. Duane Spangler 1-25-84

HATFIELD ELECTRIC COMPANY

UNITS 1 & 2

QA/QC Memorandum #1148

Interpretation 2/
Reinspection Program
RB Klingler
2-2-84 PJ 1 of 2

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

It has been brought to my attention that welds are being re-jected 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 correct-ive 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 stich
2. accept excess weld lengths
above actual required
if 3/8" no visual distortion
exists
& weld quality is
acceptable
BK
2-2-84

Speed Letter

To BOB KLINGLER
CECO

From J. D. SPANGLER *Interp 2*
HECO *pay 20%*

Subject INTERPRETATION #21 - NRC REINSPECTION

-NO. 9813 FOLD
MESSAGE

THERE WERE NO OVER WELDING CALLS BECAUSE
OF NOT PER DETAIL 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

TTX

-NO. 8 FOLD
-NO. 18 FOLD

Date 3-14-84 Signed B. W. [Signature]

interpretation
22
Reinspection
Program Acceptable
for use
BB [signature]

Hatfield Electric Company
Byron Units 1 & 2
QA/QC Memorandum #1170

Hatfield
only

TO: R. Tueken/R. Klingler, CECC
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.

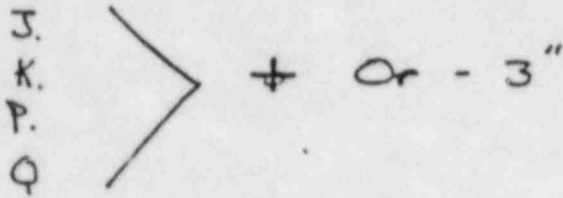
JTH/kih
cc: File 15.00

Acceptable if repeat dimension within

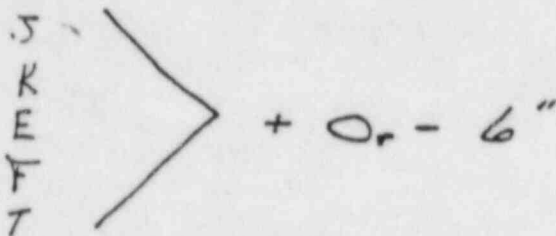
Hangers

- A : + or - 4"
- B : Ref Only
- C : + 2" - 8"
- D-E-F-G, between Horizontals are Reference Only Measurements
- W : 5 1/2"

INTERNAL DIAGONAL MEASUREMENTS



Braces



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. Tuttle
2/10/84

TUETKEN ATTACHMENT B

HATFIELD ELECTRIC
Attribute Inspection Summary

<u>Procedure</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
#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-Seq 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

<u>Procedure</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
#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	

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HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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	

7

HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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

7

HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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	

7

HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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

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HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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 - Sautter Stroking	Inaccessible	Requires disassembly to access

HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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.

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HUNTER CORPORATION
Attribute Inspection Summary

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
(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

<u>Attribute Classification</u>	<u>Inspection Type</u>	<u>Reinspection Condition</u>	<u>Why Inaccessible/Not Recreatable</u>
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
Polting - 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

21b7

1 BY MR. MILLER:

2 Q Mr. Shewski, do you have before you a 32
3 page document to which there are attached documents which are
4 identified as Attachments A through F which bears, on the
5 very first page, Testimony of Walter A. Shewski?

6 A (Witness Shewski) I do.

7 Q By whom was that document prepared, Mr. Shewski?

8 A Myself.

9 Q Are there any changes or corrections you wish
10 to make to this document at this time?

11 A Yes.

12 Q Describe them, please?

13 A On page 16, the answer to 27 needs the question
14 added.

15 Q If I might just interrupt you for a second on
16 that one, Mr. Shewski.

17 MR. MILLER: Once again, I do have a substituted
18 page which contains the question that was inadvertantly
19 omitted. To preserve the integrity of the numbering
20 system on the questions and answers, we have now identified
21 that question as question 26-27 so that the remaining
22 numbered questions and answers continue in sequence.

23 (Document distributed to Board and parties.)

24 BY MR. MILLER:

25 Q Would you continue, sir, with your corrections?

21b8

1 A (Witness Shewski) The other correction is on
2 page 21, the bottom table, left hand side should read
3 Hatfield inspector, instead of Hunter inspector.

4 Q I believe Judge Smith earlier asked, with respect
5 to the caption on one of your exhibits, Mr. Shewski?

6 JUDGE SMITH: That's what I was referring to.
7 That's what I meant.

8 BY MR. MILLER:

9 Q With those changes and corrections, Mr. Shewski,
10 is the testimony accurate and complete?

11 A (Witness Shewski) Yes.

12 MR. MILLER: At this time, Judge Smith, I ask
13 Mr. Shewski's prepared written testimony be incorporated
14 in the record as if read.

15 JUDGE SMITH: Any objections?

16 MR. LEARNER: No objections.

17 MR. LEWIS: No objections, Your Honor. I note
18 Mr. Miller referred to the testimony as being 32 pages in
19 length. In my copy, I note that there is a page 33 of the
20 text, but that it was out of place in my copy. It was
21 reversed with page 32.

22 MR. MILLER: You're quite right. Thank you
23 very much, Mr. Lewis. It is in mine as well. I apologize.

24 MR. CASSEL: Judge Smith, Intervenors do have --
25 is this mike working?

21b9

1 JUDGE SMITH: I hear you very well, but I sense
2 that the microphone isn't working.

3 MR. CASSEL: We have an objection to a portion
4 of Mr. Shewski's testimony that relates -- that is, our
5 objection relates entirely to one of the preliminary
6 motions that we would like to present today, which also
7 relates to Mr. Behnke's testimony and to a portion of
8 Mr. Laney's testimony. I would have no objection to admitting
9 Mr. Shewski's testimony, subject to your consideration at
10 your convenience of the motion that we wish to make, because
11 the only objection I have to admission of Mr. Shewski's
12 testimony is that one objection, which is only a small
13 part of his testimony.

14 JUDGE SMITH: If the objection requires a
15 modification of the testimony, we would want it to be made
16 today, so that it would appear in the transcript.

17 MR. CASSEL: I'm ready to present them.

18 JUDGE SMITH: Why don't you make your objection?
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(Document distributed to Board and parties.)

JUDGE SMITH: We will stop and read the document, and Ms. Reporter, please bind it in at this point.

(Intervenors' Motion to Strike Portions of Prefiled Testimony of Edison Witnesses follows.)

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
(Byron Nuclear Power Station,) 50-455 OL
Units 1 and 2))

MOTION TO STRIKE PORTIONS OF
PREFILED TESTIMONY OF EDISON WITNESSES

Intervenors DAARE/SAFE and Rockford League of Women Voters, by their undersigned counsel, hereby move to strike and exclude from this proceeding all portions of the prefiled testimony of Edison's witnesses which pertain to the alleged merits of the QA/QC program at Byron before the Reinspection Program initiated February 22, 1983, or since that date except insofar as the testimony relates to the Reinspection Program or other issues admitted in this proceeding.

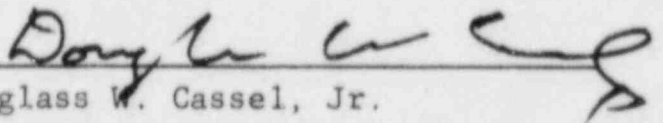
The basis for this motion is that the purpose of this proceeding is to permit Edison an opportunity to show that the Reinspection Program resolves the questions about QA/QC at Byron discussed in the Initial Decision, and to address certain specific points identified in this Board's June 8 Order. The purpose of this proceeding is not to afford Edison an opportunity to re-litigate all the findings in the Initial Decision, including those concerning the general adequacy (or lack thereof) of the QA/QC program at Byron over the years.

The following testimony is included in this motion to strike:

1. The entire testimony of Wallace B. Behnke, Jr.
2. All statements of Walter J. Shewski pertaining to the extent of Commonwealth Edison's Quality Assurance oversight of Hunter, Hatfield and PTL, apart from the Reinspection Program, since the previous close of the record in this proceeding in August, 1983 (Answer to Question 43).
3. All statements of Robert V. Laney pertaining to the general scope of the Commonwealth Edison Quality Assurance program at Byron; and his discussions on that subject with managers and engineers by Commonwealth Edison and Sargent & Lundy (Answers to Questions 10 (last paragraph), 19, and 20 (paragraph 1)).

July 23, 1984

Respectfully submitted,



Douglass W. Cassel, Jr.

One of the Attorneys for DAARE/
SAFE and Rockford League of
Women Voters on matters per-
taining to quality assurance/
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1 JUDGE SMITH: Mr. Cassell, would you, off
2 the record, briefly give a summary of your motion for
3 the spectators.

4 (Discussion off the record.)

5 JUDGE SMITH: Mr. Miller?

6 MR. MILLER: Thank you, Judge Smith.

7 I think that I would like to point out two
8 independent grounds on which this testimony is pertinent
9 to the issues that are before this Board. The first is
10 a general one; the second is quite specific and relates
11 back to the prehearing conference that was held in
12 Rockford May 30th of this year.

13 First, with respect to the general issue,
14 if one looks at the report on the Byron QC Inspector
15 Reinspection Program, dated February 1984, which is not
16 yet an exhibit in this proceeding, but which forms the
17 basis for the testimony of virtually every witness that
18 the Applicant is going to present today and through the
19 weeks, one finds in Chapter 7 of that report a section
20 which is entitled "Management Approach to Ensure
21 Quality of Construction," which details coverage and
22 the effectiveness of Commonwealth Edison Company's
23 quality assurance program as a basis for the conclusion
24 of the report, that the quality of the work at the Byron
25 station is adequate.

mgc 3-3

1 That Chapter 7 is supplemented with Appendix E
2 to the resinspection program report, which at some length
3 and on a contractor-by-contractor basis discusses the
4 quality assurance coverage of each site contractor's
5 activity.

6 More specifically, in my letter to the Board of
7 May 8, 1984, which discussed certain issues which the Board
8 might wish to consider in a reopened hearing, I referred
9 to an item which I described as Commonwealth Edison
10 Company's general control of its site contractors. This
11 Board's prehearing conference at page 8147 of the
12 transcript stated as follows with respect to that
13 issue:

14 "The Board has no desire to relitigate the
15 whole issue. We want to focus on the three contractors,
16 unless there is a specific exception, which we will discuss
17 later, present testimony, and I think it would be helpful
18 if you will bring us up to date as to your delegation
19 of quality assurance functions to those contractors and
20 your oversight of them. I think that would be an
21 appropriate area to go into."

22 And it was with that guidance from the
23 Licensing Board on the scope of the hearing that
24 Mr. Shewski prepared the testimony relating to the general
25 coverage of the quality assurance program, which appears

mgc 3-4

1 towards the end of his testimony, and Mr. Behnke and
2 Mr. Laney prepared their portions -- portions of their
3 testimony which go to the same issue.

4 I think that this is just an effort on the
5 part of the Intervenors to reargue an issue which they
6 fully discussed before the Board at our prehearing
7 conference on May 30th and on which there was a ruling
8 adverse to them. I think the motion should be denied.

9 MR. CASSEL: Might I respond, Judge?

10 JUDGE SMITH: Let's hear from Mr. Lewis.

11 MR. LEWIS: Your Honor, I fail to see how the
12 testimony that has been identified in the Intervenors'
13 motion constitutes a relitigation of any issue already
14 decided. I think, as Mr. Miller pointed to a statement
15 by the Board in the prehearing conference which said that
16 this kind of information would be helpful in assessing the
17 reinspection program issue itself, and I don't believe that
18 this constitutes, therefore, a reopening of all QA/QC
19 matters or necessarily would result in -- or that the denial
20 would necessarily result in the Intervenors not being able
21 to litigate all QA/QC matters, whatever they may be.

22 So Staff does not support the motion.

23 JUDGE SMITH: Mr. Cassel?

24 MR. CASSEL: I believe I heard two points from
25 Mr. Miller and one from Mr. Lewis, and I would like to

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1 respond to each of those three points as I heard them.

2 Mr. Miller's first point was that two portions
3 of the reinspection program report covers some of this
4 same territory, and he identified specifically Section 7
5 and, I believe, Appendix E.

6 Mr. Miller is quite correct in noting that that
7 report is not in evidence before this Board in this
8 proceeding, and indeed, I intend to object to the admission
9 of any portions of that report, which, as Mr. Behnke's
10 testimony, for example, does go back over the old history
11 of the QA/QC program at Byron and, in effect, attempts to
12 reargue the issues which were decided adversely to Edison
13 by this Board in January. The reinspection program,
14 simply by making a couple of references to the fact that
15 Edison thinks its program over the years at Byron has
16 been marvelous, should not be entitled to serve as a
17 foot in the door for Edison to just have us relitigate all
18 over again the findings this Board made concerning the
19 history of QA/QC at Byron.

20 The second point which Mr. Miller made was
21 that this Board, at the earlier prehearing conference,
22 indicated that Edison's control of its contractors might
23 appropriately focus on the three contractors -- Hatfield,
24 Hunter, and PTL -- and bring them up to date. To the
25 extent the Board so ruled, bringing up to date does not

mgc 3-6

1 authorize in any way going back through history, as
2 Mr. Behnke's testimony, for example, does and showing
3 purportedly how wonderful Edison's program has been.

4 The ruling which Mr. Miller cites in his
5 support simply does not authorize Edison to introduce
6 evidence going all the way back.

7 Thirdly, in support of that point and also
8 in response to Mr. Lewis' argument that admission of this
9 testimony that Edison wants to admit would not go back
10 over the ground that we heard last year and that you
11 ruled on this January, let me cite you just one example from
12 Mr. Behnke's testimony with regard to the breadth of the
13 testimony which Edison now wants to get into this proceeding
14 by virtue of these witnesses.

15 On page 4 of Mr. Behnke's prefiled testimony,
16 the Question No. 8 is posed: "Please describe how the
17 quality assurance function has developed at Commonwealth
18 Edison over time," and I will just read you verbatim the
19 first two words of his answer and summarize from there.
20 * The first two words of his answer are "in 1973," quote,
21 unquote, and it goes on from there to talk about the
22 history of QA/QC at Byron, and there are repeated references
23 throughout Mr. Behnke's testimony in this proceeding,
24 which Edison proposes to admit, which just rehashed all
25 the same ground that we have already been over last year.

mgc 3-7

1 JUDGE SMITH: To whose prejudice?

2 MR. CASSEL: To the prejudice of Intervenors --
3 well, first of all, there's a question of, what is the
4 scope of this hearing? If the scope of this hearing is
5 not to go back into the issues already decided, except
6 to the extent that the new order indicates that we are
7 reopening, that's fine. All parties can address the
8 hearing on that issue.

9 If, on the other hand, the scope of this
10 hearing is to go back over the whole history of QA/QC
11 at Byron, and Edison wants to introduce evidence on that
12 point, then Intervenors will likewise want to go back
13 over that whole history and show the other side.

14 JUDGE SMITH: We'll come to that, yes.

15 MR. CASSEL: So for that reason, Judge --

16 JUDGE SMITH: So it's not a question of
17 prejudice, then, it's a question of defining early the
18 scope of the reopened proceeding.

19 MR. CASSEL: It's also a question prejudice
20 to Intervenors, in that until Mr. Behnke's testimony
21 was prefiled, I think we were entitled to believe, as we
22 did, that the scope of this hearing was the reinspection
23 program and certain specified issues. We did not prepare
24 to relitigate last year's case, nor have we prepared to
25 relitigate last year's case, and if we are going to have

mgc 3-8

1 to go back over the whole history of Edison's OA/QC
2 at Byron, then we are going to need to prepare to do that.

3 MR. MILLER: Judge Smith, could I just have
4 a few more words?

5 Commonwealth Edison most assuredly does not wish
6 to relitigate the entire quality assurance issue. There
7 was comprehensive evidence presented to this Board on a
8 variety of detailed quality assurance issues. The Board
9 made findings. A rehearing was ordered on two aspects of
10 the decision of this Board, putting to one side the
11 systems control issue, which has no pertinence here. The
12 other deals with the reinspection program.

13 This Board's initial decision made adverse
14 findings with respect to both the qualifications of certain
15 site contractors' quality control inspectors and as to the
16 quality of the work that was performed by those contractors.
17 I think the Board's precise words were that it "had no
18 confidence in the quality of specifically Hatfield's work."
19 That is an issue which I believe is before the Board on the
20 reopened record.

21 We have a number of different approaches to
22 producing our proof on that issue, and one of them is
23 the testimony of knowledgeable individuals, both experts
24 within Commonwealth Edison Company and from the outside,
25 that the quality of the work is good.

mgc 3-9

1 It seems to me that Mr. Cassel's point is
2 really a much narrower one. He is quibbling over what
3 it is that an expert can rely on to support an opinion
4 with respect to an issue that is clearly before this
5 Board, and I don't believe the Federal Rules of Evidence
6 contemplate any such narrowing of bases on which an
7 expert can support his expert opinion. It seems to me
8 that Mr. Cassel has been on notice, certainly since the
9 prehearing conference and the prehearing conference order,
10 that there was an issue as to the quality of the work.
11 There was an issue as to Commonwealth Edison Company's
12 oversight of Hatfield, Hunter and perhaps PTL as well,
13 and he simply chose not to discover with respect to that
14 issue.

15 I don't believe there has been any prejudice
16 to Mr. Cassel, certainly nothing that he has brought to
17 this Board in any sort of timely fashion, and we obviously
18 reiterate our opposition to his motion.

19 JUDGE SMITH: In this dispute -- this is not
20 the first time we have heard this dispute or a form of it.
21 It does present somewhat of a logical paradox to the Board,
22 and it has. Looking at the history of this litigation,
23 we begin with what one might call the whole, and that is
24 the challenge to the utility's quality assurance program.
25 That is almost the language of the contention itself.

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2 That challenge was made by example. It was
3 made by bringing evidence with respect to -- in the main
4 hearing, with respect to six, seven or more contractors.
5 So we have the whole being challenged by example of the
6 parts.

7 With respect to the parts, we found that the
8 contention of Intervenors prevailed on some of the parts,
9 and with respect to other parts or other contractors, we
10 found that they did not prevail. However, with respect
11 to those where Intervenor did prevail, we denied the
12 license. We found they prevailed on the contention.

13 So the paradox I refer to is this: The utility,
14 we believe, does have a right to come back and demonstrate,
15 by whatever relevant means available to it, that our
16 conclusion was wrong with respect to those parts upon
17 which we based it and whatever.

18 However, as we discussed at the prehearing
19 conference and we discussed other times, that the
20 Commonwealth Edison, when they present evidence, will have
21 to expect the Intervenors to be able to follow wherever
22 the evidence that they present takes them. So what we
23 need, what the Board needs, and we've never quite
24 successfully been able to identify it in so many words,
25 is, what are reasonable objective guidelines which prevent
you, for example from laying out the allegations made

mgc 3-11 1

2 against Blount, as a challenge to their presentation today
3 as to the whole aspect of it -- simply this: You lost on
4 that part of the adjudication; however, I don't think that
5 it's going to be easy to announce a rule which is going to
6 be universally and always in every instance reliable.

7 If you have guidance to us on how we resolve
8 this paradox, that's fine. Right now, we will have to
9 take whatever evidence is relevant to the remanded issues.
10 Evidence of the whole is relevant to evidence of the parts;
11 however, it is not necessarily that evidence of the part
12 is always germane and within the scope of the hearing as
13 to the whole. That's our paradox.

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1 I fear I have confused the matter. It's clear
2 to me, so with that, absent a particular demonstration that
3 a particular piece of evidence or piece of testimony
4 goes beyond the scope of the remanded hearing -- that is,
5 by specific identification, your objection is overruled.

6 But just bear in mind the admonition that where
7 the Applicant wishes to take us, the Intervenors may follow.
8 That is just simple adjudication.

9 MR. CASSEL: I appreciate that clarification,
10 Judge, and I recognize the difficulty of defining the scope.

11 JUDGE SMITH: Now, I believe it is difficult, but
12 I believe it has been defined.

13 Is there additional objection to Mr. Shewski's
14 testimony?

15 MR. CASSEL: No, Judge, we do not.

16 JUDGE SMITH: Then Mr. Shewski's testimony is
17 received.

18 (The testimony of Walter A. Shewski follows:)
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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
(Byron Station, Units 1 and 2)) 50-455-OL

TESTIMONY OF WALTER J. SHEWSKI

Q.1. State your full name

A.1. Walter J. Shewski

Q.2. By whom are you employed?

A.2. Commonwealth Edison Company

Q.3. In what capacity?

A.3. I am the Corporate Manager of Quality Assurance for
the Company.

Q.4. Have you previously testified in this proceeding?

A.4. Yes.

Q.5. On what date?

A.5. My prior testimony was bound into the transcript of
March 28, 1983.

Q.6. Is the statement of your professional qualifications appended to your previous direct testimony still accurate and complete?

A.6. Yes.

Q.7. Please describe the scope of your present testimony.

A.7. The scope of my testimony is a description of (1) the activities of Commonwealth Edison Company's Quality Assurance Department in the conduct of the quality control inspector reinspection program ("reinspection program") which was conducted at the Byron Station; (2) the results of an examination of the certification package of the one quality control inspector (employed by PTL) who did not achieve a "passing" grade in the reinspection; (3) the steps taken to assure that the documentation of the Quality Control Inspector reinspection program was accurate and reliable; (4) a description of the scope of PTL's inspection activities at the Byron site; and (5) the extent of CECO's quality assurance oversight of Hunter, Hatfield and PTL since the previous close of the record in this proceeding August, 1983.

Q.8. What is your personal involvement in the Quality Assurance Department's activities in connection with the reinspection program?

- A.8. After the formulation of the program in February, 1982, I reviewed and evaluated reports and surveillances prepared by quality assurance personnel and I reviewed the inspection reports on the reinspection program prepared by the NRC Staff. In addition I prepared a portion of the report on the reinspection program; more specifically Chapter IV which describes quality assurance activities in connection with the reinspection program and Appendix E.
- Q.9. Please describe generally the activities of the Quality Assurance Department in connection with the reinspection program in so far as that program reviewed the qualifications of quality control inspectors employed by Hatfield Electric Company ("Hatfield"), Hunter Company ("Hunter") and Pittsburgh Testing Laboratory ("PTL").
- A.9. Through the course of the reinspection program (February, 1983 through the conclusion of the program) Quality Assurance conducted 3 audits and 4 surveillances of the reinspection program. Additional surveillances were performed to close out audit findings and observations. These audits and surveillances are discussed in detail in subsequent portions of my testimony. Two of these audits involved the activities

of all site contractors including Hunter and Hatfield. The third dealt with Hatfield alone. Three of the 4 surveillances dealt with the activities of Hatfield and the other one involved the disposition of an interpretation of the reinspection program initiated by Hunter.

Q.10. Did the Quality Assurance Department participate in any other activities concerning the reinspection program?

A.10. Yes. Concurrent with the start of the reinspection program in late March, 1983, weekly meetings were held with contractors involved with the reinspection program until mid-September, 1983. The purpose of the meetings was to resolve any questions that the contractors had relative to implementation of the reinspection program, to obtain information on the progress made by each contractor on a weekly basis. Quality Assurance was present at a majority of these meetings. Either the QA Superintendent or a designated QA representative involved with the recertification/reinspection attended the meetings. During the meetings, questions arose relative to the implementation of the reinspection program, many of which resulted in documented interpretations that were

acceptable to Site Quality Assurance. The QA audit performed in June, 1983 provided formal documentation of acceptance of the existing interpretations.

Q.11. What other activities of the Quality Assurance Department took place in connection with the reinspection program?

A.11. The QA Department directed Pittsburgh Testing Laboratory ("PTL") to conduct a special Unit Concept Inspection of a sample of attributes reinspected by site contractors during the reinspection program. This special Unit Concept Inspection, which is discussed in detail later in my testimony, was designed to determine whether the results reported in the reinspection program were reliable and valid. This was done by reinspecting again the work of the site contractors.

Q.12. Please identify the surveillances of the reinspection program by number.

A.12. The surveillances are identified as #5682 dated 1/21/84, #5700 dated 1/23/84, #5753 dated 2/2/84 and #5811 dated 2/21/84.

Q.13. Please describe the scope, results and corrective action, if any, for Surveillance #5682.

A.13. Surveillance #5682 (Attachment A) reviewed the tallying accuracy of the reinspection results for a Hatfield inspector's first ninety (90) days of inspections after his certification in the visual welding area. The reinspection record and the third party concurrence for 20% of the weld travelers were reviewed. With the exception of one weld traveler, the results given were accurate. For the one weld traveler, the number of welds rejected by the Hatfield inspector totalled 18 not 28. The correction was made to the data base. The error did not impact true rejectability as determined by the third party.

Q.14. Please describe the scope, results and corrective action, if any, for Surveillance #5700.

A.14. Surveillance #5700 (Attachment B) was a review of Interpretation 19 which provided concurrence to (1) use AWS D1.1-82, Articles 2.3.2 and 2.3.2.1 for inspection of fillet welds, and (2) to allow a variance of up to .025" undersize as acceptable when inspecting fillet weld size. This variation was deemed acceptable because of varying accuracy between gauges employed by Hunter Corporation. Quality Assurance determined from the information provided that

this interpretation is reasonable and would not affect the validity of the inspection results.

Q.15. Please describe the scope, results and corrective action, if any, for Surveillance #5753.

A.15. Surveillance #5753 (Attachment C) dated February 2, 1984 again reviewed the issuance and processing of field problem sheets by Hatfield. The use of these sheets had first been identified as a problem in Audit 6-83-66 (see Answer 19). This surveillance was undertaken to confirm that Hatfield was continuing to use field problem sheets to identify problems needing attention and not as a substitute for discrepancy or nonconformance reports. Various field problem sheets were reviewed. It was found that they were correctly being written by Hatfield Production to Hatfield Engineering describing problems which prevented installation per the design document and that no field problem sheets were being used in lieu of deficiency reports. Also, it was found Hatfield was documenting deficiencies using the deficiency report and nonconformance system as provided in their procedure. No deficiencies were identified and no further corrective action as a result of this surveillance was required.

Q.16. Please describe the scope, results and corrective action, if any, for Surveillance #5811.

A.16. Surveillance #5811 (Attachment D) was a review to verify the accuracy of the data tabulated by Hatfield in connection with the Reinspection Program. The nine (9) attributes reinspected by Hatfield were visual welding, conduit, cable termination, equipment setting and modification, bolting and cable pan hanger and cable pan inspections and all were checked. Tabulation errors were identified and corrected. The corrections did not affect the final results. It was found that the Reinspection Program results involving these nine (9) attributes were acceptably tabulated.

Q.17. Are the audits of the reinspection program identified by number?

A.17. Yes. They are identified as #6-83-66, #6-83-93 and #6-83-124.

Q.18. What was the scope, findings and observations of audit #6-83-66?

A.18. Audit #6-83-66 is in evidence as Intervenors Exhibit 29. That exhibit describes the scope of the audit, its findings and observations. For the convenience of

the Board and the parties that audit is attached to my testimony as Attachment E.

Q.19. Please describe how the findings directed at the activities of Hatfield, Hunter and PTL in audit #6-83-66 were resolved.

A.19. Finding #1 Part A applies to Hunter; Finding #1 Part B applies to Hatfield; and Finding #1 Part C applies to PTL.

Finding #1 Part A identified two potential problems which could have affected the analysis of reinspection results. The first item involved the use of field problem sheets rather than a discrepancy report by Hunter. Quality Assurance Surveillance #5189 (Attachment F) dated 10/12/83 verified that discrepancy reports had been initiated for the supports identified in Finding #1 Part A as required by Hunter's procedures.

The second problem identified in Finding #1 Part A was concerned with the reinspection of bolted connections by Hunter. This item was dispositioned by a letter from Sargent & Lundy which stated "flange bolt torque values will relax over time" and thus are not reproducible.

Finding #1 Part B identified the fact that Hatfield was using field problem sheets to resolve discrepancies identified during reinspections for the conduit and termination attributes. Quality Assurance Surveillance #5202 R1 (Attachment G) identified that HECO. NCR #674 was written to disposition a deficient item discovered during the reinspection process which had previously been the subject of a field problem sheet.

Finding #1, Part C identified the fact that PTL had not yet transmitted inspection reports generated during the Reinspection Program to the appropriate contractors. These inspection reports described discrepant conditions in work performed by other contractors, but inspected by PTL. PTL was working on the premise that reports with nonconforming conditions would be reported to the contractors upon completion of the Program. Upon being advised during the audit to immediately transmit nonconforming reports to the appropriate contractors after concurrence by the independent third party inspector, PTL began and continued transmitting such reports as they were prepared. No further corrective action was required. Quality Assurance surveillance 4939 (Attachment H) described the corrective action taken to close this audit finding.

- Q.20. Were nonconformance reports issued as a result of any audit finding of Audit #6-83-66 included in a trend analysis program?
- A.20. Hatfield issued NCR-674 for an isolated problem dealing with a relay which was eventually determined to be a temporary installation. This NCR was included in the 1983 third quarter trend analysis by Hatfield. All other NCRs initiated as a result of discrepancies observed during the reinspection program were included in trend analyses.
- Q.21. Please describe how the observations directed at the activities of Hatfield and Hunter in audit #6-83-66 were resolved.
- A.21. Observation #1 applies to Hunter and Hatfield. The Hunter portion of Observation #1 was closed by Quality Assurance Surveillance #5188 dated 10/12/83 (Attachment I). The surveillance stated "per R. B. Klinger, CECO PCD, the Hunter Corporation application of interpretation #2 is correct." Interpretation #2 was a clarification of the term inaccessible as used in the reinspection program. The Hatfield portion of Observation #1 was similar in nature to the Hunter item and was closed by Quality Assurance Surveillance #5210 dated 10/14/83 (Attachment J). Hatfield researched the inspections termed inaccessible. Hatfield

response dated 8/4/83 to Audit 6-83-66 clarified that some inspections identified as inaccessible were actually not recreatable. In both instances, it was not possible to redo the inspections that were initially performed.

Observation #2 applies to Hatfield. Quality Assurance Surveillance #5211 (Attachment K) dated 10/14/83 documents the fact that Hatfield determined that the fireproofing had been removed and the original hanger inspection did include verification of the connection detail. The inclusion of connection detail verification with the proper inspection to be reinspected assured that this reinspection was properly performed.

Observation #3 applies to Pittsburgh Testing Laboratory. Quality Assurance Surveillance #4939 (Attachment L) dated 8/26/83 documents that after complete review of certification packages of inspectors involved with the Reinspection Program that only one PTL inspector had two inspection certifications. They covered visual weld inspection and concrete expansion anchor installation inspection. Only visual weld inspection was covered by the Reinspection Program as concrete expansion anchor torque checks are not recreatable. Thus, there was no deficiency and no further corrective action was required.

Observation #5 Part A applies to Hunter. In the case of Hunter, Quality Assurance Surveillance #5187 (Attachment M) documents the expansion of three inspectors' data base to include all their work during employment. For two of the inspectors, the minimum sample size could not be achieved but were deemed acceptable based on the fact that all their inspections of this attribute during employment were reinspected and their original inspections of other attributes were found to be acceptable under the Reinspection Program.

Observation #8 applies to Hatfield. Observation #8 was a situation in which Hatfield was gathering data concerning an inspection which was actually not recreatable. Conduit bolt torque could not be reinspected. Bolt count was a portion of the original bolt torque inspection. Surveillance #5210 (Attachment J) documents the fact that since torque checks were not within the reinspection program, bolt counts would also be excluded. Since the original inspector and the individual reviewing his inspection reports were no longer employed by Hatfield, there were no means available to identify which conduit bolts were subject to the original inspection.

- Q.22. When was Audit #6-83-93 conducted?
- A.22. Audit #6-83-93 (Attachment N) was conducted between November 14 and November 17, 1983.
- Q.23. What was the reason for that audit?
- A.23. The purpose of Audit 6-83-93 was to assure that conclusions drawn from the Byron Reinspection Program were valid and reliable.
- Q.24. Please describe the Audit Program.
- A.24. For each of the 7 contractors involved in the reinspection program a review was conducted of the a) correction of discrepancies, b) expansion of an inspector's reinspection sample size and the number of inspectors to be inspected upon a failure to pass the acceptance criteria, c) independence of the reinspection program reinspection personnel and d) accuracy of results reported in the Interim Report to NRC. Also, the design basis for the Sargent & Lundy evaluations of the visual weld discrepancies, the qualification of the individuals who perform the third party review of subjective deficiencies and the adequacy of the basis for Interpretations established by the Project Construction Department were reviewed during the course of the audit.

Q.25. What were the results of audit 6-83-93 as concerns the activities of Hatfield, Hunter and PTL?

A.25. One audit finding was applicable to PTL. After implementation of Interpretation 11, PTL had changed the deficient status of some welds that previously had received third party concurrences for true rejectability without allowing the independent third party inspector to concur or disagree with the changes. The completed corrective action for this Finding was the resubmittal to the third party inspector of the reinspection reports that changed the deficient status of welds rejected for reason other than those addressed by Interpretation 11. Also, the contractors were advised to carefully watch that such second inspections are not done without allowing the third party to concur or disagree. This corrective action was documented in CECO Surveillance 5696 (Attachment O).

No audit findings or observations were identified for Hunter or Hatfield. There was, however, one minor misunderstanding by Hatfield regarding the timing of submission of confirmed weld discrepancies to Sargent and Lundy for engineering evaluation. Any confirmed weld discrepancies resulting from this third party review were to be submitted to engineering for evaluation and disposition under a Commonwealth Edison non-

conformance report rather than issue Hatfield deficiency reports. Hatfield deficiency reports were used to disposition objective deficiencies identified by the Reinspection Program. The use of a Commonwealth Edison Company nonconformance report insured that no repair of the discrepant weld would take place prior to the engineering evaluation. Hatfield was documenting welding inspection deficiencies on inspection reports and weld maps and accumulating them after third party review. All weld discrepancies were being identified and controlled on weld traveller cards as well as being reported to Project Construction for inclusion in weekly computerized status updating of the Reinspection Program results. During the audit a Commonwealth Edison Company nonconformance report was issued to engineering covering the weld deficiencies identified during the Reinspection Program by Hatfield and confirmed as deficiencies by the third party reviewer. Issuance of the NCR insured that Sargent and Lundy engineering evaluation would be initiated.

Q.26-27. When was Audit 6-83-124 conducted?

A.26-27. Audit #6-83-124 (Attachment P) was conducted between August 24 and September 1, 1983.

Q.28. Why was this audit conducted?

A.28. The purpose of Audit 6-83-124 was to verify proper implementation of Hatfield's QA Program as applicable to the QC Inspector Reinspection Program. This audit specifically examined welding and Hatfield's methodology of reinspection in this area.

Q.29. What was the scope of this audit?

A.29. The scope of this audit included the following:

- A. Inspection
- B. Inspection, Test, and Operating Status
- C. QA Records

The audit consisted of field and record reviews to determine whether Hatfield had adequate traceability of weld travelers to installations in the field. Weld travelers are the document setting forth the basic characteristics of welds on a particular connection as well as its inspection history. The reviews were accomplished by retrieving weld travelers for a component from Hatfield and then going into the field to determine which weld travelers corresponded to which weld on the component. Since welders identify welds on a component with a unique identification number assigned to them traceability of weld traveler to weld could be made. In addition, this audit reviewed the method that Hatfield used to identify hangers which

had been reworked or renumbered so that a reinspection could be performed if required. This was performed by reviewing the inspection history of a component to determine the completeness of inspection as well as identification of the most current inspection.

Finally, the audit was performed to verify whether Hatfield was properly inspecting combination cable pan hanger welds (hangers shared with the HVAC contractor). This was performed through identification of combination hangers, and review of installation and inspection documentation to support the installation.

Q.30. What were the results of the audit?

A.30. As a result of this audit, two findings and one observation were identified. The first finding was that in some cases the weld traveler cards did not adequately identify the weld in the field for inspection. The second finding was that not all combination hangers had inspections documented to indicate conclusively that the inspection was completed. The observation identified one hanger that was inspected and accepted to the wrong hanger detail.

Q.31. What corrective actions were implemented for the findings and observation of audit 6-83-124?

A.31. The corrective action for Finding 1 was to correlate the weld traveler inspection data to design drawing cable pan hanger data using computer data base management techniques to demonstrate traceability of inspection. This use of the computerized data base identified the welders and inspectors who worked on and inspected the component as well as components not inspected. For those components which for no correlation existed between component and inspection data, an inspection was initiated to complete the documentation and any repair requirements. This corrective action was documented in Surveillance 5275 (Attachment Q).

The corrective action for Finding 2 consisted of the identification of all combination hangers for which inspection accountability was indeterminate. The hangers identified were considered never inspected. An inspection was performed and where required, rework was performed. This corrective action was documented in Surveillance 5274 (Attachment R).

The corrective action for the Observation consisted of a reinspection of the identified hanger which was inspected to the wrong drawing detail. When inspected to the correct hanger detail, this hanger was found acceptable. In addition, a sample of 10 additional hangers whose hanger type had changed from the origi-

nal design were reinspected for acceptability. The results indicated that all hangers inspected were found acceptable. This corrective action was documented on Surveillance 5276 R1 (Attachment S).

Q.32. You previously referred to an overinspection of the reinspection program by PTL. What was the reason for this overinspection?

A.32. A special Unit Concept Inspection was conducted, to provide an additional level of confidence that the on-site contractor's QC personnel were performing adequate reinspections under the Reinspection Program.

Q.33. Please describe the qualifications of the PTL personnel who conducted the overinspection.

A.33. The reinspection activities were conducted by five (5) PTL Technicians, who were qualified and certified to the requirements of ANSI N45.2.6-1978.

Q.34. How was the work to be overinspected selected?

A.34. PTL was instructed to perform a sample reinspection of the items inspected during the reinspection program. PTL was instructed by CECO QA to randomly select the QC Inspector and randomly select QC activities for reinspection. The inspection was conducted in accordance to PTL's approved procedure.

Q.35. What were the results of the special Unit Concept Inspection for Hatfield and Hunter reinspection program implementation?

A.35. An evaluation by CECO QA of the results of the overinspection performed by the Unit Concept group of PTL found the six contractors' inspectors to be within the acceptance standard set forth in the February 23, 1983 letter of response to I&E Inspection reports, Number 50-454/82-05 and 50-455/82-04. During the overinspection of Hunter, five (5) inspectors were overviewed and eighty (80) items were reinspected. The results are as follows:

<u>Hunter Inspector</u>	<u>Items Inspected</u>	<u>% of Correct Calls</u>
G. Inboden	19	100%
D. Sager	16	100%
J. McVeigh	18	100%
S. Burstein	17	100%
J. Lincoln	10	100%

During the overinspection of Hatfield, seven (7) QC inspectors were overviewed and 917 items were reinspected. The results are as follows:

<u>Hatfield Hunter Inspector</u>	<u>Items Inspected</u>	<u>% of Correct Calls</u>
D. Opantry	259	100%
J. Moehling	98	90.8%
J. Mandurano	162	100%
J. Elgin	157	98.1%
C. Cavins	87	95.4%
D. Richards	68	100%
T. Wells	86	96.5%

Furthermore, this independent check by PTL of the respective contractor inspectors provided good correlation of the acceptability of the reinspection activities, provided verification the contractors QC personnel were doing accurate and acceptable work, and provided added confidence that the reinspection results were valid.

Q.36. What conclusions, if any, did you draw from the special Unit Concept Inspection regarding any favoritism which might have been shown in the reinspection program towards a particular inspector's work?

A.36. The special Unit Concept Inspection as well as the results of audit 6-83-93 verified that the reinspection personnel for Hatfield and Hunter were not involved in the reinspection of work that they had originally inspected. In addition, the reproducibility of the results by PTL, whose inspection personnel had no known connection with Hatfield and Hunter employees, demonstrates that no favoritism was shown to any particular inspector during the reinspection program.

Q.37. Did the Quality Assurance Department have the results and qualifications of Inspector J. Moehling examined?

A.37. Yes. An evaluation was performed to determine if the 90.8 percentage by J. Moehling was an indication that his qualifications were suspect. A third party inspection was performed by the S&L Level III inspector, as welding inspection is a subjective examination. The result of the third party inspection found five (5) of the deficiencies to be acceptable. This acceptance of the welds by the third party inspector placed J. Moehling's correct calls at 98%. An additional review was performed on J. Moehling's QC personnel qualification/certification package which identified that he received a general education degree and had worked as a welder from 1972 to 1983. While working as a welder, he obtained a certification as an AWS Visual Weld Inspector in November, 1980. After working one (1) year and nine (9) months with Hatfield Electric Company, J. Moehling was trained and certified as a Level II Visual Weld Inspector. He received scores of 90% in the specific exam, 95% in the Quality Assurance exam, 88% in the general exam and 97.5% in his practical exam. The review found that J. Moehling exceeds the minimum qualification requirements as a Level II Visual Weld Inspector. Based on the results of the reinspection by PTL and the third party review by Sargent & Lundy, it has been determined that J. Moehling has adequately performed inspections within

the acceptable standard set forth in the February 23, 1984 letter of response to I&E Inspection Report 50-454/82-05 and 50-455/82-04.

Q.38. Were the certification documentation packages of other inspectors of Hunter, Hatfield or PTL involved with the Reinspection Program examined?

A.38. Yes, where they failed. One PTL inspector involved in the Reinspection Program failed to achieve the acceptance threshold at the end of both the first and second three month periods. His certification package was examined and in accordance with the reinspection program all his work was reinspected. A review of the certification package found that he had received indoctrination and technical training and had successfully passed the related exams. Initial certification as a Level I was based on the training and exams. The certification package was complete and accurate.

Q.39. Please describe the steps taken to assure that the documentation of the Quality Control Inspector Reinspection Program was accurate and reliable.

A.39. I have previously described Audit 6-83-93 insofar as that audit involved review of the independence of the reinspection program reinspection personnel, and the accuracy of the results reported in the interim report

to the NRC, and the reliability of the records so addressed. Similarly, the special Unit Concept Inspection with its emphasis on reproducibility of results, was a strong indicator of reliable documentation.

Q.40. Did the Quality Assurance Department undertake any other measures to ensure that reliable records were being maintained by the site contractors?

A.40. Yes. Since mid-1982 and continuing to the present, special attention has been given by Byron Site Quality Assurance to actions by site contractors which could lead to inaccurate and unreliable records. Training for detecting possible alterations to documents was conducted for Site Quality Assurance personnel. Lead Auditor retraining also covers this subject. Auditors have been trained to check for improper records as part of document review activities, even when specific questions are not on the audit checklist. Indication of such checking is evident in the objective evidence established on the audit checklist. Cases have been identified where records have not been properly revised such as the use of white-out which is contrary to procedures. There is no evidence that the records of certification of Quality Control and Quality Assur-

ance personnel and the reinspection program are inaccurate and unreliable.

As a follow-up of the two month CECo audit of over 10,500 records in late 1982 to verify the authenticity of contractor quality control documentation, another related audit was performed by General Office Quality Assurance in early 1984 relative to the Reinspection Program. Hunter, Hatfield and PTL records were covered by the audit. One purpose of the audit was to ensure that no fraudulent documentation practices had occurred. The contractors' method of control and administration of QC qualification tests were reviewed, including reviews to verify that retests were done with a different test than the original and that tests and test answers were controlled.

In addition, calibration records were reviewed to ensure that information/date was unique, complete and not improperly altered and that signatures on documents were original and by authorized personnel. Reviews to verify that CECo Site Quality Assurance was checking contractor welder qualifications and QC Inspector qualification packages for acceptability and authenticity were also conducted. No fraudulent activities were identified.

Q.41 As a result of the quality assurance activities which you have described in the testimony, have you reached any conclusion regarding the reinspection program?

A.41. Yes. The Quality Assurance Department monitored the contractors' QC inspector requalifications and the Reinspection Program through audits, surveillances and meetings. On the basis of these activities, we have concluded that: (1) the Reinspection Program was properly implemented in accordance with the Program requirements, (2) the personnel performing the re-inspections were properly qualified and were not re-inspecting their own work, (3) the reinspection results were properly processed and evaluated and the corrective actions for the deficiencies identified in the CECO QA audits were appropriate and adequate to resolve the audit concerns. It is concluded that the Reinspection Program provided reliable results.

Q.42. Please describe the scope of PTL's work at the Byron site.

A.42. PTL has been on site at Byron since September 1977. PTL reports to the Commonwealth Edison Site QA Department and performs independent inspections, destructive testing and nondestructive testing involving many of the key activities of the site contractors. The scope of work performed by PTL includes nondestructive test-

ing of welds, concrete testing, aggregate testings, concrete expansion anchor inspection and testing, soils testing, calibration, bolting inspection, etc. The non-destructive testing includes radiographic testing of welding and most of the magnetic particle, liquid penetrant and ultrasonic testing. Site QA also uses Pittsburgh Testing to perform overinspections to check construction work performed and inspected by the site contractors and to perform surveillances of many contractor activities in the structural, mechanical and electrical disciplines. These overinspections by PTL are in addition to the QC inspections required to be done by the site contractors. These independent overinspections have been performed since about 1980, generally cover up to 10% of a work activity and have been concentrated in the areas of welding, electrical installations and HVAC installations. The purpose of these overinspections is to provide another level of confidence that the field work and the inspection activities by the contractors have been done acceptably. In September 1982, another form of inspection was added by Commonwealth Edison Quality Assurance to the work scope for PTL to perform each week at Byron. This new inspection is called "Unit Concept Inspection" ("UCI"). PTL uses a team of inspectors who are qualified in various disciplines per ANSI N45.2.6.

(1978) to inspect items installed within specific spatial boundaries or in conjunction with specific equipment for compliance to vendor and engineering documents. This inspection encompasses all contractors who performed work activities within a given area. These UCIs are also in addition to the normal inspection and the specifically directed overinspections performed on site.

As part of the Reinspection Program and as described above, PTL was specifically directed to perform a Unit Concept Inspection to provide an additional level of confidence that the contractors' QC personnel were performing adequate reinspections which is discussed previously herein.

Q.43. Please describe the extent of the Company's quality assurance oversight of Hunter, Hatfield and PTL since the close of the record in this proceeding in August, 1983.

A.43. Since the close of the record in this proceeding in August, 1983, our program audits and surveillances continued to be actively and intensely performed to identify problems, ensure requirements are fulfilled and verify inspection and testing of the facilities were performed, reviewed and accepted by properly

qualified personnel. The frequency of the audits and surveillances for these contractors were nearly doubled during the period.

In the case of Hunter, Commonwealth Edison Quality Assurance conducted fourteen audits and at least 142 separate surveillances of this contractor since August, 1983. The auditing coverage included the key aspects of Hunter's work activities and Quality Program requirements as was the case for the other site contractors. Coverage by these audits included, for example, whip restraint installations, handling, storage and shipping, nonconformances, welder qualification testing, inspector qualifications, the Reinspection Program, design and installation methodology, control of Field Change Notices, concrete expansion anchors and bolted connections, equipment installation, corrective action, auditing, piping and equipment component support, installation and engineering activities, document control, Quality Assurance Program implementation, etc. The results of these audits demonstrated exceptional performance on the part of Hunter in view of the extensive scope of these audits. Of the sixteen (6 Findings and 10 Observations) deficiencies identified, none were found to be significant and only required minor corrective

action. The deficiencies were closed by audit close out surveillances. The (142) surveillances performed on Hunter involved such items as personnel qualifications, calibration activities, welding and weld rod control, housekeeping/storage, inspecting and walkdown activities and installation activities.

For PTL, eight audits and at least fifty-one surveillances were performed since August, 1983. The audits covered PTL's work activities involving such areas as: tool, gauge and instrument control, calibration activities, corrective actions, trending, inspections of electrical installations, document control, test/inspection reports, visual weld inspections, handling, storage and shipping, procurement and material control, the Reinspection Program, QA records, auditing, radiographic and ultrasonic examination, etc. These eight audits identified ten deficiencies (4 Findings and 6 Observations) requiring corrective action. The findings involved an inspector incorrectly accepting seven two-inch welds, a receiving inspector not being certified, white out being used by one person on sample logs and documentation on a Ultrasonic Test Records not being complete. The corrective actions mainly involved retraining. The fifty-one surveillances of PTL covered such items as calibration

activities, personnel qualifications, ultrasonic, radiographic, magnetic particle and dye penetrant examinations, visual weld inspections, document control, material control and civil testing activities. Overall, the findings and observations did not have significance, and the corrective action were easily achieved.

Hatfield was audited fourteen (14) times since August, 1983. Also, at least two hundred twenty-two (222) surveillances were performed. Special audit and surveillance attention and emphasis was applied to Hatfield during this period to ensure requirements were being fulfilled. The audits covered Hatfield's work activities involving such items as welder qualification testing, material traceability, procedures, inspections, auditing, personnel qualifications, corrective actions, training, installation activities, calibration activities, records, fire protection, the Reinspection Program, storage and housekeeping, field change requests, design control, document control, etc. As a result, seventeen (17) deficiencies (7 Findings and 10 Observations) were identified by Commonwealth Edison Quality Assurance. The findings involved audit follow-up and objective evidence omissions, personnel qualifications and certifi-

cation errors, inadequate identification on weld traveller cards, lack of inspection of combination hangers, improper disposition of Discrepancy Reports and failure of certain QC Inspectors to perform required read/study activities.

The corrective actions consisted of additional inspections, auditing, training, review of personnel documentation packages and review of Discrepancy Reports to assure proper disposition. Acceptable corrective action has been achieved or is underway. The two hundred twenty-two (222) surveillances performed on Hatfield involved such items as corrective actions, personnel qualifications, calibration activities, document control, welding, inspection reports, installation activities, design change control, etc.

The Commonwealth Edison Quality Assurance audits and surveillances of Hatfield Electric have examined and evaluated applicable areas of Hatfield's Quality Assurance Program. These audits and surveillances have identified deficiencies which resulted in corrective actions that improved Hatfield's performance and QA Program implementation. Overall, the quality assurance implementation by Hatfield during this period has been acceptable.

BYRON SITE Q.A. SURVEILLANCE

F ~~GPA~~

QF: 2790.22.2.1

Report No. 302

Date: 01/21/84

Contractor/Organization : Hatfield Electric Co.

SUBJECT: Reinspection Program Results

OBSERVATIONS:

Reviewed the tallying of the "reinspection" results for Peter Lanes' first ninety (90) days of inspections after his certification in the visual welding area. This review entailed a review of the reinspection record and the third party concurrence for 20% of the Weld Travellers to verify that the numbers listed were accurate. Those items reviewed are highlighted on the attached list. With the exception of Weld Traveller 22438, the results given were accurate. For Weld Traveller 22438, the number of welds rejected by the HECO. reinspector total eighteen (18) not twenty-eight (28). The correction has been made to the data base. This error did not impact true rejectability as determined by the third party.

This surveillance is closed.

Reported by J. A. Lerner Date 1-23-84

Approved by K. J. Hawking Date 1/24/84

LAS:tj:1647S

Attachment

cc: W. J. Siewski, G. F. Marcus

QA Supt./Site Q.A. File

Contractor

PCD Supt

LAS

✓ 1-25-85

DM 1/22/84

TIME: 3:00 P.M.
 DATE: 01-20-84
 WPS ID 0036D

-1-

PETER LANES - 1st 90 Days - REJECTED

W/T	Amt	NECo Rej	Third Party	Inspection Date	# Cds	Comments
✓2041OK	6	2	1	79-02-26	1	
✓20754	32	6	3	79-03-05	1	
27711	39	1	1	79-03-05	1	
31026	12	7	7	79-03-05	1	
22359	4	2	2	79-03-06	1	
✓22360OK	2	1	1	79-03-06	1	
32028	20	1	1	79-03-06	1	
22686	4	1	1	79-03-07	1	
31944	18	0	0	79-03-08	1	
28301	30	15	14	79-03-10	1	
✓22374OK	8	6	4	79-03-12	1	
22455	33	2	2	79-03-12	1	
27010	39	1	1	79-03-13	1	
27023	20	4	4	79-03-13	1	
28226	4	1	1	79-03-13	1	
✓22353OK	6	2	2	79-03-14	1	
22355	8	2	2	79-03-14	1	
22460	4	2	2	79-03-14	1	
22690	4	3	3	79-03-14	1	
22479	2	1	1	79-03-15	1	
✓21861OK	4	2	2	79-03-15	1	
22461	18	7	7	79-03-16	1	
20442	8	1	1	79-03-20	1	
26678	6	1	1	79-03-20	1	
26851	4	3	3	79-03-20	1	
✓27008OK	21	3	2	79-03-20	1	
27009	26	1	1	79-03-20	1	
28115	4	1	1	79-03-20	1	
28136	4	3	3	79-03-20	1	
28145	1	1	1	79-03-20	1	
✓22477OK	5	2	3	79-03-22	1	
22481	7	2	2	79-03-22	1	
22482	4	2	2	79-03-22	1	
23380	10	4	4	79-03-22	1	
22366	12	4	4	79-03-26	1	
✓22605OK	8	1	1	79-03-26	1	
22665	8	2	2	79-03-26	1	
22669	6	3	2	79-03-27	1	
22601	24	2	0	79-03-28	1	
22603	12	'	0	79-03-28	1	
✓21402OK	8	1	1	79-03-29	1	
22491	2	1	1	79-03-29	1	
26854	6	3	3	79-03-29	1	
27247	8	1	1	79-03-29	1	
28955	11	3	2	79-03-29	1	
✓28957OK	0	0	0	79-03-29	1	See W/T 29012
29039	8	1	0	79-03-29	1	
22606	8	2	2	79-04-02	1	
22439	12	2	1	79-04-03	1	
22494	4	3	2	79-04-03	1	
✓22502OK	10	4	4	79-04-03	1	

* - THESE WELDS WERE REPAIRED BEFORE S/L COULD GIVE AN EVALUATION.

TIME: 3:00 P.M.
 DATE: 01-20-84
 WPS ID 0036D

PETER LANES - 1st 90 Days - REJECTED

<u>W/T</u>	<u>Amt</u>	<u>HE To Rej</u>	<u>Third Party</u>	<u>Inspection Date</u>	<u># Cds</u>	<u>Comments</u>
30897	6	2	2	79-04-03	1	
22489	3	4	3	79-04-03	1	
27499	2	1	0	79-04-05	1	
22500	12	4	2	79-04-05	1	
✓23532OK	4	2	2	79-04-05	1	
26513	24	1	1	79-04-05	1	
28966	11	4	4	79-04-05	1	
28968	8	2	2	79-04-05	1	
29011	8	0	7	79-04-05	1	
✓20725OK	8	2	2	79-04-06	1	
29012OK	8	7	7	79-04-06	1	
23367	6	2	2	79-04-09	1	
23371	16	2	2	79-04-09	1	
23372	6	2	2	79-04-09	1	
✓23373OK	4	1	0	79-04-09	1	
23531	16	8	8	79-04-09	1	
20724	8	1	0	79-04-10	1	
29010	40	2	3	79-04-10	1	
29033	10	1	2	79-04-10	1	
✓29650OK	8	2	2	79-04-10	1	
22495	4	3	2	79-04-11	1	
22696	8	4	0	79-04-11	1	
22504	6	6	4	79-04-13	1	
26782	16	2	2	79-04-13	1	
✓26850OK	28	2 1/2 1/2 1-21-84	3	79-04-13	1	
26855	16	5	5	79-04-13	1	
29034	8	1	0	79-04-16	1	
23376	16	3	2	79-04-17	1	
23534	4	1	0	79-04-17	1	
✓26692OK	11	7	6	79-04-17	1	
26693	14	6	6	79-04-17	1	
26780	33	5	4	79-04-17	1	
27063	12	1	1	79-04-17	1	
28046	6	2	0	79-04-17	1	
✓27696OK	21	1	1	79-04-19	1	
27697	8	1	1	79-04-19	1	
27698	32	2	0	79-04-19	1	
22582	8	1	1	79-04-20	1	
26847	8	6	5	79-04-20	1	
✓28062OK	2	1	0	79-04-23	1	
28064	6	3	1	79-04-23	1	
28965	8	7	7	79-04-24	1	
28993	33	6	5	79-04-24	1	
21372	11	1	1	79-04-25	1	
✓21651OK	11	2	2	79-04-25	1	
21676	16	1	1	79-04-25	1	
26515	2	2	1	79-04-25	1	
26827	20	5	4	79-04-25	1	
27057	20	1	1	79-04-25	1	
✓21102OK	14	3	3	79-04-25	1	
29393	8	3	3	79-04-25	1	

* - THESE WELDS WERE REPAIRED BEFORE S/L COULD GIVE AN EVALUATION.

TIME: 3:00 P.M.
 DATE: 01-20-84
 WPS ID: 0036D

PETER LANES - 1st 90 Days - REJECTED

W/T	Amt	MECo Rej	Third Party	Inspection Date	# Cds	Comments
29399	10	6	6	79-04-25	1	
29413	6	6	4	79-04-25	1	
296360IL	241	36	19	79-04-25	1	
29637OK	0	0	0	79-04-25	1	OK See W/T 29636
29639	16	3	3	79-04-25	1	
29640	0	0	0	79-04-25	1	See W/T 29636
29647	8	5	4	79-04-25	1	
20727	8	2	2	79-04-26	1	
22210OK	2	2	2	79-04-26	1	
22211	4	2	1	79-04-26	1	
22212	4	2	1	79-04-26	1	
22298	2	2	1	79-04-26	1	
22299	4	4	2	79-04-26	1	
26222OK	4	3	3	79-04-26	1	
26226	2	1	1	79-04-26	1	
29391	7	2	2	79-04-26	1	
29662	9	1	1	79-04-26	1	
21626	10	3	3	79-04-30	1	
26684OK	4	1	1	79-04-30	1	
26818	6	1	1	79-04-30	1	
27710	33	1	1	79-04-30	1	
28981	17	11	11	79-05-01	1	
22016	30	2	8	79-05-02	1	
22020OK	4	2	2	79-05-02	1	
22832	4	1	1	79-05-02	1	
22834	4	2	2	79-05-02	1	
22842	2	1	1	79-05-02	1	
26815	6	4	4	79-05-02	1	
26817OK	10	2	1	79-05-02	1	
26819	8	1	0	79-05-02	1	
26820	8	1	0	79-05-02	1	
27706	12	2	2	79-05-02	1	
28980	8	1	1	79-05-02	1	
20692OK	8	1	1	79-05-03	1	
20723	8	1	1	79-05-03	1	
20732	11	2	2	79-05-03	1	
22886	13	1	1	79-05-03	1	
26860	16	14	14	79-05-03	1	
29367OK	9	4	4	79-05-03	1	
29656	0	0	0	79-05-03	1	See W/T 29636
29658	0	0	0	79-05-03	1	See W/T 29636
26541	8	1	0	79-05-04	1	
26646	16	1	1	79-05-04	1	
27705OK	15	4	4	79-05-06	1	
21371	8	2	2	79-05-07	1	
29231	11	3	3	79-05-07	1	
29233	19	8	9	79-05-07	1	
27216	4	3	2	79-05-09	1	
22013OK	2	2	2	79-05-10	1	
22014	2	1	1	79-05-10	1	
23991	8	1	1	79-05-10	1	

* - THESE WELDS WERE REPAIRED BEFORE S/L COULD GIVE AN EVALUATION.

TIME: 3:00 P.M.
 DATE: 01-20-84
 WPS ID.0036D

PETER LANES - 1st 90 Days - REJECTED

W/T	Amt	NECo Rej	Third Party	Inspection Date	# Cds	Comments
23993	80	12	6	79-05-10	1	
23995	47	4	4	79-05-10	1	
29648	7	5	4	79-05-10	1	
29649	8	2	1	79-05-10	1	
29652	8	3	3	79-05-10	1	
33862	3	3	3	79-05-10	1	
22795	8	3	2	79-05-11	1	
22796 OK	8	4	3	79-05-11	1	
22799	6	4	4	79-05-11	1	
20661	8	3	1	79-05-16	1	
22840	4	3	3	79-05-16	1	
22651	6	1	1	79-05-16	1	
29653 OK	8	2	0	79-05-16	1	
29654	6	6	4	79-05-16	1	
33866	6	1	1	79-05-16	1	
21674	10	2	0	79-05-17	1	
22024	20	3	2	79-05-17	1	
22026 OK	2	1	0	79-05-17	1	
22028	8	3	3	79-05-17	1	
22388	2	2	2	79-05-17	1	
22389	2	2	2	79-05-17	1	
22397	6	6	6*	79-05-17	1	
22398 OK	12	12	12* - NOTE	79-05-17	1	
22446	4	4	4	79-05-17	1	
22447	2	2	2	79-05-17	1	
22448	4	4	3	79-05-17	1	
22449	2	2	2	79-05-17	1	
22451 OK	2	2	2* - NOTE	79-05-17	1	
22452	2	2	2	79-05-17	1	
22453	4	4	4*	79-05-17	1	
22755	10	3	2	79-05-17	1	
22819	2	2	2	79-05-17	1	
27683 OK	14	4	3	79-05-17	1	
37356	8	8	8	79-05-17	1	
37360	10	6	6	79-05-17	1	
37367	8	4	4	79-05-17	1	
21648	24	2	2	79-05-18	1	
22391 OK	14	6	4	79-05-21	1	
27127	20	3	2	79-05-21	1	
27682	32	4	4	79-05-21	1	
37363	16	2	2	79-05-21	1	
23082	34	5	3	79-05-22	1	
23983 OK	113	9	6	79-05-22	1	
26946	2	1	1	79-05-22	1	
29666	8	1	1	79-05-22	1	
37357	16	4	4	79-05-22	1	
37358	16	4	4	79-05-22	1	
37362 OK	12	4	4	79-05-22	1	
21625	16	3	3	79-05-23	1	
21647	12	3	0	79-05-23	1	
21677	10	3	2	79-05-23	1	

NOT TO
 DETAIL -

* - THESE WELDS WERE REPAIRED BEFORE S/L COULD GIVE AN EVALUATION.

TIME: 3:00 P.M.
 DATE: 01-20-84
 WPS ID 0036D

-5-

PETER LANES - 1st 90 Days - REJECTED

W/T	Am	NECo Rej	Third Party	Inspection Date	# Cds	Comments
22438?	32	28-20-18	18- ^{LS 1-21-84} DID NOT ADDRESS ALL	79-05-23	1	
✓27000K	8	5	5 28 WELDS	79-05-23	1	
27117	4	2	2 LS	79-05-23	1	
27118	6	6	6 1-21-84	79-05-23	1	
27122	6	5	4	79-05-23	1	
27123	6	4	4	79-05-23	1	
✓27130OK	4	1	1	79-05-23	1	
27207	8	3	2	79-05-23	1	
29638	24	2	1	79-05-23	1	
29659	6	4	2	79-05-23	1	
29661	8	1	1	79-05-23	1	

	2,646	700	577	215		

* - THESE WELDS WERE REPAIRED BEFORE S/L COULD GIVE AN EVALUATION.

BYRON SITE Q.A. SURVEILLANCE

6A-1
F

QG: 54.3

Report No. 5700

Date: 1-23-84

Contractor/Organization : Project Construction Dept.

SUBJECT: Reinspection Program Interpretations

OBSERVATIONS:

Quality Assurance has reviewed Interpretation 19 issued by the Project Construction Department to be used in the implementation of the Reinspection Program. In light of the information supplied (attached), this interpretation is reasonable and will not affect the validity of the reinspection results.

This surveillance is closed.

Reported by [Signature] Date 1-22-84

Approved by [Signature] Date 1-25-84

LAS:jc:1667S

cc: W.J. Shewski/G.F. Marcus
QA Supt./Site Q.A. File
Contractor
PCD Supt
LAS

76.1
2/1/84

HUNTER CORPORATION

3800 119TH STREET HANNOVER, ILLINOIS 62240
HC-QA-485

L SIMON (LEE QH)

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 $\pm .025"$. Telephone conversation with Goodwin Lyden, 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 .002". Therefore, using similar 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
Quality Control Supervisor

cc: M.L. Somsay
K. Solman
QA Vault

LEH/pb

Reply: Interpretation 1 it is acceptable to use AWS D11 articles 2.3.2 and 2.3.2.1 12/16/83

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

4/DESIGN OF WELDED CONNECTIONS

(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 1 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 third its effective length.

2.3.2.4 The effective throat shall be the shortest distance from the root to 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 facing 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 loads, or where fatigue fracture joints containing such welds, made from one side only, shall be restrained to prevent rotation.

G.A.L. Gage Co.

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

ATTACHMENT 2

interpretation
19
Page 3 of 5

November 23, 1982

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

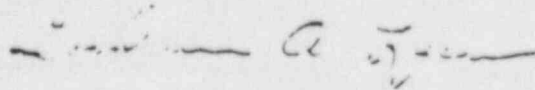
Subject: 72 Partial Sets Fillet Weld Gage
P. O. #265003

Dear Mr. Hadick,

The manufactures tolerance of the Fillet Weld Gage on your
P. O. #265003 are within the .005 range.

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

Sincerely,
G.A.L. Gage Co.



Goodman A. Lycan
President

GAL/jkn

MANUFACTURERS
OF THE "HI-LO"
WELDERS GAGE



AN INDISPENSIBLE
TOOL FOR FIT-UPS
AND RADIOGRAPHED WELDS

Information is page 4 of 5

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

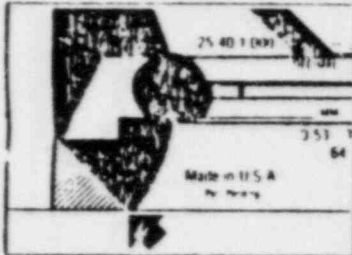
32nds, with metric equivalents given, so you get more accurate readings. Four screws hold the offset arm in position for future adjustments.

This gage also measures weld throat thicknesses to 1/32nd of an inch by adjusting a pointer until it touches the center of the weld. A thumb screw holds the

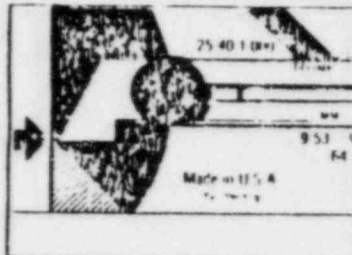
pointer in position for future reference. If the weld is concave, more filler material can be added to build the weld throat up to standard.

The G.A.L. Adjustable Fillet Weld Gage is made of durable, rust-resistant stainless steel. Its 2 1/2" x 3 1/8" slim design weighs only 1 1/2 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.

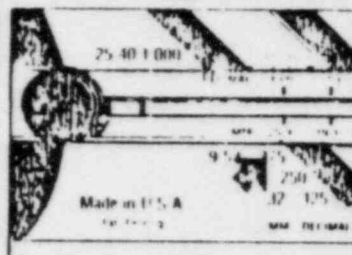
G.A.L. Adjustable Fillet Weld Gage is easy to use.



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.



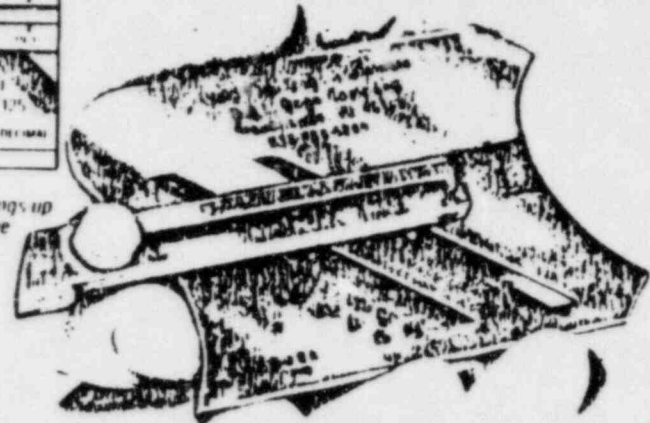
Read the weld size indicated. The increments are 1/32" and 1/64" markings up to 1". All numericals are etched into the surface and filled for easier reading.



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.



U.S. patent 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 SVL

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

ATTACHMENT II
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

BYRON SITE Q.A. SURVEILLANCE

AFM
F

QF: 2790.22.2.1

Date: 2-02-84

Report No. 5753

Contractor/Organization : Hatfield Electric Co.

SUBJECT: 1. Document Control
2. Installation Activities

OBSERVATIONS:

A surveillance was conducted at Hatfield to document the issuance and processing of field problem sheets.

Field problem sheets are written by production to Hatfield Engineering Department, describing problems encountered in the field which cannot be installed per the design document. The equipment has not been installed and the foreman is asking a question, "How should I install it". Problem sheets are categorized by drawing area.

These field problem sheets have suggested corrective action, such as: a drawing or drawings may be changed, an FCR may be written, a DR may be written if it pertains to a drawing error or it may remain as is.

DR's and NCR's are written by the QC Department after work has been completed by production and the equipment has been turned over for inspection. A DR is written to document a deficiency in which the installation is not per the drawing. If the foreman cannot rework the deficiency into an acceptable conforming item a HECO. Nonconformance Report (NCR) is written.

Field problem sheets are not used in lieu of a DR. Copies of field problems may be found in QC but only as a reference document. No QC inspector signs these field problem sheets. Deficiencies are documented using the DR and NCR system proceduralized in HECO.'s Procedure #6.

Twenty-three (23) field problem sheets were reviewed. Of these twenty-three (23), two (2) field problem sheets referenced a deficiency report. Fifteen (15) field problem sheets are attached for reference. All were found acceptable.

This surveillance is closed.

Reported by *[Signature]* Date *[Date]*

Approved by *[Signature]* Date 2-7-84

MVD:jc:17069

cc: ~~W.J. Shewski~~/G.F. Marcus
QA Supt./Site Q.A. File
Contractor
PCD Supt
MVD

2/13/84

FPS#	IAR	7-15-83	KW
FOREMAN D. OLSEN			
PRINT#	0-3374	REV. BA	
CABLE# IAR055			
LOCATION	18+Q	ELV. 451	

K.V.



FCR# F-

AL. O.

FP-1881

REASON FOR CHANGE	cannot comply with Section "B-B"
-------------------	----------------------------------

PROBLEM:

Section "B-B" on 0-3374 shows  which is now 1 1/2" conduit entering a 1" sleeve on 'Q' wall.  was changed from 1" to 1 1/2" on 0-3374 CT1 Rev. Y

REFERENCE ONLY

NOT TO BE USED FOR INSTALLATION

SUGGESTION:

CA. # IAR055 HAS AN O.D. OF 0.9" CA. WILL FIT IN 1" ϕ SLEEVE IN WALL. HOWEVER, 1 1/2" ϕ COND. IS BEING USED TO ACCOMMODATE AN EASIER PULL THRU FLEX. A 1 1/2" ϕ TO 1" REDUCER SHOULD BE USED @ SLEEVE, & DOESN'T HAVE TO BE STATED ON DWG. (PER K. DIETZEN)

7-26-83

C-2

FIELD PROBLEM SHEET

SYS DATE G.F.

FPS#	IPR	6-6-83	KW
FOREMANC. Reints			
PRINT#	0-3374	REV. AH	
CABLE#	IPRO05	IPRO06	
LOCATION	18 + Q to S	ELV. 451	

REWORK
FCR#F-

FP-1764

REASON FOR CHANGE	Blount Structural Rework
-------------------	--------------------------

PROBLEM: Need re-design for two CC-405's removed per ORR 3106.

[Faint handwritten notes]

C-3

NOT TO BE USED FOR INSTALLATION

SUGGESTION:

0-3374A - REV. AK
 0-3374C01 - REV. AA
 0-3374C02 - REV. AF
 } 6/27/83

SYS DATE G.F.

IPS#	155	9-7-83	EVAN
FOREMAN J. S. HANCOCK			
PRINT#	0-3372	REV.	04
CABLE#			
LOCATION		ELV.	

0-3372 C02 REV V
 0-3372 CT1 W

FP-51: F

FCR#F-

[Handwritten signature]

REASON FOR CHANGE	PRINT ERRORS
-------------------	--------------

PROBLEM:

REFERENCE ONLY

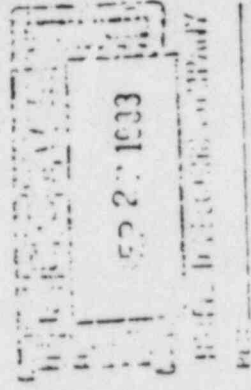
AT L & IS YOU RENUMBERED CONDUIT 2" ~~23~~
 TO ~~13~~ THERE IS ALREADY A ~~13~~ ON THE PRINT AT
 23 & M WHICH IS LISTED ON 0-3372 CT1 REV. W

NOT TO BE USED FOR INSTALLATION SUGGESTION:

PLEASE CORRECT, AGAIN!

0-3372 --- BP
 ↓ C02 --- Z
 CT1 --- Z

9/22/83



-15 DATE G.F.

FPS#		1-7-84	EVAL
FOREMAN J. SCHANDLMEIER			
PRINT#	0-3571D	REV.	BP
CABLE#			
LOCATION	P. 2 + 12.7		ELV. 451

Tri 1 MARK

111030

FCR#F-

FP-3632

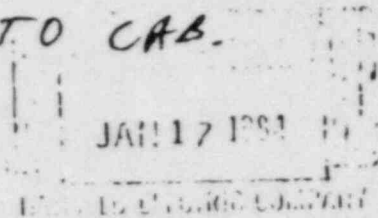
REASON FOR CHANGE	
-------------------	--

REASON FOR CHANGE

PROBLEM:

Print 0-3571D SHOWS CONDUIT COABIDI INTO CAB.

1BA28J, NOT INSTALLED



ON PRINT 0-3381 CT2 REV. Y NO CONDUIT IS LISTED

SHOULD CONDUIT BE DELETED FROM 0-3371D

NOT TO BE USED FOR INSTALLATION SUGGESTION:

0-3371D - "BR" 1-18-84

C-5

FIELD PROBLEM SHEET

SYS DATE G.F.

1M022

FPS#	IVC	12/7/83	IVAN	BC
FOREMAN ENG: <i>Bill Cook</i>				
PRINT#	0-3371001	REV.	Y	
CABLE#	IVC505, 506, 553			
LOCATION	10-L	ELV	451	

PRI 1

FCR# F-

D3526

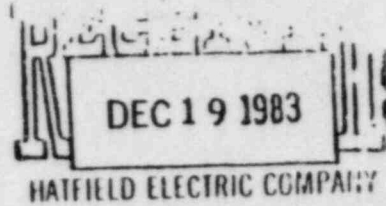
FP-3531

DOMM

REASON FOR CHANGE	<i>Drawing Discrepancy</i>
-------------------	----------------------------

PROBLEM: 0-3371001 calls out 1/2" CEA's for WS-7, they should be 1/4" CEA's.

C-6



NOT TO BE USED FOR INSTALLATION SUGGESTION:

0-3071001 - "Z" 12/19/83

FIELD PROBLEM SHEET

SYS DATE G.F

FPS ^d		9/7/83		
FOREMAN				
PRINT ^d	D-3364		REV. AP	
CABLE HGR FOR IJB2260A				
LOCATION	566 Below		ELV. -	

FCR#F-

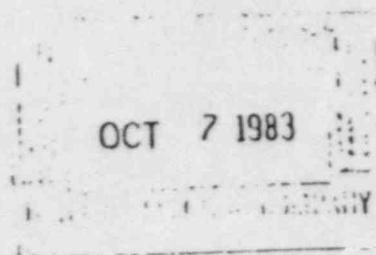
FP-3105

REASON FOR CHANGE	DWG. DISCREPANCY
-------------------	------------------

PROBLEM:

NO NORTH-SOUTH LOCATING DIMENSIONS FOR IJB2260A

REFERENCE ONLY



REF-D.R. 2822

NOT TO BE USED FOR INSTALLATION SUGGESTION:

G.C. 3364, REV. "AT", 9/21/83
 DWG TO FIELD.

C-7

SYS DATE G.F.

FPS#	2MS	12-15-83	
FOREMAN	George W. Hedtke		
PRINT#	0-3363	REV.	BV
CABLE#	2MS 112		
LOCATION	1'3" N/24	ELV.	446' 9"

Rebar

FCR# F-

FP-4392

REASON FOR CHANGE	
-------------------	--

PROBLEM:

chipped concrete revealed 1 vertical re-bar and 1 horizontal re-bar directly in the way of 2" core hole center -

RECEIVED
 JAN 24 1964
 HATFIELD ELECTRIC COMPANY
 PER _____

RECEIVED

C-8

NOT TO BE USED FOR INSTALLATION SUGGESTION:

will possibly work by raising elev 1 1/2" (or 446' 10 1/2") and moving north 2 1/2"

0-3363 REV. BV
1-25-84
FCR F24139

AEC 914

FIELD PROBLEM SHEET

SYS DATE G.F.

FPS#	2UR	12-2-83	WQ
FOREMAN	Geo. Hadtke		
PRINT#	0-3363A	REV.	BJ
CABLE#	2UR165		
LOCATION	254 N	ELV.	

BL

FCR# F-

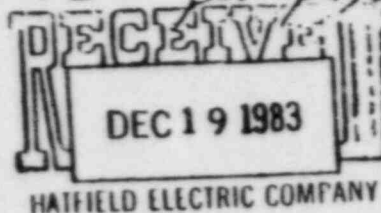
FP-4319

REASON FOR CHANGE	
-------------------	--

PROBLEM:

Supports CC-73 and CC-124 are reattached to a reinforced beam and are located too close together to be able to attach #3 7/4" x 3" x W between the two hangers as called for on FCN 5769 ^{per page} 7, 8, and 9 of 14.

Previous FP-4189 did not solve problem



NOT TO BE USED FOR INSTALLATION SUGGESTION:

0-3363 CD2 REV. AJ

12-21-83

0-9

SYS	DATE	G.F.
FPS# 2UR	10-28-83	WA
FOREMAN G.O. Hodgk.		
PRINT# 0-3363A	REV. BG	
CABLE# 2UR 165		
LOCATION 254N	ELV. 439	

(ADT)

~~Have Henry~~

MISC.

REWORK

FCR# F-

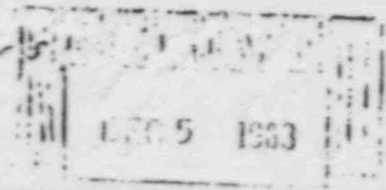
FP-4189

REASON FOR CHANGE	
-------------------	--

PROBLEM:

Supports CC 73 and CC-124 Need to be reattached to Reinforced Beam. They are located too close to allow attachment per ECN 5580. Can you come up with a detail for attaching those two hangers?

REFERENCE ONLY



NOT TO BE USED FOR INSTALLATION SUGGESTION:

ECN # 5769 12-1-83

C-10

FIELD PROBLEM SHEET

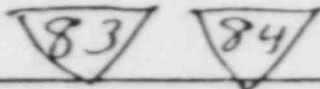
SYS DATE G.F.

FPS#	ZNR	10-18-83	WQ
FOREMAN Geo. Hedtke			
PRINT#	0-3363	REV. BR	
CABLE# 2 NR 072,003, ETC			
LOCATION	B5+P-Q	ELV. 439	



FCR# F-

FP-4157

REASON FOR CHANGE	Over 270° IN Conduit Run
-------------------	-------------------------------------



PROBLEM:

Conduits  +  have a pull point shown approx 6' S of 26 line. We will have over 270° of Bend if we locate the pull points as shown. If those pull points were relocated 10' S of their present location we would not be over 270° IN these respective runs

NOT TO BE USED FOR INSTALLATION SUGGESTION:

0-3363 REV. BR 10-26-83

11-2

SYS DATE G.F

FPS#	2FP	9-29-83	WQ
FOREMAN	Geo. Hedtke		
PRINT#	0-3362, AD01, 78A	REV.	B, F, AH, S
CABLE#	2FP 475, 476, 477		
LOCATION	18 & L	ELV.	479

FCR# F-

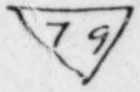
FP-4099

~~O-PRC~~

REASON FOR CHANGE	Conduit going into wrong part of cabinet for terminating cables
-------------------	---

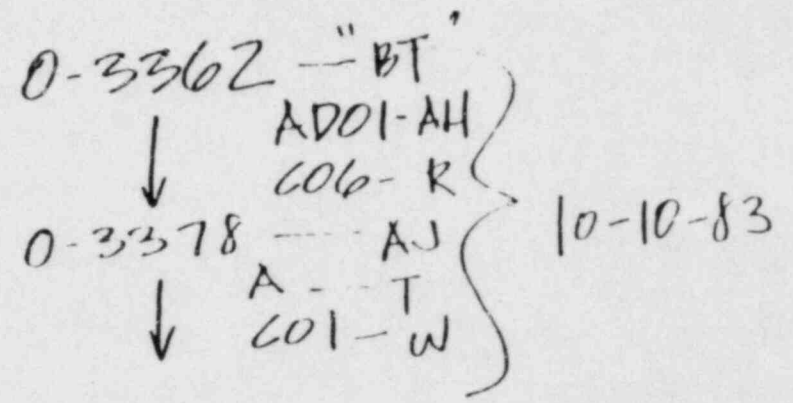
79 3" C 2 B

PROBLEM:

Conduit  from 2502058A to 2PM09J 0-3378 is located in compartment of cabinet which will not allow termination of cables. Need to relocate conduit south approx. 2' (per Steve Boydon cable termination)

REFERENCE ONLY

NOT TO BE USED FOR INSTALLATION SUGGESTION:



C-12

FIELD PROBLEM SHEET

SYS DATE G.F.

FPS#	2VX	9-12-83	WA
FOREMAN	Geo. Hodre		
PRINT#	0-3362003	REV.	B
CABLE#	2VX047		
LOCATION	18+V	ELV.	439

JEAN H.

FCR# F-
FP-4065

REASON FOR CHANGE

PROBLEM:

UNable to weld P1004A UNISTRAT TO PLATE AS
 SHOW N IN DET A. & SEC. A-A
 ALSO floor THICKNESS will NOT allow us to
 INSTALL 1/2" C.E.A. per JOHN STEVEN S+L STRU.

[Faint stamp]

NOT TO BE USED FOR INSTALLATION
 SUGGESTION:

0-3362003 - "C" 11/16/83

C-13

SYS DATE G.F.

FPS#	ICX	12-15-83	WA
FOREMAN Geo Hodjko			
PRINT#	0-3362	REV.	
CABLE#	ICX129		
LOCATION	14+L	ELV.	437

Tony

(M190.)

FCR#F-

FP-35073

REASON FOR CHANGE	Rebar HIT
-------------------	-----------

CoA 62 E0

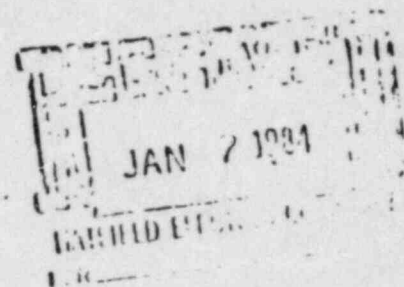
PROBLEM:

HIT Rebar coring hole CDR 689 F-23918 S-1302
 Unable to move location within tolerance to miss
 rebar.
 Need new location for hole.

HEC915

NOT TO BE USED FOR INSTALLATION SUGGESTION:

SEE FOR F.24140 1-4-84



C-14

FIELD PROBLEM SHEET

SYS DATE G.F.

FPS#	1PS	12-3-83	WA
FOREMAN Geo Holtz			
PRINT#	0-3362	REV.	βW
CABLE#	1PS-477		
LOCATION	ELV.		

JD

①-PRI

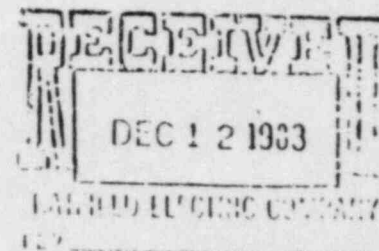
FCR#F-

FP-3486

REASON FOR CHANGE	
-------------------	--

PROBLEM:

Conduit COA 6208 routed to wrong compartment in panel. Conduit routed to ~~Panel~~ Section A Needs to terminate in Section H.



NOT TO BE USED FOR INSTALLATION SUGGESTION:

REFERENCE ONLY

SEE FOR F24056 12-3-83

FIELD PROBLEM SHEET

SYS DATE G.F.

FPS ^d	YA	6-28-82	Q.C.
FOREMAN A. SCHUTT			
PRINT#	0-3374	REV.	
CABLE#	2VA011, 2VA012, 2VA023		
LOCATION	21 E 5	ELV. 451	

K.O.

HOT

FCR# F-

STEVE CLARK

FP-2901

REASON FOR CHANGE	
-------------------	--

2VA011 & 12 - FUNCTIONAL

PROBLEM: 6"x6" CWW FROM 2JB587A TO 0VA01JD HAS A 4" CONDUIT @ THE FLOOR ON 465' ELEV. THIS CWW AND 4" CONDUIT HAVE CABLES ALREADY INSTALLED IN THEM. ~~THE~~ THE 4" CONDUIT IS TOO SMALL TO PULL THESE CABLES WHICH ARE 12/C - #14'S THROUGH, WITHOUT DAMAGING THE EXISTING INSTALLED CABLES. WE HAD THE SAME PROBLEM ON UNIT I SIDE.

REPAIR ONLY

NOT TO BE USED FOR INSTALLATION

SUGGESTION:

PER FCR#: 23,495-

INT. 12/1/82 J.D.W.S. 0-33740-1 REV. AB

0-33740-1 REV. L

9/17/82

4" FLEX FROM 2JB587A: CABLES PULLED 2VA040
 CABLES YET TO BE PULLED: 2VA011 2VA 256
 2VA012 2VA 300
 2VA023 2VA 350
 OUT 2VA033 2VA421
 2VA774
 2VA756
 TOTAL ALLOWABLE FILL FOR A 4" ϕ SLEEVE = 7.63
 ACTUAL FILL INCLUDING CABLES YET TO BE PULLED = 4.866 2VA798
 ALLOWABLE FILL FOR 4" ϕ CONDUIT = 5.09 2FF068

6"x6" W.W. FROM 2JB587A: CABLES PULLED 2FP072
 CABLES YET TO BE PULLED: 2VA787 2FP078
 2VA799 2VA010
 2VA020
 CABLES THAT SHOULD NOT HAVE BEEN 2VA031
 IN WIREWAY: 2FP072 2VA032
 2FP078 2VA034
 2VA256 2VA256
 2VA319 2VA319
 2VA784 2VA398
 2VA399
 2VA784
 2VA794

TOTAL ALLOWABLE FILL FOR A 4" ϕ SLEEVE = 7.0
 ACTUAL FILL INCLUDING CABLES YET TO BE PULLED = 7.42
 ALLOWABLE FILL FOR 6"x6" W.W. = 8.00

1235
BYRON SITE Q.A. SURVEILLANCE

QF: 2790.22.2.1

Report No. 5811

Date: 2/21/84

Contractor/Organization : Hatfield Electric Co.

SUBJECT: NRC Reinspection Program Results Verification

OBSERVATIONS:

Attribute #1 - Visual Weld Inspections

The visual weld inspection attribute for Hatfield Electric Company included eight (8) inspectors. For two (2) of the eight (8) inspectors, a complete 100% verification of the data used in the final database was performed. The two (2) inspectors were P. Lane and E. Dumas. For each inspector, the primary source documents (weld traveller and third party inspection record) used for the initial data were compared to the Hatfield Wang database. For P. Lane a total of 488 weld travelers were reviewed which accounted for approximately 5000 welds, and for E. Dumas a total of 205 weld travelers were reviewed which accounted for approximately 700 welds. Then the Wang data was compared to the final inspection report database dated February 15, 1984.

In all cases for both inspectors, the final data was found to be an accurate representation of the primary data. Minor typographical errors were found but were minimal. The effect of the errors was randomly distributed and did not skew the final results. Errors found during the course of the surveillance were addressed during the surveillance and corrected as necessary.

Attribute #2 - Conduit

Attribute No. 2 (Conduit Inspections) consisted of the work of six inspectors performing 134 inspections. The initial review of the tally sheets, inspection reports and reinspection reports raised a number of questions regarding the method used to tabulate the results. This matter was discussed with Mr. Greg Cason of Hatfield, Group Leader, who originally tallied the results. It was determined that Mr. Cason had not included those items marked "not applicable" on both the original checklists and reinspection checklists in the total reinspection population. Since this was contrary to the method used in tabulating the results for the other attributes, a recount was performed. The resulting tally sheets were reviewed by J. Bergner of CECO, QA for mathematical accuracy and found acceptable. The reinspection sheets for inspectors "G", "J", and "K" were checked against the tally sheets to verify the accuracy of the tally sheets. This sample, which included 120 of the 134 inspections, indicated that the tally sheets were accurately and correctly completed.

Based on the aforementioned activities, it appears that the results of attribute No. 2 are correct.

Attribute #3 - Termination

The third attribute, terminations, involved the reinspection of five (5) inspectors' work and covered approximately 664 original inspections. 100% of the reinspection reports for Dumas and Buchanan and a random sample of the reinspection reports for Getzelman, Cripps and Hanson were verified against the termination tally sheets. The tally sheets appeared to accurately reflect the data contained in the reinspection reports; however, the final results contained in the "Detailed Inspector Results" did not accurately reflect the data in the tally sheets. Specifically, the total number of items and the number of acceptable items both included those items that were found to be non-reproducible. It appears that the error occurred when the total item count was computed by multiplying the total number of reports by the number of items per report. The error was pointed out to Hatfield QA and a recount was performed in the presence of J. Bergner of CECO, QA. The resulting figures are now believed to be accurate and acceptable.

Attribute #4 - Equipment Setting

In the area of equipment setting (Attribute #4), no results were shown on the "Detailed Inspection Results". The reason for this, as verified by review of the reinspection reports, was that the few inspections performed in this area were either inaccessible or nonreproducible.

Attribute #5 - A325 Bolting

A325 Bolting, which is listed as Attribute #5, included only two (2) inspections by one (1) inspector. These inspections were reviewed by C. Nagel and J. Bergner of CECO, QA with one (1) apparent discrepancy noted. One of the items on a reinspection checklist had been marked unacceptable because three (3) of four (4) nuts in a bolted connection had been turned around and could not be verified to be of A325 composition. Upon review of Procedure 25 (A325 Bolting) it was verified that this was an "in process" type of inspection where the original inspector would have been able to check the markings on each nut. Since the nut that was accessible was of A325 composition and the other three (3) nuts were effectively inaccessible, this item was found to be acceptable. Based on this, the "Detailed Inspector Results" were found to be correct.

Attribute #6 - Equipment Modification

The reinspection reports for equipment modifications (Attribute #6), involved inspectors Dumas, Cripps, and Hanson. The six (6) reinspection reports that make up this area were examined and found acceptable.

Attribute #7 - Equipment Modification

In the matter of Attribute #7, (Conduit As-Built), forty-nine (49) conduit as-built reports were examined for numerical accuracy. Items on the reports were counted and compared to results found on the clarification of as-built information sheets. It appears that the number of items inspected have been accurately tallied.

The reinspection reports were examined for the equipment modification inspections and no rejectable items were found, thus confirming the results of the final report in this area.

Attribute #8 - Cable Pan Hangers

The results of Attribute No. 8 (cable pan hangers) are comprised of the reinspection of two (2) inspectors' work consisting of 324 inspection reports. The initial tabulation of the reinspection was found to be in error due to the method used to tally the items. The 9A-1 inspection reports consists of two parts: the HP-9A-1 form, which is a six (6) item checklist, and a supplementary sheet which contains detailed information regarding hanger dimensions, connection types, aux. steel, etc. The reinspections were performed using the supplementary sheets but the tally sheets accounted for only the six (6) items on the HP-9A-1 checklists. The reinspection population appeared much lower than it actually was because of this. A recount was performed on 2/18/84. When this recount was reviewed by CECO, PCD and Hatfield QA, several new problems were noted. First, a clerical error was noted in that the Hatfield QC personnel performing the recount were using a tolerance of zero to plus three inches for internal braces and zero to plus six inches for external braces. The actual tolerances were plus or minus three inches and plus or minus six inches respectively as noted on note 37, drawing 0-3275 and note four, drawing 0-3277.

A second problem encountered during the recount was that, in certain instances, criteria used during the reinspection have changed since or were non-existent during the original inspections. In these cases, it was decided that the original criteria should be used in determining the validity of the original inspection. The aforementioned items were reviewed by M. Dellabetta, CECO, QA, and found acceptable. Mr. Dellabetta also reviewed forty-nine (49) of the reinspection reports against the tally sheets and checked the addition on the tally sheets for errors. Both were found acceptable. Based on the items examined, it appears that the final results of the recount are accurate.

Attribute #9 - Cable Pan

The reinspection of cable pans, (Attribute #9) involved eight (8) inspections by one (1) Hatfield inspector. The reinspection reports were reviewed and compared to the "Detailed Inspector Results". All of the aforementioned were found acceptable.

Evaluation

All nine (9) attributes reviewed during the course of this surveillance were found to be acceptably documented, and in accordance with the guidelines and interpretations of the NRC Reinspection Program I&E Report 50-454/82-05 and 50-455/82-04.

The following CECO. QA personnel were involved in this surveillance:

P. T. Myrda	J. W. Zid
M. V. Dellabetta	C. J. Nagel
J. L. Bergner	S. Stimac
T. G. Hibst	L. Bihlman

This surveillance is closed.

Reported by P. T. Myrda / J. L. Bergner Date 2/22/84
Approved by K. J. Hansing Date 2/22/84

JLB:jc:l773S

³⁻¹⁻⁸⁴
cc: ~~W. J. Showski~~/G.F. Mar...
QA Supt./Site Q.A. File
Contractor
PCD Supt
P.T. Myrda
K.J. Hansing
E.L. Martin
J.L. Bergner
M.V. Dellabetta

QUALITY ASSURANCE MANUAL

AUDIT REPORT

Byron Reinspection Program Audit
#6-83-66

7/24/83
AS
F

Type Audit: Program Audit Product Inspection Point
 Records Special

To: (As Listed on Distribution Page)

Project Byron Visit Date 6/21/83 Report Date 7/18/83
7/06/83

System Various Component Identification N/A

Material Description N/A

Vendor Site Contractors Location Byron

Subcontractor N/A Location N/A

Contacts See Attached Reports

P.O. No. Various Spec. No. Various

Recommended Inspections: 6 mos 3 mos 1 mo
Other: As Scheduled

Notes: For items listed in the report as requiring a written response, please respond by 8/05/83. Responses to Findings and Observations will include the following:
* 1. Corrective action and results achieved.
* 2. Action to prevent recurrence.
* 3. Date of full compliance.

* (As required by the content of each item)
Auditor [Signature] Date 7/18/83

Reviewed M.A. Starch Date 7/21/83

AJR:jc:0221A
Attachments

- cc: ~~Manager~~ 7-25-83
- Manager-Projects [Signature] 7/11/83
- Project-Manager
- Eng-Manager
- Director-QA-Construction (As Listed on Distribution Page)
- Site-Construction-Superintendent
- Site-QA
- Auditee
- Site-QA-Supervisor

DISTRIBUTION PAGE
COMMONWEALTH EDISON AUDIT OF THE
BYRON REINSPECTION PROGRAM

TO: M. L. Somsag Hunter Corporation
 J. T. Hill Hatfield Electric Company
 B. Shah Johnson Controls Inc.
 M. R. Tallent Pittsburgh Testing Lab.
 R. P. Larkin Powers Azco Pope
 R. Allen NISCO
 R. H. Bay Blount Brothers Corporation

cc: ~~Manager QA~~ 7-25-53
 Manager Projects
 Project Manager
 Eng. Manager
 Director QA Construction
 Site Construction Superintendent
 Site QA
 Auditee
 Site QA Supervisor
 Director Nuclear Licensing
 QA ANSI N45.2.6 Coordinator

LIST OF AUDITEES

<u>Contractor</u>	<u>P. O.</u>	<u>Specification</u>
Hunter Corporation	207010	2739
Hatfield Electric Company	197131	2790
Johnson Controls Inc.	213415	2783
Pittsburgh Testing Lab.	216025	2850
Powers-Azco-Pope	222445	2906
NISCO	213839	2834
Blount Brothers Corporation	181186	2722

COMMONWEALTH EDISON AUDIT OF THE
BYRON REINSPECTION PROGRAM
AUDIT No. 6-83-66

Purpose:

To observe, assess and verify the implementation of the Reinspection Program at Byron as performed by on-site contractors and directed by C.E.Co. Project Construction Department. A description of the reinspection program and the audit methodology is included in this report.

Description of the Byron Reinspection Program:

In March of 1983, a reinspection program was instituted to validate the certification programs of the Byron on-site contractors as they relate to Level I and Level II QC inspectors. The program was outlined in a letter from W. L. Stiede to J. G. Keppler dated February 23, 1983. (See Attachment). The mechanics of the program were directed by Commonwealth Edison Project Construction at Byron.

Description of the Reinspection Program Audit:

The audit was conducted between 6/21/83 and 7/06/83. The auditors observed all contractors involved in the reinspection program for the items listed under scope. The reference document for the audit was the W. L. Stiede letter dated February 23, 1983, which was the response to I&E Inspection Report Numbers 50-454/82-05 and 50-455/82-04. Deficiencies or items of concern identified during the audit are listed in the appropriate portion of the audit report. With each deficiency, the organization responsible for response is listed. All responses to items identified in this report will be reviewed by Commonwealth Edison Quality Assurance Department to determine acceptability.

Several items identified during the audit were closed prior to or at the exit meeting. These items are presently acceptable and are not classified as deficiencies in this report. In most cases, these items required clarifying information to be resolved. A section of the audit report labeled "Items Dispositioned during the Audit" describes these items and their respective dispositions.

Scope:

The audit examined the following areas:

1. Reinspection sample size of inspectors and inspection items.
2. Items determined to be inaccessible.
3. Third party review of potentially unacceptable subjective type inspections.
4. Dispositions of nonconforming conditions discovered during the reinspection program.
5. Adequate documentation of the reinspection program as implemented by the contractors.
6. Qualifications of inspection personnel performing reinspection.

Audit Team:

The reinspection audit team consisted of the following personnel:

A. J. Rosenbach	Lead Auditor	QA Inspector	- Byron
L. A. Simon	Auditor	QA Engineer	- Byron
S. A. Altmayer	Auditor	QA Engineer	- Byron
P. T. Myrda	Auditor	QA Supervisor	- Byron
C. J. Nagel	Auditor	QA Engineer	- Byron
M. A. Stanish	Auditor	QA Superintendent	- Byron

Summary:

An entrance meeting was held on 6/21/83 at the Byron Quality Assurance Department. Attendees were as follows:

P. T. Myrda	C.E.Co. QA
M. A. Stanish	C.E.Co. QA
A. J. Rosenbach	C.E.Co. QA
L. A. Simon	C.E.Co. QA
C. J. Nagel	C.E.Co. QA
S. L. Bindenagel	Hatfield Electric Co.
T. Maas	Hatfield Electric Co.
J. D. Spangler	Hatfield Electric Co.
M. R. Tallent	Pittsburgh Testing Lab.
B. Shah	Johnson Controls Inc.
L. E. Hadick	Hunter Corporation
D. L. Smith	Pittsburgh Testing Lab.
M. L. Somsag	Hunter Corporation
R. P. Larkin	Powers-Azco-Pope
G. Cason	Hatfield Electric Co.
R. B. Klingler	C.E.Co. PCD
Bob Allen	NISCO
C. C. Novak	NISCO
Ghaus Mohammed	Pittsburgh Testing Lab.
S. A. Altmayer	C.E.Co. QA

Two exit meetings were held, one on 6/30/83 and the other on 7/06/83. Attendees were as follows:

6/30/83 exit with C.E.Co. PCD:

R. P. Tuetken	C.E.Co. PCD
R. B. Klingler	C.E.Co. PCD
M. A. Stanish	C.E.Co. QA
E. L. Martin	C.E.Co. QA
P. T. Myrda	C.E.Co. QA
K. J. Hansing	C.E.Co. QA
L. A. Simon	C.E.Co. QA
A. J. Rosenbach	C.E.Co. QA

7/06/83 exit with Byron Contractors:

A. J. Rosenbach	C.E.Co. QA
R. H. Bay	Blount Brothers Corp.
L. E. Hadick	Hunter Corporation
J. T. Hill	Hatfield Electric Co.
K. J. Hansing	C.E.Co. QA
E. L. Martin	C.E.Co. QA
M. R. Tallent	Pittsburgh Testing Lab.
D. L. Smith	Pittsburgh Testing Lab.
R. P. Larkin	Powers-Azco-Pope
S. A. Altmayer	C.E.Co. QA
M. L. Somsag	Hunter Corporation
R. B. Klingler	C.E.Co. PCD
R. P. Tuetken	C.E.Co. PCD

At the exit meetings, deficiencies and items of concern were discussed to assure understanding by all involved parties. The auditors would like to express their appreciation for the level of cooperation exhibited by contractor and PCD personnel during the audit.

The Reinspection Audit resulted in a total of one (1) finding and eight (8) observations. Findings and Observations are listed and discussed in Part A of this audit report.

Responses are required from the following organizations as delineated below:

Finding #1	Hunter Corp., Hatfield Electric, PTL, and Blount Brothers
Observation #1	Hunter Corp., Hatfield Electric
Observation #2	Hatfield Electric
Observation #3	Pittsburgh Testing Lab
Observation #4	Powers-Azco-Pope
Observation #5	Hunter Corp., NISCO
Observation #6	Blount Brothers
Observation #7	Powers-Azco-Pope
Observation #8	Hatfield Electric

PART A
AUDIT No. 6-83-66

Finding #1:

Contrary to 10CFR50 Appendix B, Criterion XV, certain contractors were not taking appropriate measures to identify, document, segregate, disposition, and notify affected organizations of nonconforming items identified under the reinspection program.

*closed
11/15/83*

Discussion: Finding #1 Part A (Hunter Corporation)

During the reinspection program, nonconforming conditions were identified which did not result in discrepancy reports being initiated. Problems with component support 2FP12016 were documented on Field Problem Sheet #FP109F rather than on a discrepancy report. No DR was issued for rejectable items associated with component support 2FP14056X because Hardware Removal Report #1380 has been initiated due to W ECN 52901 dated 6/22/83. The reinspection for 2FP14056X was prior to the issuance of the ECN. The following mechanical joints failed to meet the specified torque of 70% of the initial value when reinspected: SSX 100-23 MJ177, SSX 100-23 MJ178, SAB 100-43 MJ23, SDO 100-34 MJ49; these joints were retorqued by production immediately following inspection. No DR's were issued to document this.

*closed
11/17/83*

Discussion: Finding #1 Part B (Hatfield Electric)

During the reinspection program, nonconforming conditions were identified which did not result in discrepancy reports being initiated. Field Problem Sheets were being implemented to resolve reinspection items in the conduit and terminations area. The Field Problem Sheet is not proceduralized.

*closed
11/5/83*

Discussion: Finding #1 Part C (Pittsburgh Testing Lab)

At the time of the audit, PTL had not yet transmitted open inspection reports generated because of the reinspection program to the appropriate contractors. Therefore, no corrective action has been taken for the apparently nonconforming conditions.

*closed
12/8/83*

Discussion: Finding #1 Part D (Blount Brothers Corporation)

At the time of this audit, Blount Brothers Corporation had not yet generated any DR's or DRC's for rejectable items discovered as a result of the reinspection program.

*closed
10/14/83*

Observation #1:

Application of the term "inaccessible" to those items which receive multiple inspections does not correspond directly to the definition of "inaccessible" offered in the Stiede-Keppler letter dated February 23, 1983.

Discussion: Observation #1 Part A (Hunter Corporation)

According to the Stiede-Keppler letter, "Inaccessible shall be defined as: condition where dismantling would be required to gain access, or condition where process was an event which can not be recreated." Classified
10/2/76

When inspections of the same type occur after that inspection to be sampled in the reinspection program, the item of the original inspection is labeled by Hunter as inaccessible. For example, if a Type 3 inspection is performed in January, 1980 and a subsequent Type 3 performed in May, 1982, the one in 1980 is termed inaccessible. This is done without research to determine if the later inspection occurred as a result of rework etc. thus making the original inspection uncreateable.

Discussion: Observation #1 Part B (Hatfield Electric)

According to the Stiede-Keppler letter, "Inaccessible shall be defined as: condition where dismantling would be required to gain access, or condition where process was an event which can not be recreated." Hatfield was using the term inaccessible to disposition reinspections to which this definition does not apply. The example noted during the audit was, Hatfield had termed those items with subsequent inspections as inaccessible without determining if the original inspection was an event which cannot be recreated because of rework, design change, etc.

Observation #2: (Response: Hatfield Electric Company)

Hatfield has not performed an evaluation of QA/QC Memorandum #295 for its potential effect in the reinspection program.

Discussion:

Hatfield Electric Company QA/QC Memorandum #295 dated 9/17/82 states that an acceptable weld inspection of cable pan or conduit hangers implies verification of the correct connection detail. This manner of acceptance occurred when the cable pan or conduit hanger inspection could not verify the detail due to the presence of fireproofing. Due to the fact that the reinspection program requires re-creation of the original inspection, a determination must be made as to what type of inspection, either weld or hanger inspection, originally included the connection detail. After this determination is made, the connection detail can be included as an element of the proper type of reinspection.

Observation #3: (Response: PTL)

Pittsburgh Testing Laboratory is not reinspecting each individual inspection performed during the inspector's first three (3) months, where accessible.

*Closed
11/15/83*

Discussion:

For inspectors certified in several disciplines within the three month time frame, only those inspections in the area of the original certification during the first 90 calendar days were reinspected as opposed to "each individual inspection performed during the inspector's first three months" as cited in the Stiede-Keppler letter dated February 23, 1983. An example of this situation would be if an inspector was originally certified in one type of inspection and later certified in a second type of inspection, the first certification was reinspected. The second type of inspection was not reinspected even though certification and inspections within that area may have taken place during the inspector's initial 90 days.

Observation #4: (Response: PAP)

The status of rejected reinspection items is not determinable.

*Closed
10/31/83*

Discussion:

The reinspection sample record does not note the FIS report number which is used to disposition nonconforming installations. Without this information supplied, the status of the open items could not be determined by PAP at the time of the audit nor could the auditor assure a discrepancy report had been initiated for those items.

Observation #5:

For some inspectors, the number of items reinspected, though in agreement with the Stiede-Keppler letter, do not provide an adequate sample size.

Discussion: Observation #5 Part A (Hunter Corporation)

Commonwealth Edison's Project Construction Department verbally directed all contractors, with the exception of PTL/Peabody, to provide a minimum sample size of fifty (50) items.

*Closed
8/31/83*

Of the five (5) Level II QC inspectors reviewed during the audit, three (3): P. Pepitone, S. Kilpatrick, and J. Ooten, didn't have the minimum of fifty (50) items reinspected.

*Closed
10/21/83*

Discussion: Observation #5 Part B (NISCO)

Commonwealth Edison's Project Department verbally directed all contractors with the exception of PTL/Peabody to provide a minimum sample size of fifty (50) attributes.

*Closed
10/11/83*

The following inspectors were reinspected for less than 50 inspections:

R. Schultz	16 Inspections
M. Weir	39 Inspections
T. J. Priutt	30 Inspections

The number of items per inspection cannot be determined from information provided.

Observation #6: (Response: Blount Brothers Corporation)

One inspector chosen for the reinspection program was not reviewed in all areas of inspection activity during his first three (3) months of certification.

*Closed
10/11/83*

Discussion:

R. H. Bay had performed masonry inspections during his first 90 days of certification at Blount Brothers Corporation; these have not been reinspected.

Observation #7: (Response: PAP)

Six (6) months as opposed to three (3) months of an inspector's work was reinspected in the original sample.

*Closed
10/31/83*

Discussion:

Because of a misunderstanding, PAP considered the six month time period to be the original sample; failure to meet the acceptable quality level after this time frame, resulted in an additional 90 days of reinspection rather than the entire remainder of an inspector's work as specified in the Stiede-Keppler letter.

Observation #8: (Response: Hatfield Electric Company)

Hatfield Electric could not determine if a portion of the conduit inspection is subject to the reinspection program.

Discussion:

Torque checks in the conduit area were determined to be non-reproducible inspections; despite this, bolt counts were taken during reinspection. The bolt count was included in the original conduit inspection to determine the proper number of torque checks to perform. Differences in bolt counts between the original inspection and the reinspection are being entered as rejectable items in the reinspection program. These items are remaining open due to confusion on how to disposition them. Hatfield Electric Company needs to determine if bolt counts should be a part of the reinspection program and, if so, how to resolve these items.

Items Dispositioned during the Audit

During the audit, several items were identified which were dispositioned prior to or at the exit meetings. Because these items no longer exist at the time this report is being written, they are not considered deficient.

During the audit, it was noted that the population of Pittsburgh Testing Laboratory inspectors changed due to factors such as inaccessibility and the minimum number of required inspections. It was also noted that it could not be determined which inspectors were replaced and for what reasons they were replaced. Before the exit meeting, a list of Level I and Level II initial and subsequent inspectors selected was provided. The list developed included inspector's level of capability and reasons for all inspector's chosen. Due to the acceptability of the PTL inspector list provided, this item requires no response.

Additionally, it was noted that the status of PTL reinspection reports to be submitted for third party evaluation was difficult to determine. Before the exit meeting, PTL provided a form which included the steps necessary to procure reinspection reports. The PTL form is acceptable.

Powers-Azco-Pope's inspectors were included in the reinspection program only if their certification date fell before March 1982. PAP's new certification procedure was accepted in July, 1982. R. Sutherland was PAP's only QC inspector certified between March and July. His qualification package was reviewed by C.E.Co. QA on Surveillance #4624 dated 5/25/83; it was acceptable to current criteria.

As a result of the audit, it was determined that Hatfield Electric Company QA was not aware of the proper number of additional inspectors to include in the reinspection program. Per the Stiede-Keppler letter, when a failure in the reinspection program occurs, the population of additional inspectors should equal 50% of the initial number of inspectors chosen to be reinspected. Due to the fact that the results of the reinspection program have not yet been analyzed, no additional inspectors have been selected. Prior to the selection of additional inspectors, C.E.Co. PCD will provide Hatfield Electric Company with the proper number of inspectors to include.

Also identified, two of Hatfield Electric Company's reinspection inspectors did not meet the experience/education requirement at the time of certification. Hatfield Electric Company failed to verify high school education or its equivalency for D. Moehling and D. McCarty. This item was identified and followed by C.E.Co. QA Surveillance #4750. Their certifications were revoked prior to any inspections being performed. Presently, McCarty has his high school diploma on file and Moehling a copy of his GED. Both individuals have been recertified.

At the time of the audit, C.E.Co. Site QA has not completed review and verification of all qualifications of those QC inspectors performing reinspections. This item was previously identified and being followed by Finding #4 on General Office QA Audit of Byron Station Construction, June 1983. Review of these qualification packages is currently underway. If any deficiencies are noted, these will be tracked on the surveillance documenting the review.

Problems with Blount Brothers Corporation not properly documenting all facets of their certification program for their reinspection inspectors are documented on Byron Site QA Surveillance #4699. Resolution of these problems will be through this mechanism.

Summary and Assessment, Byron Reinspection Program Audit

The audit team found that all contractors involved are in the process of implementing the reinspection program described in the Stiede-Keppler letter dated February 23, 1983. The audit team also found that in some cases clarification is needed to provide the reinspection program with continuity. It is suggested that all clarifications and directions required be put in writing. The audit team found that in the past, verbal direction had resulted in differences in interpretation and implementation of the Stiede-Keppler letter. In order for C.E.Co. Project Construction to perform a meaningful analysis of the program results, differences in implementation should be eliminated.

As a result of this audit, a total of one (1) finding and eight (8) observations were identified. The only potential QA program violation identified was the finding which concerned identification of non-conforming conditions. The audit team felt that this finding resulted from difficulties incurred when attempting to combine a special program with the contractor's regular program. This finding applied to four of the seven contractors audited. The observations identified in this report were, for the most part, the result of different interpretations of the Stiede-Keppler letter. These differences resulted in discrepancies in such areas as sample size, both initial and expanded, of inspectors and inspections to be reinspected. Another example of a difference in interpretation is the application of the term "inaccessible" to items which do not fit the description of "inaccessible" offered in the Stiede-Keppler letter.

Because the audit occurred while the reinspection program was in progress, the results of the program could not be analyzed. The audit team felt that this situation provides an advantage as it will provide Project Construction with a list of items that could, if not resolved, impact the analysis of the results of the program. This fact is evidenced by the number of items resolved both during the audit and at the exit meeting. Resolution of the finding and observations identified in this report should provide the reinspection program with sufficient clarity and continuity to enable Project Construction to identify the adequacy of the contractor's past QC inspector certification programs. The reinspection program is expected to be complete in September of 1983. The audit team hopes that this audit will assist Project Construction in fulfilling the commitments made in the Stiede-Keppler letter.

Attachment, Audit 6-83-66

February 23, 1983

Mr. James G. Keppler, Regional Administrator
Directorate of Inspection and
Enforcement - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Byron Station Units 1 and 2
I & E Inspection Report Nos.
50-454/82-05 and 50-455/82-04

- References (a): June 24, 1982 letter from C.E. Norelius
to Cordell Reed
- (b): July 30, 1982 letter from W.L. Stiede
to J.G. Keppler
- (c): September 22, 1982 letter from C.E.
Norelius to Cordell Reed
- (d): November 5, 1982 letter from W.L. Stiede
to J.G. Keppler

Dear Mr. Keppler:

This letter provides a revised response to an item of noncompliance at Byron Station which was identified as Violation 2 in reference (a). In references (b) and (d) we proposed actions to be taken to provide additional assurance that contractor quality control inspectors were properly trained and qualified or to assure that their inspections were valid. This letter documents an alternate plan which supercedes in part the previously proposed programs. We believe this plan will satisfy NRC concerns presented in references (a) and (c) and clarified in discussions with Region III personnel.

During the subject inspection the NRC found that the contractor programs for qualifying Q.A./Q.C. personnel at Byron were inconsistent with their interpretation of the requirements of ANSI N45.2.6-1978. Specifically, they found deficiencies in our contractor's evaluations of initial inspector capabilities, in documentation of initial certification, and in the criteria used to establish inspector qualification. The NRC did not find that these deficiencies had compromised the quality of plant instruction. In issuing a violation, however, they made it clear that the qualification programs were to be upgraded and the quality of work completed was to be verified in some manner.

Before explaining the program which we propose to implement in verifying the quality of the work completed, it is appropriate that we describe the history of changes made to the inspector qualification practices at Byron. This will demonstrate that we have always required qualified inspectors and that the contractor programs for inspector certification have been upgraded over the years to address the changing interpretation of the applicable industry standards.

Certification Practices

ANSI N45.2.6 is the standard applicable in establishing qualification programs for nuclear power plant Q.A./Q.C. personnel. Since its inception in the early 1970's the interpretation of acceptable application of this standard has evolved throughout the industry and at Byron.

From 1974 to 1977 our contractors were required to develop quality assurance programs and procedures for certification of inspectors which were directed toward their specific contractual scope of work. The certification programs depended on training and experience as the primary basis for qualification in accordance with the intent of ANSI N45.2.6-1973. To assure that the installations and inspections performed by the various contractor organizations were acceptable, the work was checked by reinspections and surveillances conducted by an on-site independent testing contractor directed by the Commonwealth Edison Quality Assurance Department and by technical audits and surveillances performed by Commonwealth Edison Quality Assurance personnel.

In 1979 and 1980 the contractors' programs and procedures for certification of inspectors were revised to address NRC concerns raised in a 1979 inspection. The procedures were made more specific with regard to the basis for qualification and certification of inspectors; yet they remained directed toward the various activities associated with the contractor's specific scope of work. The work continued to be checked by the independent testing contractor's reinspections and surveillances and the Quality Assurance Department's technical audits and surveillances. In early 1980 an audit was performed of the records of all inspectors who were then certified to assure that their training, qualification and certification activities and records conformed to the augmented requirements established after the 1979 NRC inspection. The NRC reviewed the results of this audit and the implementation of the augmented requirements and closed the deficiency identified in the 1979 inspection. We believed that our inspector qualification activities were acceptable according to the interpretation of ANSI N45.2.6 which was being applied at that time.

In 1982 the NRC has again reviewed the programs for qualification and certification of contractor inspectors at Byron. They found that uniform criteria had not been established for qualification of inspectors of various contractors that chose to develop alternate parameters and limitations.

February 23, 1983

N45.2.6 specifically states that the parameters contained there are recommended and that alternate means are acceptable. The standard provides no guidance on development of the alternate parameters and limitations so the contractors each developed these differently. The procedures and methodologies set forth by the various contractors have been reviewed, approved and audited for compliance by Commonwealth Edison. They all conform to ANSI N45.2.6-1978. As a result of various other inspection and audit results we are confident that the inspections were and are being performed in an acceptable manner.

To address the inspector's concern, however, minimum parameters and limitations were established in April 1982 to institute a common basis for inspector certification requirements for the various contractors. With input from NRC inspectors these requirements were further enhanced and reissued to the contractors on June 9, 1982. The applicable site contractors' procedures for qualification and certification of inspectors were revised between July and September 1982 to incorporate these new requirements.

To summarize, our contractors' inspector qualification and certification activities have been upgraded to remain consistent with the changing interpretation of acceptable application of ANSI N45.2.6. The certification upgrading activities do not imply deficiencies in work previously inspected. This conclusion has been verified through over-check inspections, audits, and surveillances.

Proposed Corrective Action

In responding to Violation 2 in reference (b) we established a program for assuring that all current inspectors are certified to upgraded requirements established in new contractor procedures. That program is not changed by this letter.

A new plan has been developed to address the NRC's concerns regarding work performed by inspectors no longer on site or inspectors who cannot presently be shown to have been qualified. Details of this plan are provided in Attachment A to this letter. Generally, we are proposing various reinspections which verify the adequacy of past QC inspector training/certification practices employed at Byron. For each site contractor we have delineated the manner in which construction quality would be reverified through reinspection of representative portions of the accessible work. In some cases reinspections which would accomplish this goal have been completed or are in progress. For other contractors new inspection programs are described here. We have delineated the scope of reinspections to be performed and the acceptance criteria which would be utilized. Schedules for this work have not yet been set. In the few cases where all of a contractor's work is accessible for reinspection we have highlighted the oversight inspections and testing which provide addition assurance of quality.

J. G. Keppler

- 4 -

February 23, 1983

We understand that NRC concurrence in these corrective actions is necessary to close out this noncompliance. We also understand that the NRC may wish to identify up to three additional inspectors of each contractor's work to be checked. The reinspection program would be conducted most efficiently if these additional names were known at the outset of our records review. Please contact Tom Tramm with these names as soon as possible and no later than March 1, 1983.

Please contact me if additional information is needed.

Very truly yours,



W. L. Stiede
Assistant Vice-President

TRT/lm

Attachment

6029N

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

Q: 53.4

Report No. 5189

AUDIT No. 6-83-66

Date 10/12/83

Contractor/Organization: Hunter Corp.

FINDING #1:

PART 'A'

Contrary to 10CFR50-B, Criterion XV, certain contractors were not taking appropriate measures to identify, document, segregate, disposition, and notify affected organizations of nonconforming items identified under the reinspection program.

DISCUSSION:

During the reinspection program, nonconforming conditions were identified which did not result in discrepancy reports being initiated. Problems with component support 2FPI2016 were documented on Field Problem Sheet #FPI09F rather than on a discrepancy report. No DR was issued for rejectable items associated with component support 2FPI4056X because Hardware Removal Report #1380 has been initiated due to W ECN 52901 dated 6/22/83. The reinspection for 2FPI4056X was prior to the issuance of the ECN. The following mechanical joints failed to meet the specified torque of 70% of the initial value when reinspected: SSX 100-23 MJ177, SSX 100-23 MJ178, SAB 100-43 MJ23, SDO 100-34 MJ49; these joints were retorqued by production immediately following inspection. No DR's were issued to document this.

Hunter Reponse Dated: 9/1/83

In relation to 2FPI2016, at the time support was initially reviewed by Quality Control, it was suspected that the support was installed outside of tolerances. Our Engineering Department was queried about the condition, and unknown to Quality Control, the Engineering Department initiated a Field Problem which resulted in the ECN. At that point in time, Quality Control was just beginning reinspection and the scenario for handling this type of problem may not have been finalized. DR number QC-2FPI2-001 was initiated on 7/11/83 to resolve problems associated with this support. In relation to 2FPI4056, reinspection was performed 6/7/83 and 6/8/83. The reinspection resulted in generation of Field Problem AB37580, S&L ECN 8233, and DR no. QC-2FPI4-004, Hardware Removal Number 1380 and W ECN 52901 are associated with hanger number 1PS190001 not 2FPI4056.

In relation to the mechanical joints, data has been turned over to PCD for evaluation of the phenomena associated with this problem. The evaluation will determine a course of action to be taken.

ACTION TO PREVENT RECURRENCE:

None required. Reinspection is completed.

Attachment F

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

Due to the isolated nature of the cited problem and actions taken since the actual time of the problem, we consider ourselves to be in compliance at this time.

FOLLOW-UP:

10/12/83 - Reviewed Hunter Corp. discrepancy report QC-2FP12-001 (Attached) and QC 2FP14-004. Hunter Corp. discrepancy Report QC-2FP12-001 is associated with component support 2FP12016. Hunter Corp. discrepancy report QC-2FP12-004 is associated with component support 2FP14056X. Hunter Corp. has received direction from CECO. PCD which enables them to consider bolt torque inspections as inaccessible. See attached Hunter Corp. inquiry dated 9/15/83 and S&L letter dated 9/14/83.

This surveillance is closed.

This closes Part "A" Finding #1 of Audit 6-83-66.

Prepared by Al Rosenbluh Date 10/13/83
Approved by J. M. L. Date 10/13/83

AJR:tj:1228S
Attachments

cc: ~~W. J. Showski~~ / J.S. Bites ¹⁰⁻¹⁴⁻⁸³ *for file*

Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
AJR

DISCREPANCY REPORT

NRC HUNTER CORPORATION

DR QC 2FP12-001

INITIATED AT INSPECTION TYPE Production Ins. 2H

DRAWING NO. 2FP12 016 R

REV. 1A

REWORK DRAWING NO. _____

REV. _____

PROCESS SHEET NO. _____

REV. _____

LINE NO. DFPK 288-4

HARDWARE

DOCUMENTATION

AREA Area A is 4, 6-6" with #24 FIN 20155

Q.A USE ONLY	Class C	DISCREPANCY	SKETCH ON BACK
		<p>Upon reinspection it was found that item #3 a fig 6's attachment was 2"H offset from center of end plate to the north. CCD show 1/2" this is beyond M9A tolerance originally inspected and accepted by T. Kelly on 4/12/81 and reinspected by S. Brode and G. Intobon on 6/3/83 and found to be rejected.</p>	
		<p>Holdtag 2-1316 apptd by Gary Intobon ^{QCWI} Date 7/5/83</p>	

DISCREPANCY REPORTED BY

Gary K. Intobon ^{QCWI}

DATE 7/5/83

PROD. ENG. QA/QC

RESOLUTION

DR referred to M Ferris to prepare an NR

Closed

DISCREPANCY RESOLVED BY _____

DATE _____

QA APPROVAL OF RESOLUTION _____

DATE _____

- PRODUCTION
- ENGINEERING
- QA/QC
- MATERIAL CONTROL

DISCREPANCY REPORT

HUNTER CORPORATION

DR PG 1062 CC 2FP14.004 INITIATED AT INSPECTION TYPE VEAL REINSPECTION CC NRC REINSPECTION

DRAWING NO. 3FP 14058X REV. 0/C REWORK DRAWING NO. N/A REV. N/A

PROCESS SHEET NO. N/A REV. N/A LINE NO. OFP 21A-10

HARDWARE DOCUMENTATION AREA 21+Q ELEV. 435'-8" Au + BLDG

Q.A USE ONLY	DISCREPANCY	SKETCH ON BACK
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	<p>DURING NRC REINSPECTION OF THIS HANGER THE FOLLOWING DISCREPANCIES WERE NOTED: (INSPECTED BY T KELLEY #1130 ON 4-20-81)</p> <ul style="list-style-type: none"> : THE PIPE CLAMP IS IMPROPERLY TIGHTENED AND THE SPACER IS LOOSE. : ONE OF THE SNAP RINGS ON THE LOAD PIN IN THE REAR BRACKET IS BROKEN : PER THE CCD ELEVATION OF THE PIPE SHOULD BE 435' 0" - IT IS 435' - 7 3/8" ACTUAL. : ITEM #2 IS M4x13x10 5/8" STEEL IT IS SPEC'D AS W 4x13x10 7/16" : FW-1 IS NOT INSTALLED PER CCD THE LOCATION OF THE WELDS HAS BEEN CHANGED FROM FROM TOP AND BOTTOM TO BOTH SIDES 	
--	---	--

DISCREPANCY REPORTED BY SEE PAGE #2 DATE 7-7-83 PROD. ENG. QA/CC

RESOLUTION
DR referred to drawing RFP 7-11-83

DISCREPANCY RESOLVED BY _____ DATE _____

QA APPROVAL OF RESOLUTION _____ DATE _____

- PRODUCTION
- ENGINEERING
- QA/CC
- MATERIAL CONTROL

DISCREPANCY REPORT

HUNTER CORPORATION
SEE FIG 1 CC: NRC Reinspection

DR QC 2FP14.004 INITIATED AT INSPECTION TYPE FIG 1

ING NO. 2FP14056X REV. 0/C REWORK DRAWING NO. N/A REV. N/A

PROCESS SHEET NO. N/A REV. N/A LINE NO. CEP210-10"

HARDWARE DOCUMENTATION AREA SEE PAGE # 1

Q.A. USE ONLY	DISCREPANCY	SKETCH ON BACK
	<p>NO AS-BUILT USING M919 TOLERANCES HAS BEEN FOUND ON ANY OF THESE ITEMS.</p> <p>ALSO - THE NON-NF WELDS ON ITEM # 2 ARE BADLY UNDERCUT (1/4" WING IN EXCESS OF 1/32" DEEP THE LENGTH OF THE WELDS). THE WELD ON THE INSIDE OF THE TOP FLANGE OF ITEM # 2 ON THE S.E. SIDE HAS BEEN REWORKED BY SWL TO HAVE A 1 3/4" LONG CRACK IN IT HUNTER QC DISAGREES THERE IS ALSO EXCESS GRINDING ON THE IN PLACE STEEL IN EXCESS OF 1/32" -</p> <p>Verified by G. Inboden - C Hernandez QCW - CLASS 'C'</p> <p>HOLD TAG 2-1321 APPLIED BY CALW DATE 7-8-83</p>	

DISCREPANCY REPORTED BY CA QCWI DATE 7-8-83 PROD. ENG. QA/QC

RESOLUTION

DISCREPANCY RESOLVED BY _____ DATE _____
 QA APPROVAL OF RESOLUTION _____ DATE _____

- PRODUCTION
- ENGINEERING
- QA/QC
- MATERIAL CONTROL



HUNTER CORPORATION

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

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

cc: M. L. Somsag
K. Selman
file

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

R. Tuetken
9/15/83

LEH/pb

Reinspection
Interpretation
16
RB Klunke
9-15-83
page 1 of 2

**SARGENT & LUNDY
ENGINEERS**

FOUNDED 1891

55 EAST MONROE STREET

CHICAGO, ILLINOIS 60603

(312) 269-1000

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:c1
Copies:
J. T. Westermeyer
R. Cosaro
M. Lohmann
R. P. Tuetken

D. L. Leone/W. C. Cleff
B. G. Treece
R. J. Netzel
D. A. Gallagher



HUNTER CORPORATION

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

HC-QA-412

September 1, 1983

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

Attention: Construction Quality Assurance
Mr. A.J. Rosenbach
Lead Auditor

Subject: Expanded Hunter Corporation response to your organizations report of Audit 6-83-66.

References (1) Hunter Corporation letter number HC-QA-402 (which is superceeded by this correspondence)
(2) CECo letter number BY 9628

Mr. Rosenbach.

I apologize for the failure to provide a response to observation 5 in letter number HC-QA-402. The responses for Finding 1 and Observation 1 are reiterated in this correspondence along with the response for Observation 5.

CECo Finding #1:

Contrary to 10CFR50 Appendix B, Criterion XV, certain contractors were not taking appropriate measures to identify, document, segregate, disposition, and notify affected organizations of nonconforming items identified under the reinspection program.

Discussion Part A:

During the reinspection program, nonconforming conditions were identified which did not result in discrepancy reports being initiated. Problems with component support 2FP12016 were documented on Field Problem Sheet #FP109F rather than on a discrepancy report. No DR was issued for rejectable items associated with component support 2FP14056X because Hardware Removal Report #1380 has been initiated due to W ECN 52901 dated 6/22/83. The reinspection for 2FP14056X was prior to the issuance of the ECN. The following mechanical joints failed to meet the specified torque of 70% of the initial value when reinspected: SSX 100-23 MJ177, SSX 100-23 MJ178, SAB 100-43 MJ23, SDO-100-34 MJ49; these joints were retorqued by production immediately following inspection. No DR's were issued to document this.

ter Corporation Response:

Corrective Action Taken and Results Achieved:

In relation to 2FP12016, at the time support was initially reviewed by Quality Control, it was suspected that the support was installed outside of tolerances. Our Engineering Department was queried about the condition, and unknown to Quality Control, the Engineering Department initiated a Field Problem which resulted in the ECN. At that point in time, Quality Control was just beginning reinspection and the scenario for handling this type of problem may not have been finalized. DR number QC-2FP12-001 was initiated on 7-11-83 to resolve problems associated with this support. In relation to 2FP14056, reinspection was performed 6-7-83 and 6-8-83. The reinspection resulted in generation of Field Problem AB37580, S&L ECN 8233, and DR no. QC-2FP14-004. Hardware Removal Number 1380 and W ECN 52901 are associated with hanger number 1PS190001 not 2FP14056.

In relation to the mechanical joints, data has been turned over to PCD for evaluation of the phenomena associated with this problem. The evaluation will determine a course of action to be taken.

Action Taken To Prevent Recurrence:

None required. Reinspection is completed.

When Full Compliance Will Be Achieved:

Due to the isolated nature of the cited problem and actions taken since the actual time of the problem, we consider ourselves to be in compliance at this time.

CECo OBSERVATION #1:

Application of the term "inaccessible" to those items which receive multiple inspections does not correspond directly to the definition of "inaccessible" offered in the Stiede-Keppler letter dated February 23, 1983.

DISCUSSION:

According to the Stiede-Keppler letter, "Inaccessible shall be defined as: condition where dismantling would be required to gain access, or condition where process was an event which can not be recreated."

When inspections of the same type occur after that inspection to be sampled in the reinspection program, the item of the original inspection is labeled by Hunter as inaccessible. For example, if a Type 3 inspection is performed in January, 1980 and a subsequent Type 3 performed in May, 1982, the one in 1980 is termed inaccessible. This is done without research to determine if the later inspection occurred as a result of rework etc. thus making the original inspection uncreateable.

Hunter Corporation Response:

Corrective Action Taken and Results Achieved:

None required. This approach was in accordance with Reinspection Interpretation #2, a copy of which is attached to this response.

Action Taken to Prevent Recurrence:

N/A

Date When Full Compliance Will Be Achieved:

N/A

CECo Observation #5:

For some inspectors, the number of items reinspected, though in agreement with the Stiede-Keppler letter, do not provide an adequate sample size.

Discussion: Observation #5 Part A

Commonwealth Edison's Project Construction Department verbally directed all contractors, with the exception of PTL/Peabody, to provide a minimum sample size of fifty (50) items.

Of the five (5) Level II QC inspectors reviewed during the audit, three (3): P. Pepitone, S. Kilpatrick, and J. Ooten, didn't have the minimum of fifty (50) items reinspected.

Hunter Corporation Response:

Corrective Action Taken and Results Achieved:

Mr. Pepitone's data base was expanded to include his full term of employment as an inspector with Hunter Corporation. This resulted in reinspection of 51 of his inspections. In relation to Mr. Ooten and Mr. Kilpatrick, an inquiry was made to your organization's Quality Control Supervisor (Mr. R.B. Klingler) to obtain a disposition of their cases. A copy is included as Attachment 1.

Action Taken to Prevent Recurrence:

None required. Reinspection is completed.

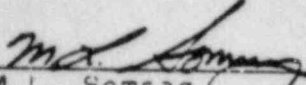
Date When Full Compliance Will Be Achieved:

We are in full compliance at this time.

If you have any questions or comments, please contact me.

Sincerely yours,

HUNTER CORPORATION



M.L. Somsag
Quality Assurance Supervisor

cc: K.R. Selman
B. Krasawski
L. Hadick
M.L. Somsag
CECo Audit 6-83-66

jm

ATTACHMENT 1 TO HC-QA-412



HUNTER CORPORATION

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

HC-QA-411

September 1, 1983

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

cc: R. Klingler
K.R. Selman
L. Hadick
M.L. Somsag
Original to NRC
Reinspection File

Attention: Project Construction Department
Mr. R. B. Klingler
Quality Control Supervisor

Subject: NRC Reinspection Program

Mr. Klingler:

In completing our reports for the subject activity it has been identified that we could not attain the minimum of 50 reinspections each for 3 individuals (R. Sturgess, J. Ooten and S. Kilpatrick). The quantities of reinspections that could be performed for each individual are listed below.

R. Sturgess	(#9208)	19
J. Ooten	(#1211)	28
S. Kilpatrick	(#1354)	30

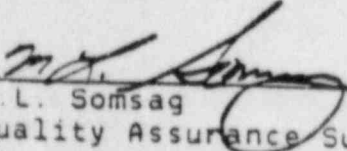
In attempting to comply with the minimum of 50 reinspections for each of the 3 individuals, we expanded the 90 day time frame of each individual to their full term of employment as an inspector. As a result of these circumstances, I present the following inquiry.

Is it necessary to expand the inspector population or will it be acceptable to let the record stand as is.

Please indicate your response in the area provided.

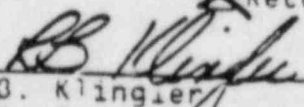
Sincerely yours,

HUNTER CORPORATION


M.L. Somsag
Quality Assurance Supervisor

CECo Response

Expand Inspector population.
 Record may stand as is.


R.B. Klingler
CECo Q.C. Supervisor
Date 9-1-83

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

QG: 53.4

Report No. 5202R1

AUDIT No. 6-83-66

Date 10-13-83

Contractor/Organization: Hatfield Electric Co.

FINDING #1: (PART B)

Contrary to 10CFR50 Appendix B, Criterion XV, certain contractors were not taking appropriate measures to identify, document, segregate, disposition, and notify affected organizations of nonconforming items identified under the reinspection program.

DISCUSSION:

During the reinspection program, nonconforming conditions were identified which did not result in discrepancy reports being initiated. Field problem sheets were being implemented to resolve reinspection items in the conduit and terminations area. The field problem sheet is not proceduralized.

Hatfield Response Dated 8/04/83

CORRECTIVE ACTION:

Field problem sheets were generated for conduit items which could easily be corrected by the area foreman in a short time period. Some items were corrected immediately, the balance is being checked for completion. All field problem sheets are filed to verify that all corrections were made. Field problem sheets were generated to C.E.Co. OAD to find out if they had made a change to the wiring diagram as the items in question were turned over to the owner.

NCR #674 was written to correct this problem.

ACTION TO PREVENT RECURRENCE:

Instruct inspectors not to use field problem sheets.

FOLLOW-UP: 10/13/83

HECo. NCR #674 was written to disposition the deficient items discovered during termination inspections. This NCR was closed 8/22/83 (See attached).

Discrepancies which had been identified on field problem sheets were included in the results of the reinspection program as submitted to CECo. PCD. A review of the reinspection program reports submitted for E.A. Durras, J. Buchanan, K. Cripps, E. Getzelman, H. Holze and F. Keep revealed field problem sheets to be included. The inclusion of field problem sheets with the reinspection program reports enabled CECo. PCD to make a determination concerning the acceptability of inspections which resulted in field problem sheets being generated. This appears to be an isolated case which has been adequately resolved.

(1237S)

Attachment G

This surveillance is closed.

This closes the Hatfield portion of Finding #1 Audit 6-83-66.

Prepared by

[Handwritten Signature]

Date

10/20/83

Approved by

[Handwritten Signature]

Date *10-27-83*

AJR:jc:1237S

cc: ~~W.J. Shewski~~ / ~~J.S. Bitel~~ ✓ *10-27-83*

Q.A. Supt./File

Contractor

Q.A. Audit Staff Desg.

PCD Supt.

Project Manager

AJR



NONCONFORMANCE REPORT

REPORT No 674
HOLD TAG No 674

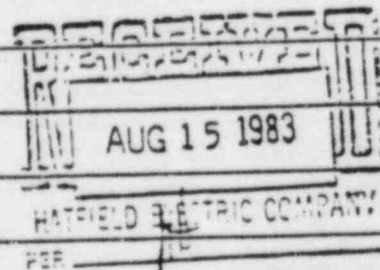
Material: Vendor N/A P.O. No. N/A MRR No. N/A MSR No. N/A
Equipment: Drawing 1-4665A Rev. G Elevation 383 Columns 15 & N
Equipment Description 1AP22E Compt. A1

Nonconformance: The wrong agastat was installed in compI A1 drawing calls for a 7022AC, but OAD furnished a 7012AC which was installed.

Observed By: [Signature] Date: 8-4-83
HECO Q. A. Manager: [Signature] Date: 8-4-83

Corrective Action: N/A Equipment installed was temporary. OAD had processed RPR #555 to obtain the correct agastat relay.

Action to Prevent Recurrence: N/A



Work: May Not Proceed May Proceed May Proceed With The Following Restrictions:

DEFERRED ONLY

Approved by CECO PCD: [Signature] Date: 8/8/83 ✓
CECO NCR No. N/A CECO Hold Tag No. N/A
Concurred By CECO Q. A.: [Signature] Date: 8-8-83 ✓

III Corrective Action Completion Verified By: [Signature] Date: 8-22-83
Action To Prevent Recurrence Completed Verified By: [Signature] Date: 8-22-83
Hold Tag Removed By: [Signature] Date: 8-22-83
NCR Close-out Reviewed By: [Signature] Date: 8-22-83
(Level II or Higher)

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT F1 § 03

4.1.73
95
JSS
E
QF: QG 53.4

Report No. 4939

AUDIT No. 6-83-66

Date 08/26/83

Contractor/Organization: Pittsburgh Testing Laboratories

FINDING #1:

Contrary to 10CFR50-B, Criterion XV, certain contractors were not taking appropriate measures to identify, document, segregate, disposition and notify affected organizations of nonconforming items identified under the reinspection program.

DISCUSSION:

At the time of the audit, PTL had not yet transmitted open inspection reports generated because of the reinspection program to the appropriate contractors. Therefore, no corrective action has been taken for the apparently nonconforming conditions.

PTL Response:

Corrective Action Taken:

PTL will transmit reports with nonconforming conditions to the respective contractors through the normal transmittal system.

Action to Prevent Recurrence:

PTL was working on the premise that reports with nonconforming conditions would be reported to the contractors upon full completion of the reinspection program. PTL has since been advised to transmit nonconforming reports upon concurrence with Mr. M. Provenzano, S&L Representative. As this appears to be an isolated incident, no further action is necessary.

Date of Full Compliance: August 8, 1983

FOLLOW-UP ACTION:

PTL has started transmitting rejectable reports to BBC. The first transmittal was #18479 dated 7/1/83. The latest was #18828 Dated 8/19/83. This process is ongoing. This was determined by reviewing PTL transmittal log and transmittal.

Attachment H

(1040S)

OBSERVATION #3: (response PTL)

PTL is not reinspecting each individual inspection performed during the inspector's first three (3) months, where accessible.

DISCUSSION:

For inspectors certified in several disciplines within the three month time frame, only those inspections in the area of the original certification during the first 90 calendar days were reinspected as opposed to "each individual inspection performed during the inspector's first three months" as cited in the Stiede-Kepler letter dated February 23, 1983. An example of this situation would be if an inspector was originally certified in one type of inspection and later certified in a second type of inspection, the first certification was reinspected. The second type of inspection was not reinspected even though certification and inspections within that area may have taken place during the inspector's initial 90 days.

PTL is not reinspecting each individual inspection performed during the inspector's first three (3) months, where accessible.

Corrective Action Taken:

PTL is now reinspecting each individual inspection performed during the inspector's first three (3) months, as directed by Commonwealth Edison via the Stiede-Kepler letter 2/23/83.

Action to Prevent Recurrence:

A complete review of selected inspectors certification package to determine what discipline(s) those individuals were certified in during initial three (3) month period.

Date of Full Compliance: August 8, 1983

Observation #3:

The only inspector who had two (2) different certifications and was chosen for the reinspection program was S. Cushman. This was researched by M. Tallent, PTL Site Manager and D. Smith, Unit Concept Supervisor. The type inspection reinspected was visual weld inspection. The certification which also occurred during Cushman's first 90 days was concrete expansion anchor installation. Concrete expansion anchor torque checks were inspected by Cushman, due to relaxation torque checks are nonreproducible.

This surveillance is closed.

This closes the PTL portion of Finding #1 and Observation #3 of Audit #6-83-66.

Prepared by PTM/ptm for A. J. Rosenthal Date 8/30/83
Approved by R. J. Downing Date 8.30.83

AJR:tj:1040S

~~W. J. Shewski~~ 8-31-83
cc: ~~W. J. Shewski~~ / J. S. Bitel
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
AJR

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

QG: 53.4

Report No. 5188

AUDIT No. 6-83-66

Date 10/12/83

Contractor/Organization: Hunter Corp.

OBSERVATION #1:

Application of the term "inaccessible" to those items which receive multiple inspections does not correspond directly to the definition of "inaccessible" offered in the Stiede-Keppler letter dated February 23, 1983.

DISCUSSION: Observation #1 Part A (Hunter Corporation)

According to the Stiede-Keppler letter, "Inaccessible shall be defined as: condition where dismantling would be required to gain access, or condition where process was an event which cannot be recreated."

When inspections of the same type occur after that inspection to be sampled in the reinspection program, the item of the original inspection is labeled by Hunter as inaccessible. For example, if a Type 3 inspection is performed in January, 1980 and a subsequent Type 3 performed in May, 1982, the one in 1980 is termed inaccessible. This is done without research to determine if the later inspection occurred as a result of rework etc. thus making the original inspection uncreateable.

Hunter Response: Dated 9/1/83

None required. This approach was in accordance with Reinspection Interpretation #2, a copy of which is attached to this response.

ACTION TO PREVENT RECURRENCE:

N/A

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

N/A

FOLLOW-UP:

10/12/83 - Per R.B. Klingler, CECO, PCD, the Hunter Corp. application of interpretation #2 (See Attached) is correct. When subsequent inspection of the same type occurred, the later inspection was reinspected and the earlier inspection is considered inaccessible.

Attachment I

(1227S)

This surveillance is closed.

This closes Part A of Observation #1 of Audit #6-83-66.

Prepared by *Alf Rasulak* Date 10/13/83
Approved by *P. Nigala* Date 10/13/83

AJR:tj:1227S
Attachment *10/14/83*
cc: W.J. Shewski / J.S. Bitel
Q.A. Supt./File *10/27/83*
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
AJR

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

AS 11/9/83
① QG: 53.4

Report No. 5210

AUDIT No. 6-83-66

Date 10-14-83

Contractor/Organization: Hatfield Electric Co.

OBSERVATION #1:

Application of the term "inaccessible" to those items which receive multiple inspections does not correspond directly to the definition of "inaccessible" offered in the Stiede-Keppler letter dated February 23, 1983.

DISCUSSION:

According to the Stiede-Keppler letter, "Inaccessible shall be defined as: condition where dismantling would be required to gain access, or condition where process was an event which can not be recreated." Hatfield was using the term inaccessible to disposition reinspections to which this definition does not apply. The example noted during the audit was, Hatfield had termed those items with subsequent inspections as inaccessible without determining if the original inspection was an event which cannot be recreated because of rework, design change, etc.

Hatfield Response Dated 8/4/83

Items which could not be physically reached or where conduits and hangers had been changed per print revisions, FCR's or ECN's and had been reinspected at a later date were inadvertently noted "Inaccessible" during conduit reinspection. This was an error in terminology and actually the items were non-retrievable. All items noted incorrectly as "Inaccessible" had been researched and the original inspections could not be recreated.

FOLLOW-UP: 10/14/83

The error in terminology has been resolved via the research performed by Hatfield. Inspections which cannot be recreated are properly termed "inaccessible".

OBSERVATION #8:

Hatfield Electric could not determine if a portion of the conduit inspection is subject to the reinspection program.

DISCUSSION:

Torque checks in the conduit area were determined to be non-reproducible inspections; despite this, bolt counts were taken during reinspection. The bolt count was included in the original conduit inspection to determine the proper number of torque checks to perform. Differences in bolt counts between the original inspection and the reinspection are being entered as rejectable items in the reinspection program. These items are remaining open due to confusion on how to disposition them. Hatfield Electric Company needs to determine if bolt counts should be a part of the reinspection program and, if so, how to resolve these items.

Hatfield Response Dated 8/25/83

Bolt counts will not be included as part of the reinspection criteria. Differences in bolt counts on the reports cannot be investigated since both the original inspector and report reviewer are no longer employed by Hatfield Electric Company.

FOLLOW-UP: 10/14/83

The elimination of bolt counts from the reinspection program has resolved this deficiency.

This surveillance is closed.

This closes Observation #8 of Audit 6-83-66.

This closes Observation #1 Part B of Audit 6-83-66.

Prepared by J. A. Lee for A. J. Kowalski Date 10/17/83

Approved by E. J. Mant Date 10-17-83

AJR:jc:1240S

cc: W.J. Shewski / J.S. Bitel
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
AJR

Shewster

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

AS 11/9/82
(F) QG: 53.4

Report No. 5211

AUDIT No. 6-83-66

Date 10-14-82

Contractor/Organization: Hatfield Electric Co.

OBSERVATION #2:

Hatfield has not performed an evaluation of QA/QC Memorandum #295 for its potential effect in the reinspection program.

DISCUSSION:

Hatfield Electric Company QA/QC Memorandum #295 dated 9/17/82 states that an acceptable weld inspection of cable pan or conduit hangers implies verification of the correct connection detail. This manner of acceptance occurred when the cable pan or conduit hanger inspection could not verify the detail due to the presence of fireproofing. Due to the fact that the reinspection program requires re-creation of the original inspection, a determination must be made as to what type of inspection, either weld or hanger inspection, originally included the connection detail. After this determination is made, the connection detail can be included as an element of the proper type of reinspection.

Hatfield Response Dated 8/25/83

Fireproofing was removed on All items which had to be reinspected for the program. If it was the pan hanger detail itself or a weld traveler to be reinspected, the material was removed so that the connection detail or the welds could be inspected as individual attributes. Memo #295 was not considered during the reinspection.

Hatfield Response Dated 8/30/83

Please be advised that connection detail verification is originally included in hanger inspection report.

FOLLOW-UP: 10/14/83

The determination by Hatfield that the connection detail verification is part of the hanger inspection closes this deficiency.

This surveillance is closed.

This closes Observation #2 of Audit 6-83-66.

Prepared by A. J. Rosenthal Date 10/17/83
Approved by [Signature] Date 10-17-83

AJR:jc:1241S

11-7-83
cc: W. J. Shewski / J.S. Bitel
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
AJR

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

AS 12/3/83
F
QF: QG 53.4

Report No. 4939

AUDIT No. 6-83-66

Date 08/26/83

Contractor/Organization: Pittsburgh Testing Laboratories

FINDING #1: Part C

Contrary to 10CFR50-B, Criterion XV, certain contractors were not taking appropriate measures to identify, document, segregate, disposition and notify affected organizations of nonconforming items identified under the reinspection program.

DISCUSSION:

At the time of the audit, PTL had not yet transmitted open inspection reports generated because of the reinspection program to the appropriate contractors. Therefore, no corrective action has been taken for the apparently nonconforming conditions.

PTL Response:

Corrective Action Taken:

PTL will transmit reports with nonconforming conditions to the respective contractors through the normal transmittal system.

Action to Prevent Recurrence:

PTL was working on the premise that reports with nonconforming conditions would be reported to the contractors upon full completion of the reinspection program. PTL has since been advised to transmit nonconforming reports upon concurrence with Mr. M. Provenzano, S&L Representative. As this appears to be an isolated incident, no further action is necessary.

Date of Full Compliance: August 8, 1983

FOLLOW-UP ACTION:

PTL has started transmitting rejectable reports to BBC. The first transmittal was #18479 dated 7/1/83. The latest was #18828 Dated 8/19/83. This process is ongoing. This was determined by reviewing PTL transmittal log and transmittal.

OBSERVATION #3 (response PTL)

PTL is not reinspecting each individual inspection performed during the inspector's first three (3) months, where accessible.

DISCUSSION:

For inspectors certified in several disciplines within the three month time frame, only those inspections in the area of the original certification during the first 90 calendar days were reinspected as opposed to "each individual inspection performed during the inspector's first three months" as cited in the Stiede-Keppler letter dated February 23, 1983. An example of this situation would be if an inspector was originally certified in one type of inspection and later certified in a second type of inspection, the first certification was reinspected. The second type of inspection was not reinspected even though certification and inspections within that area may have taken place during the inspector's initial 90 days.

PTL is not reinspecting each individual inspection performed during the inspector's first three (3) months, where accessible.

Corrective Action Taken:

PTL is now reinspecting each individual inspection performed during the inspector's first three (3) months, as directed by Commonwealth Edison via the Stiede-Keppler letter 2/23/83.

Action to Prevent Recurrence:

A complete review of selected inspectors certification package to determine what discipline(s) those individuals were certified in during initial three (3) month period.

Date of Full Compliance: August 8, 1983

Observation #3:

The only inspector who had two (2) different certifications and was chosen for the reinspection program was S. Cushman. This was researched by M. Tallent, PTL Site Manager and D. Smith, Unit Concept Supervisor. The type inspection reinspected was visual weld inspection. The certification which also occurred during Cushman's first 90 days was concrete expansion anchor installation. Concrete expansion anchor torque checks were inspected by Cushman, due to relaxation torque checks are nonreproducible.

This surveillance is closed.

This closes the PTL portion of Finding #1 and Observation #3 of Audit #6-83-66.

Prepared by PTM/mb for A.J. Rosenberg Date 8/30/83
Approved by K.J. Jansing Date 8.30.83

AJR:tj:1040S

8-31-83
cc: W.J. Shewski/J.S. Bitel
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
AJR

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

QG: 53.4

Report No. 5187

AUDIT No. 6-83-66

Date 10/12/83

Contractor/Organization: Hunter Corp.

OBSERVATION #5:

For some inspectors, the number of items reinspected, though in agreement with the Stiede-Keppler letter, do not provide an adequate sample size.

DISCUSSION: Observation #5 Part A

Commonwealth Edison's Project Construction Department verbally directed all contractors, with the exception of PTL/Peabody, to provide a minimum sample size of fifty (50) items.

Of the five (5) Level II QC inspectors reviewed during the audit, three (3): P. Pepitone, S. Kilpatrick and J. Ooten did not have the minimum of fifty (50) items reinspected.

Hunter Corporation Response:

CORRECTIVE ACTION:

Mr. Pepitone's data base was expanded to include his full term of employment as an inspector with Hunter Corporation. This resulted in reinspection of fifty-one (51) of his inspections. In relation to Mr. Ooten and Mr. Kilpatrick, an inquiry was made to your organizations Quality Control Supervisor (Mr. R.B. Klingler) to obtain a disposition of their cases. A copy is included as Attachment 1.

ACTION TO PREVENT RECURRENCE:

None required. Reinspection is completed.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

We are in full compliance at this time.

FOLLOW-UP ACTION:

10/12/83 - Reviewed records of individual reinspections submitted to CECO, PCD by Hunter Corp. P. Pepitone, Emp. #1284, had a total of fifty-one (51) inspections reinspected. Per R.B. Klingler, CECO, PCD, the number of inspections for Ooten and Kilpatrick were determined to be acceptable. (See attached Hunter Memo HC-QA-411 dated 9/1/83)

Attachment M

This surveillance is closed.

This closes part A of Observation #5 of Audit #6-83-66.

Reported by Al Rosenbush Date 10/13/83
Approved by [Signature] Date 10/13/83

AJR:tj:1226S
Attachment 10-4-84
cc: W.J. Shewski/J.S. Bitel
QA Supt./Site Q.A. File
Contractor
PCD Supt
AJR

Bitel
10/12/83

QUALITY ASSURANCE MANUAL

AUDIT REPORT

#6-83-93

12/1/83
AS
(F)

Type Audit: Program Audit Product Inspection Point
 Records Special

To: R. B. Klingler, PCD QC Supervisor

Project Byron Visit Date 11/14-17/83 Report Date 11/28/83

System N/A Component Identification N/A

Material Description N/A

Vendor N/A Location N/A

Subcontractor N/A Location N/A

Contacts See Attachment "B"

P.O. No. N/A Spec. No. N/A

Recommended Inspections: 6 mos 3 mos 1 mo

Other: As specified

- Notes: Please respond with
1. Corrective action
 2. Action to prevent recurrence
 3. Date of completion for the above items for Finding #1 by December 15, 1983

Prepared by Eric A. Simon Date 11-30-83

Auditor E. A. Simon - Auditor Date 12/1/83

J. S. Hale - Lead Auditor

Reviewed K. A. Damsing Date 12/1/83

LAS:tj:0437A
Attachments

- cc: Manager 12-5-83
 Manager Projects
 Project Manager
 Eng. Manager
 Director CA Construction
 Site Construction Superintendent
 Site QA
 Auditee
 Site QA Supervisor
 JSH

4

QUALITY ASSURANCE AUDIT
BYRON SITE REINSPECTION PROGRAM
NOVEMBER 14-17, 1983
#6-83-93

INTRODUCTION AND PURPOSE:

From November 14 to November 17, 1983, the Commonwealth Edison Byron Quality Assurance conducted an audit on the Byron Site's Reinspection Program. The purpose of the audit was to assure that conclusions drawn from the Reinspection Program are valid and reliable.

SCOPE:

The scope of the audit covered the following areas:

1. Accuracy of Reinspection Program results as reported to the NRC in the Interim Report.
2. The design basis for the engineering evaluation of Visual Weld Inspection Discrepancies as described in the Interim Report.
3. Qualifications of the third party inspectors.
4. Documentation of third party inspections.
5. Basis for PCD "Interpretations" in regards to the Reinspection Program.
6. Correction of deficiencies identified as a result of the Reinspection Program.

AUDIT AGENDA:

An entrance meeting was conducted and the audit started on November 14, 1983. The audit lasted four (4) days with two (2) exit meetings held on November 17, 1983. Attendees of entrance and exit meetings are listed in Attachment "A". A list of those personnel contacted during the audit is given in Attachment "B".

AUDIT TEAM:

The audit team consisted of J.S. Hale, Lead Auditor, L.A. Simon, Auditor and T.J. Mitoraj, Observer.

GENERAL EVALUATION:

The following four (4) areas were reviewed at each of the seven (7) contractors involved in the reinspection Program.

1. Correction of discrepancies - All contractors with the exception of PTL and Hatfield Electric Co. were found to have identified and have or are correcting deficiencies in accordance with their approved nonconformance procedure. PTL and Hatfield have taken these actions on some deficiencies but have refrained on items in which an engineering evaluation is to be performed.
2. Expansion of an inspector's reinspection sample size and the number of inspectors to be reinspected upon a failure as defined by the Stiede-Keppler letter of February 1983 - All contractors were found to have expanded sample size accordingly with those results given in the Interim Report.
3. Independence of the Reinspection Personnel - The reinspection personnel at each contractor were verified to have not been involved in the reinspection of work that they had originally inspected or had reviewed and accepted.
4. Accuracy of results reported in the Interim Report - The items reviewed during the audit at all contractors matched up with the exception of JCI and PTL. Differences identified at these contractors are discussed in Attachment "C" under Observation #1 and Finding #1 respectively.

Also reviewed during the course of the audit were the following areas which were directed towards the Project Construction Department in their implementation of this program.

The engineering evaluation of the Visual Weld Discrepancies performed by Sargent and Lundy was reviewed for adequate design basis. Calculations which support the evaluation were performed in accordance with appropriate "Structural Design Standards" and the approved Design Control Summary. The Design Control Summary outlines assumptions to be followed in performing the calculations. These assumptions appeared to be based on industry standards and practices. This approach was presented to the NRC on September 22, 1983.

Those individuals who performed the third party review of subjective deficiencies were properly qualified for the task. Additionally, adequate documentation of these inspections exists.

Lastly, those Interpretations offered by the Project Construction Department during the Reinspection Program have adequate basis and fall between the guidelines of the program.

Page 3
Audit No. 6-83-93
Byron Reinspection Program

ASSESSMENT:

On the basis of this audit, it appears that conclusions drawn from the Reinspection Program results will be valid and reliable.

N-4

(0437A)

ATTACHMENT "A"

BYRON REINSPECTION PROGRAM
AUDIT #6-83-93

ENTRANCE MEETING
11/14/83

<u>NAME</u>	<u>TITLE</u>	<u>ORGANIZATION</u>
J.S. Hale	Lead Auditor	CECo. QA
L.A. Simon	Auditor	CECo.
T.J. Mitoraj	Observer	CECo.
R.B. Klingler	PCD QC Supervisor	CECo.

EXIT MEETING
11/17/83

<u>NAME</u>	<u>TITLE</u>	<u>ORGANIZATION</u>
J.L. Woldridge	QA Supervisor	CECo.
E.L. Martin	QA Supervisor	CECo.
R.B. Klingler	PCD QC supervisor	CECo.
J.S. Hale	Lead Auditor	CECo.
L.A. Simon	Auditor	CECo.
W.E. Wolber	QA Inspector	CECo.
M.R. Tallent	Site Manager	PTL
D. Smith	Supervisor	PTL
S. Pearson	QA Level II	JCI
R.L. Byers	PCD Field Engineer	CECo.
R.H. Bay	QA/QC Manager	BBC
T.J. Mitoraj	Observer	CECo.

ATTACHMENT "B"

BYRON REINSPECTION PROGRAM
AUDIT #6-83-93

PERSONNEL CONTACTED DURING AUDIT

<u>Name</u>	<u>ORGANIZATION</u>
R.B. Klingler	CECo. PCD
R.J. Netzel	S&L
R. Marshalla	S&L
S. Bertheau	S&L
S. Pearson	JCI
D. Smith	PTL
M. Tallent	PTL
W. Wills	BBC
M. Provezano	S&L

ATTACHMENT "C"

BYRON REINSPECTION PROGRAM
AUDIT #6-83-93

OBSERVATION #1 - JOHNSON CONTROLS INC.

Although minor, discrepancies exist between the number of subjective rejections identified by third party inspector and those given in the Interim Report.

Discussions:

The Interim Report listed S. Pearson as having thirty-two (32) subjective rejects. A review of the documentation of third party reviews showed their concurrence on thirty-two (32) welds and twelve (12) items. At the time of the audit, it could not be determined if the items were applicable to subjective reject. Additionally, D. Lindblom was accredited with only twenty-one (21) subjective rejects; third party concurrence was received for twenty-three (23) welds.

Corrective Action:

JCI will review the results and make any needed correction to the numbers given by December 1, 1983.

Action To Prevent Recurrence:

N/A

FINDING #1 - Pittsburgh Testing Laboratory

Contrary to Stiede-Keppler letter dated February 23, 1983, during reiterations of the Reinspection Program, Pittsburgh Testing Laboratory overrode third party concurrence on some welding rejects.

Discussion:

After implementation of Interpretation 11 given in the Reinspection Program which changed the visual weld inspection criteria in the areas of overlap and undercut, a review was performed by PTL on reinspections performed for applicability of the interpretation. In this review, PTL changed the deficient status of some welds which were rejected for reasons other than those changed by the interpretation. The welds had already received third party concurrence for true rejectability as defined in the Stiede-Keppler letter of February, 1983.

Request response providing Corrective Action and Action to Prevent Recurrence.

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

QG: 53.4

Report No. 5696

AUDIT No. 6-83-93

Date 1-17-84

Contractor/Organization: Pittsburgh Testing Laboratories

FINDING #1:

Contrary to the Stiede-Kepple letter dated February 23, 1983, during reiterations of the Reinspection Program, Pittsburgh Testing Laboratory overrode third party concurrence on some welding rejects.

DISCUSSION:

After implementation of Interpretation 11 given in the Reinspection Program which changed the visual weld inspection criteria in the areas of overlap and undercut, a review was performed by PTL on reinspections performed for applicability of the interpretation. In this review, PTL changed the deficient status of some welds which were rejected for reasons other than those changed by the interpretation. The welds had already received third party concurrence for true rejectability as defined in the Stiede-Keppler letter of February, 1983.

RESPONSE:

CORRECTIVE ACTION:

Pittsburgh Testing Laboratory will resubmit for concurrence by the independent third party inspector those PTL overcalls which changed the deficient status of welds rejected for reasons other than those addressed by Interpretation 11.

ACTION TO PREVENT RECURRENCE:

Contractors involved in using interpretations and independent third party inspections were directed on December 12, 1983 to carefully watch the possibility of contractor second reinspection due to an interpretations without allowing the third party to concur or disagree.

FOLLOW-UP ACTION:

1-17-84 - Corrective action is not yet completed; per E. L. Martin, due to activity surrounding license denial, completion date was extended to January 22, 1984.

Attachment O

(1664S)

Surveillance Report No. 5696
Page 2
Pittsburgh Testing Laboratory

DATE OF NEXT FOLLOW UP : 1-30-84

Prepared by *[Signature]* Date 1-27-84

Approved by *[Signature]* Date 1-26-84

LAS:jc:1664G

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
LAS

FOLLOW-UP ACTION:

2-06-84, 2-07-84 and 2-13-84 - Compared information found in the third Party Inspector's log to that information given by PTL in their reinspection package. This was performed on J. Brown's reinspection package.

This revealed that several reports were missing from the reinspection package: 2457, 2494, 2517, 2521, 2491, 2506, 2489, 2378, 2387, 2521, and 2496. These reports are being located and included in the reinspection package. Additionally, a review will be performed to locate any additional reports for Brown's package and those that might be missing from other packages and to verify the packages are then complete.

Additionally, concerns were raised regarding the second reinspection by the third Party Inspectors. Documentation for eight (8) reinspection reports of Brown was not available at PTL to indicate that the third Party Inspector concurred with all resubmitted reinspection reports.

2-14-84 - A review of the aforementioned eight (8) reinspection reports of Mr. Brown verified that the third Party Inspector had reinspected the following seven (7) reinspection reports: (2493, 2470, 2490 (2), 2468, 2384, 2397 and 2432). Report 2495 could not be reinspected due to a beam removal.

2-22-84 - A review of Mr. Brown's reinspection package verified that all of the previously missing VWI reinspection reports were now in his package. Additionally, a comparison was conducted of forty (40) VWI reinspection reports listed in the third Party Inspector's log with those maintained in the respective reinspector's package. All items were found in the packages. All corrective actions appear to be properly implemented.

Finding #1 of Audit No. 6-83-93 and this surveillance are closed.

F/U Action Verified E. Martin Date 2-23-84

F/U Action Approved R. J. Downing Date 2/23/84

Q.A. Supervisor

LAS:jc:1664S

cc: W.J. Shevski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
LAS

11/2/83
~~GS~~
~~3/1/84~~
(E)

Letter No. BY 10312

Date December 30, 1983

TO: R. B. Klingler, PCD QC Supervisor

SUBJECT: Response to CECO. Audit #6-83-93

The Commonwealth Edison Company Quality Assurance Department has received your response dated 12-22-83 to the subject audit and find it acceptable. This acceptance is conditional based upon satisfactory demonstration of corrective action and preventative measures concerning the deficient items. A follow-up surveillance will be performed by site QA personnel to close all open deficiencies.

J. L. Haning

Lead Auditor

K. J. Hansing

K. J. Hansing
QA Superintendent

(1400L)
cc: W.J. ~~Shaw~~ / G.F. Marcus (w/copy of response)
V.I. Schlosser (w/copy of response)
G. Sorensen (w/copy of response)
Site File
Site Audit Designee
L.A. Simon



Commonwealth Edison
 Byron Generating Station
 P.O. Box 8
 Byron, Illinois 61010

December 22, 1983

TO: Mr. J. J. ...
 FROM: Mr. J. J. ...

RE: ...

...

B. Kelly 12-22-83
 J. J. ...
 Byron Station

Attachment

...

cc: B. Kelly
 J. J. ...

FINDING #1 - Interpretation Laboratory

Contrary to the Gruber letter dated January 20, 1964, which recommended that the interpretation laboratory be established as an independent third party organization on some suitable object.

Discussion:

After implementation of interpretation II given in the Main Inspection Program which changed the visual weld inspection criteria in the areas of overlap and undercut, a review was performed by VII on reinspection test forms for applicability of the interpretation. In this review, VII changed the defect status of some welds which were rejected for reasons other than those stated by the interpretation. The welds had already received third party inspection for this reasonability as defined in the Gruber letter of January, 1964.

Reference:

Corrective Action.

Interpretation Laboratory VII, pending for concurrence by the independent third party organization, shall be established as an independent third party organization on some suitable object.

Action taken to prevent recurrence.

Contrary to the Gruber letter dated January 20, 1964, which recommended that the interpretation laboratory be established as an independent third party organization on some suitable object, the interpretation laboratory shall be established as an independent third party organization on some suitable object.

Date When This Corrective Action Will be Completed:

January 15, 1964

QUALITY ASSURANCE MANUAL

AUDIT REPORT
#6-83-124

9/24/83
GF
(F)

Type Audit: Program Audit Product Inspection Point
 Records Special

To: Mr. J. T. Hill

Project Byron Visit Date 9/24-29/83 Report Date 9/15/83

System Various Component Identification N/A

Material Description N/A

Vendor Hatfield Electric Co. Location Byron

Subcontractor N/A Location N/A

Contacts See Report

P.O. No. _____ Spec. No. F-2700

Recommended Inspections: 6 mos 3 mos 1 mo
Other: As Scheduled

Notes: Corrective actions have been agreed upon during the exit meeting. However, please respond by October 4, 1983 to indicate the date corrective actions will be complete for the Findings.

Lead Auditor *P.T. Myrda* Date 9/19/83
P. T. Myrda
Reviewed *M.A. Stanish* Date 9/19/83
M. A. Stanish

- PTM: jc:0298A
- Attachment
- cc: ~~Manager QA~~ 9-22-83
- Manager Projects
- Project Manager
- Eng. Manager
- Director QA Construction
- Site Construction Superintendent
- Site QA
- Auditee
- Site QA Supervisor

P.T. Myrda
G.F. Marcus (Byron Site)

AUDIT REPORT
HATFIELD ELECTRIC COMPANY
AUDIT NO. 6-83-124

Purpose:

To verify proper implementation of Hatfield Electric Company Quality Assurance Program as applicable to the QC inspector reinspection program committed to in NRC Report I&E Inspection Report Numbers 50-454/82-05 and 50-455/82-04.

Scope:

The audit included the following:

Inspection
Inspection, Test and Operating Status
Quality Assurance Records

Reference Documents:

10CFR50 Appendix B, Criteria X, XIV, XVII
Hatfield Procedures: 9A

Entrance Meeting:

August 24, 1983

P. T. Myrda	QA Supervisor	C.E.Co.
M. V. Dellabetta	QA Engineer	C.E.Co.
T. Maas	QC Supervisor	HECo.
J.D. Spangler	Lead Welding Inspector	HECo.

Exit Meeting:

September 1, 1983

J. S. Bitel	Director, QA Const/Eng.	C.E.Co.
M. A. Stanish	QA Superintendent	C.E.Co.
P. T. Myrda	QA Supervisor	C.E.Co.
R. G. Gruber	QA Engineer	C.E.Co.
R. Tuetken	Assistant Project Superintendent	C.E.Co.
J. O Einder	Project Electrical Supervisor	C.E.Co.
R. B. Klingler	PCD QC Supervisor	C.E.Co.
J. T. Hill	QA/QC Manager	HECo.
J. D. Spangler	Lead Welding Inspector	HECo.

Personnel Contacted:

HECo.

T. Hill	T. Wells
T. Maas	S. Hubler
A. Koca	D. McCarty
J. D. Spangler	

An entrance meeting was held on August 24, 1983 at the Hatfield Electric Company, Byron office during which the audit areas were discussed. During the audit a total of three discrepancies were identified. The discrepant items will be explained in Attachment "A".

Another aspect associated with the concerns related to the reinspection program is the identification of deficient conditions. The issuance and processing of NCR's and DR's will be covered under a separate surveillance.

ADEQUACY OF REINSPECTION

This audit examined Hatfield Electric Co.'s implementation of Commonwealth Edison's reinspection commitment made to the NRC. The audit specifically examined the welding area and Hatfield's methodology of reinspection in this area. The reinspection program's main thrust is to demonstrate the adequacy of quality control inspectors. Based on this, it is essential to ensure the work reinspected is actually the inspector's work and not that of someone else. During the audit, problems were identified with the method used to document cable pan hanger weld inspections (ref. Attachment "A"). As a result of these documentation problems, ~~adequate traceability back to the inspector's work was not always achieved.~~ In cases where it was indeterminate as to which welds were inspected by the inspector, the contractor identified these welds as unretrievable and removed them from the reinspection population in accordance with the guidelines of the reinspection program. In all cases reviewed during the audit, the decisions made by the contractor during the reinspection program to remove questionable data adds to the credibility of the database thereby ensuring accurate results. The ultimate sample size used for each inspector was found to be adequate and sufficient to determine the acceptability of his work.

AUDIT DEFICIENCIES

During the field verification part of the audit, it became apparent that Hatfield Electric Company's weld traveler cards, in certain cases, lacked adequate information to determine which hanger welds or hangers corresponded to each weld traveler. In certain cases, it is the lack of a definite one-to-one correspondence between the weld traveler and the component that creates a problem in determining the status of the cable pan hanger inspection. (Ref: Attachment "A", Finding #1).

This audit also included field verification of combination cable pan/HVAC hanger inspection completeness. Upon reviewing the records for combination hangers, it was determined that not all welds on these hangers have been inspected. For some hangers that were inspected, the QC inspector was not identified on the weld inspection record. (Ref: Attachment "A", Finding #2)

Also, during the field verification part of the audit, forms 9A-1 (Configuration/Dimensional Inspections) were reviewed to help establish correlation between hanger welds and weld travelers. During this review a hanger was found to be installed, inspected and accepted to a configuration other than shown on the approved drawing. (Ref: Attachment "A" Observation #1)

ANALYSIS OF INSPECTION RECORDS

Hatfield Electric Company is currently implementing a computerized database management system in an effort to reconcile weld travelers to cable pan hangers. This database is being created in parallel with the reinspection program. When the information from the computerized database is finalized and ready for use, the weld travelers used in the reinspection program will be compared to the database. This should insure that the initial hanger inspections assigned to each inspector, were correctly included in the reinspection program results.

The manner in which weld inspection records were generated and maintained at Hatfield makes it difficult to readily identify the specific work which was done by welders and inspectors in past years. As a result, personnel not familiar with all aspects of the record keeping process may misunderstand the manner in which the weld traveler records were selected during the reinspection program. It is expected that these concerns will be resolved when the computerized database is completed and the identification of past work performed by welders and inspectors is readily obtainable and easily understood.

The HDRF Form (Hanger Danang/Rehang) which covers rework on hangers, has been used for rework performed since November 1981. Prior to November 1981, Hatfield procedures did not require the HDRF Form to be used and therefore, it was not used in all hanger rework situations. When the computerized database is completed, it will provide additional means to retrieve inspection information and the HDRF Forms will no longer be the only means of tracking hanger rework.

EVALUATION

The Hatfield Quality Assurance organization agreed with the problems identified during the audit and showed initiative in identifying the weld traveler problems by writing NCR 701 on August 23, 1983. The HECO, QA/QC inspectors demonstrated an excellent working knowledge of their respective areas and presented an eagerness to do an effective quality job. Overall, the HECO, QA/QC Department, as applicable to this audit, appears to be effective in the performance of their responsibilities.

Hatfield Electric Company Quality Assurance Department is adequately implementing their portion of the reinspection program as committed to in NRC Report I&E Inspection Report Number 50-454/82-05 and 50-455/82-04. The deficient items identified in this report did not impact the purpose of the reinspection program but were significant deficiencies that require prompt attention.

ATTACHMENT "A"

Finding #1:

10CFR50 Appendix B, Criterion XIV, states in part, "Measures shall be established to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the nuclear plant... These measures shall provide for the identification of items which have satisfactorily passed required inspections and test..."

10CFR50 Appendix B, Criterion XVII, states in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

Contrary to the above, Hatfield weld traveler cards inadequately identify the acceptability of the cable pan hangers.

Discussion:

The weld traveler cards used by Hatfield for weld inspection, in many cases, do not adequately identify the item inspected. The problem stems from the variety of ways the weld traveler cards is filled out by field personnel. Essentially, general field coordinates are used to locate the hanger (i.e. 15-N) instead of the exact coordinates. Also, there is no method of assuring all welds are inspected, especially if rework is performed on a given hanger. Additionally, the weld traveler may document one or two connections or the whole hanger. The only way to determine the exact status to which a given hanger is inspected is by field verifying the weld traveler card, the hanger in the field, and the welder identification stamped on the hanger. After this field analysis, the inspection status for a given hanger can be determined. In some cases, even field verification fails to adequately assure the completeness of inspection and a reinspection is necessary.

Corrective Action:

A correlation of weld traveler inspection data to design drawing cable pan hanger data will be established using computer database management techniques to demonstrate accountability of inspection. This demonstration of accountability of inspection identifies the welder(s) and inspector(s) who worked on the component.

For those components which no correlation exists between component and inspection data, an inspection will be initiated.

The acceptability of existing inspection records will be demonstrated by the adequacy of the inspection data created by those components for which no correlation existed. If this data is insufficient in size or inconclusive, additional components will be added to the sample.

Finding #2:

10CFR50 Appendix B, Criterion X, states in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

Contrary to the above, no weld travelers were written to document the work performed by Reliable Sheet Metal welders on combination hangers.

Discussion:

Not all combination hangers have weld traveler cards for welding performed by Reliable Sheet Metal. For some hangers that do have weld travelers the weld connection is indeterminate due to the lack of information on the traveler. Also, some weld travelers do not identify the QC inspector performing the inspection.

Corrective Action:

A review of all combination hangers for adequate weld inspection will be performed. For those hangers whose status is indeterminate a reinspection of the welds will be performed.

Commitment Date: To be established after scope of work is defined.

Observation #1:

Contrary to Hatfield Electric Company, Procedure 9A Revision 11, Class I Cable Pan Hanger Installation, quality control had inspected and accepted a hanger to the wrong dimensions.

Discussion:

Hanger 15H2 on Drawing 6E-0-3033 Rev. H was inspected and accepted (HECo. Report 835) to the dimensions for hanger type 635H whose dimensions are different from those of a 15H2.

Corrective Action:

Hanger 15H2 on Drawing 6E-0-3033 Rev. H is going to be reinspected and an addition sample of ten (10) hangers whose hanger type has changed will be reinspected to determine the extent of this problem.

Commitment Date: October 3, 1983

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

AS H/12/84
F
QF: 2790.22.1

Report No. 5275

AUDIT No. 6-83-124

Date 10/21/83

Contractor/Organization: Hatfield Electric Co.

FINDING #1:

10CFR50 Appendix B, Criterion XIV, states in part, "Measures shall be established to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the nuclear plant... These measures shall provide for the identification of items which have satisfactorily passed required inspections and test...."

10CFR50 Appendix B, Criterion XVII, states in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

Contrary to the above, Hatfield weld traveler cards inadequately identify the acceptability of the cable pan hangers.

Discussion:

The weld traveler cards used by Hatfield for weld inspection, in many cases, do not adequately identify the item inspected. The problem stems from the variety of ways the weld traveler cards is filled out by field personnel. Essentially, general field coordinates are used to locate the hanger (i.e. 15-N) instead of the exact coordinates. Also, there is no method of assuring all welds are inspected, especially if rework is performed on a given hanger. Additionally, the weld traveler may document one or two connections or the whole hanger. The only way to determine the exact status to which a given hanger is inspected is by field verifying the weld traveler card, the hanger in the field, and the welder identification stamped on the hanger. After this field analysis, the inspection status for a given hanger can be determined. In some cases, even field verification fails to adequately assure the completeness of inspection and a reinspection is necessary.

Corrective Action:

A correlation of weld traveler inspection data to design drawing cable pan hanger data will be established using computer database management techniques to demonstrate accountability of inspection. This demonstration of accountability of inspection identifies the welder(s) and inspector(s) who worked on the component.

For those components which no correlation exists between component and inspection data, an inspection will be initiated.

The acceptability of existing inspection records will be demonstrated by the adequacy of the inspection data created by those components for which no correlation existed. If this data is insufficient in size or inconclusive, additional components will be added to the sample.

ACTION TO PREVENT RECURRENCE:

New cross reference will eliminate this type of problem.

FOLLOW-UP ACTION:

The component correlation has been completed and 599 components have been identified as requiring inspection. Preparations for reinspection are in process.

DATE OF NEXT FOLLOW UP : 11/2/83

Prepared by *P. T. Magala* Date 10/25/83

Approved by *R. J. Hansing* Date 10/25/83

PTM:tj:1275S

cc: W.J. Shewski/J.S. Bitel
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

11/16/83 - To date, two hundred forty (240) support hangers have been inspected with two hundred ninety-two (292) hangers left to be inspected. One hundred eighty-three (183) hangers have been deleted from population because the original hanger has either been deleted or changed in type. For the two hundred forty (240) supports inspected six hundred seventy-one (671) out of three thousand five hundred two (3502) welds, which is approximately 19% have been rejected on initial inspection. These totals include combination hangers.

DATE OF NEXT FOLLOW-UP: 11-30-83

F/U Action Verified Paul T. Magala Date 11/16/83
F/U Action Approved R. J. Danning Date 11/21/83
Q.A. Supervisor

PTM:tj:1275S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

12/2/83 - To date, 373 hangers have been inspected out of 677 hangers. The total welds inspected are 4016. Of these, 789 are rejected which is 20.7% reject rate. The totals presented do not include combination hangers.

DATE OF NEXT FOLLOW-UP: 12-16-83

F/U Action Verified Paul T. Mignola Date 12/2/83
F/U Action Approved A. J. Lawrence Date 12/6/83
Q.A. Supervisor

PTM:tj:1275S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

12/16/83 - To date, 379 weld traveler supplements have been inspected out of 527 weld traveler supplements with 150 supplements deleted. Most of these deletions are due to hanger removals. The total welds inspected are 5338. Of these, 1036 are rejected which is 19.4% reject rate. The totals presented do not include combination hangers.

FOLLOW-UP ACTION DATE: 12-30-83

F/U Action Verified [Signature] Date 12-20-83

F/U Action Approved [Signature] Date 12/21/83
Q.A. Supervisor

PTM:tj:jc:1275S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

12-30-83 - 150 weld traveler supplements are remaining to be completed. To date a total of 5358 welds have been inspected. Of this total, 997 welds were rejected by HECo. resulting in an 18.6% reject rate. Of the 997 welds rejected by HECo., 721 welds were determined to be rejected by S&L third party review which is a 13.4% reject rate. Note: these numbers reflect a decrease in total rejects. A recount to verify status numbers is currently in progress.

FOLLOW-UP ACTION DATE: 1-13-84

F/U Action Verified [Signature] Date 1/10/84
F/U Action Approved [Signature] Date 1/17/84
Q.A. Supervisor

PTM:tj:jc:12755

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

1-13-84 - To date, 416 weld traveler supplements out of a total of 512 have been completed. A total of 5566 welds have been inspected with 770 welds rejected by S&L. This represents a 13.8% reject rate. This work item is 82% complete with an expected completion date of 2-4-84.

FOLLOW-UP ACTION DATE: 2-7-84

F/U Action Verified [Signature] Date 1/16/84

F/U Action Approved [Signature] Date 1/17/84

Q.A. Supervisor

PTM:tj:jc:1275S

cc: W.J. Shewski/G.F. Marcus

Q.A. Supt./File

Contractor

Q.A. Audit Staff Desg.

PCD Supt.

Project Manager

PTM

FOLLOW-UP ACTION:

2/6/84 - No change in work progress due to change in priorities.
Reinspection efforts were concentrated on the NRC Reinspection I&E Report No.
50-454/82-05 and 50-455/82-04. The reinspection has restarted today 2/6/84.

NEXT FOLLOW-UP DATE: 3-2-84

F/U Action Verified [Signature] Date 2-7-84

F/U Action Approved [Signature] Date 2/5/84
Q.A. Supervisor

PTM:tj:jc:1275S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

3-09-84 - Currently, two (2) welds remain to be inspected. Additionally, a final review and reconciliation of all previously reinspected weld travellers will be completed by 3/30/84.

NEXT FOLLOW-UP DATE: 3-30-84

F/U Action Verified E. Mat Date 3-12-84
F/U Action Approved [Signature] Date 3-12-84
Q.A. Supervisor

PTM:tj:jc:1275S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desq.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

4-06-84 - Hatfield Electric Company, on March 31, 1984, completed the cable pan hanger weld inspections for which no inspection record existed. These inspections were done for those components for which no correlation of weld traveler inspection data to design drawing cable pan hanger data existed.

Inspection records for cable pan hanger welds are up to date and satisfactorily reflects the current status of work. The deficiencies identified during these inspections are in process of being corrected using the contractors normal rework practices. This rework amounts to approximately 13% of the total welds inspected and in the auditors judgement is indicative of first time inspection.

Therefore, with the cable pan hanger weld inspections current and inspection reports existing in the contractor's records system, the corrective action required for this audit item is considered complete.

This audit item is considered acceptable and closed.

This surveillance is closed.

F/U Action Verified [Signature] Date 4-11-84
F/U Action Approved [Signature] Date 4-11-84
Q.A. Supervisor

PTM:tj:jc:1275S

cc: W.J. Shewski / G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

4113 401
95
(F)
QF: 2790.22.1

Report No. 5274

AUDIT No. 6-83-124

Date 10/21/83

Contractor/Organization: Hatfield Electric Co.

FINDING #2:

10CFR50-B, Criterion X, states in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

Contrary to the above, no weld travellers were written to document the work performed by Reliable Sheet Metal welders on combination hangers.

DISCUSSION:

Not all combination hangers have weld traveller cards for welding performed by Reliable Sheet Metal. For some hangers that do have weld travellers the weld connection is indeterminate due to the lack of information on the traveller. Also, some weld travellers do not identify the QC inspector performing the inspection.

CORRECTIVE ACTION:

A review of all combination hangers for adequate weld inspection will be performed. For those hangers whose status is indeterminate a reinspection of the welds will be performed.

FOLLOW-UP ACTION:

All combination hangers have been identified and seventy-one (71) require inspections. These hangers are being processed for inspection in conjunction with the hangers identified in Finding #1.

DATE OF NEXT FOLLOW UP : 11/02/83

Prepared by PTM Date 10/25/83

Approved by R. J. Hansing Date 10/25/83

PTM:tj:1274S

cc: W.J. Shewski/J.S. Bitel

Q.A. Supt./File

Contractor

Q.A. Audit Staff Desg.

PCD Supt.

Project Manager

PTM

JM
4/16/84

Attachment R

FOLLOW-UP ACTION:

11-02-83 - Field verification of combination hangers reduced total to 60 hangers. Two combination hangers currently in process of inspection.

FOLLOW-UP ACTION DATE: 11-16-83

F/U Action Verified *[Signature]* Date 11/2/83
F/U Action Approved *[Signature]* Date 11/4/83
Q.A. Supervisor

PTM:tj:jc:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

Page 3
Surveillance Report 5274
HECo.

FOLLOW-UP ACTION:

11/16/83 - To date a total of ten (10) combination hangers have been inspected. See Surveillance Report No. 5275 for inspection results.

DATE OF NEXT FOLLOW-UP: 11-30-83

F/U Action Verified Paul M. Gub Date 11/16/83
F/U Action Approved R. N. Lansing Date 11/21/83
Q.A. Supervisor

PTM:tj:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

Page 4
Surveillance Report 5274
HECO.

FOLLOW-UP ACTION:

12/2/83 - To date, ten (10) hangers have been inspected out of sixty-five (65) hangers. The total welds inspected are 382. Of these, 124 are rejected which is 32% reject rate. These totals are for combination hangers only.

DATE OF NEXT FOLLOW-UP: 12-16-83

F/U Action Verified [Signature] Date 12/2/83

F/U Action Approved [Signature] Date 12/6/83
Q.A. Supervisor

PTM:tj:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

12/16/83 - To date, twenty (20) hangers have been inspected out of sixty-five (65) hangers. The total welds inspected are 842. Of these, 197 are rejected which is 23.4% reject rate. These totals are for combination hangers only.

FOLLOW-UP ACTION DATE: 12-30-83

F/U Action Verified [Signature] Date 12/24/83

F/U Action Approved [Signature] Date 12/24/83

Q.A. Supervisor

PTM:tj:jc:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

12-30-83 - To date, thirty-two (32) hangers have been inspected out of sixty-five (65) hangers. Individual weld inspection totals were not available at this time.

FOLLOW-UP ACTION DATE: 1-13-84

F/U Action Verified [Signature] Date 1/3/84

F/U Action Approved [Signature] Date 1/6/84
Q.A. Supervisor

PTM:tj:jc:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCO Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

On 1/13/84 - To date, thirty-seven (37) hangers have been inspected out of sixty-four (64) hangers, with one hanger deleted. A total of 1674 welds inspected with 384 of these welds rejected by S&L. This represents a 22.9% reject rate. This work item is 58% complete with an expected completion date of 2/4/84.

DATE OF NEXT FOLLOW-UP: 2-3-84

F/U Action Verified [Signature] Date 1/16/84

F/U Action Approved [Signature] Date 1/17/84
Q.A. Supervisor

PTM:tj:jc:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

2/6/84 - No change in work progress due to change in priorities.
Reinspection efforts were concentrated on the NRC Reinspection I&E Reports No.
50-454/82-05 and 50-455/82-04. The reinspection has restarted today 2/6/84.

NEXT FOLLOW-UP DATE: 3-2-84

F/U Action Verified [Signature] Date 2-7-84

F/U Action Approved [Signature] Date 2/6/84
Q.A. Supervisor

PTM:tj:jc:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

3-09-84 - Currently, five (5) combination weld hangers remain to be inspected. Additionally, a final review and reconciliation of all previously reinspected weld travellers will be completed by 3-30-84.

NEXT FOLLOW-UP DATE: 3 - 30 - 84

F/U Action Verified Emat Date 3 - 12 - 84
F/U Action Approved [Signature] Date 3 - 17 - 84
Q.A. Supervisor

PTM:tj:jc:1274S

cc: W.J. Shewski/G.F. Marcus
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desq.
PCD Supt.
Project Manager
PTM

FOLLOW-UP ACTION:

4-06-84 - Hatfield Electric Company, on March 31, 1984, completed the combination hanger weld inspections for which no inspection record existed. These inspections were done for those combination hangers for which no correlation of weld traveler inspection data to design drawing combination hanger data existed.

Inspection records for combination hanger welds are up to date and satisfactorily reflects the current status of work. The deficiencies identified during these inspections are in process of being corrected using the contractors normal rework practices. This inspection effort encompassed a 100% review of all combination hangers. This rework amounts to approximately 14% of the total welds inspected and in the auditors judgement is indicative of first time inspection.

Therefore, with the combination hanger weld inspections current and inspection reports existing in the contractor's records system, the corrective action required for this audit item is considered complete.

This audit item is considered acceptable and closed.

This surveillance is closed.

F/U Action Verified [Signature] Date 4/1/84
F/U Action Approved [Signature] Date 4-11-84
Q.A. Supervisor

PTM:jc:1274S

cc: W.J. Shewski/G.F. Matcova
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

[Handwritten initials]
4/16/84

OK
JW
4/16/84

BYRON SITE QA SURVEILLANCE

AUDIT CLOSE OUT

QF: 2790.22.1

Report No. 5276 R1

AUDIT No. 6-83-124

Date 02/21/84

Contractor/Organization: Hatfield Electric Co.

OBSERVATION #1:

Contrary to Hatfield Electric Co., Procedure 9A Revision 11, Class I Cable Pan Hanger Installation, quality control had inspected and accepted a hanger to the wrong dimensions.

DISCUSSION:

Hanger 15H2 on Drawing 6E-0-3033 Rev. H was inspected and accepted (HECo. Report 835) to the dimensions for hanger type 635H whose dimensions are different from those of a 15H2.

CORRECTIVE ACTION:

Hanger 15H2 on Drawing 6E-0-3033 Rev. H is going to be reinspected and an addition sample of ten (10) hangers whose hanger type has changed will be reinspected to determine the extent of this problem.

ACTION TO PREVENT RECURRENCE:

21) Not applicable; this was determined to be an isolated case.

FOLLOW-UP ACTION:

All ten (10) hangers reviewed were randomly selected and were checked dimensionally against current design documents. Attachment "A" lists hangers inspected. Hanger 15H2 on Drawing 6E-0-3033 Rev. H was reinspected and accepted to the correct drawing.

This item is considered closed.

Prepared by *[Signature]* Date 2/21/84

Approved by *[Signature]* Date 2/22/84

PTM:tj:jc:l271S
Attachment 2-29-84
cc: W.J. Shewski / J.S. Bitel
Q.A. Supt./File
Contractor
Q.A. Audit Staff Desg.
PCD Supt.
Project Manager
PTM

Attachment S

2/27/84
[Handwritten initials]
E

Suru # ~~5276~~ Attachment 'A'

6-83-124
1/2

Manager No	TYPE	Rev.	Drawing
70H2	15H	Rev. P	0-3023H03
	14H	Rev. R	0-3023H03
2H1	2H	Rev. J	0-3023H02
	3H	Rev. K	0-3023H02
13H30	13H	Rev. S	0-3023H03
	14H	Rev. T	0-3023H03
12H5	13H	Rev. L	0-3023H01
	12H	Rev. M	0-3023H01
15H5	15H	Rev. D	0-3032H01
	14H	Rev. K	0-3032H01
	15H	Rev. U	0-3032H01
12H7	12H	Rev. H	0-3033H03
	13H	Rev. J	0-3033H03
1HV3	1HV	Rev. P	0-3022H02
	402H	Rev. R	0-3022H02

14H1

14H
13H

Rev. L
Rev. M

0-3002 Hol
0-3002 Hol

14H2

14H
13H

Rev. L
Rev. M

0-3002 Hol
0-3002 Hol

4H3

14H
13H

Rev. L
Rev. M

0-3002 Hol
0-3002 Hol

5H2

635H
15H

Rev. J
Rev. R

0-3033 Hol
0-3033 Hol

1 MR. MILLER: Judge Smith, at this time -- as
2 we discussed before Mr. Cassel arrived -- Mr. Tuetken is
3 prepared, either on or off the record to describe
4 for the Board, with the aid of some of the models that he
5 brought with him, the various kinds of welds -- various kinds
6 of weld discrepancies -- and provide examples of Hatfield
7 weld, traveler and weld inspection forms and describe those
8 to the Board as well.

9 JUDGE SMITH: Will we -- will those be offered
10 as physical exhibits? I would like to see that come about.
11 I think it would be helpful.

12 MR. MILLER: We would be happy to do that, I
13 believe, although I haven't consulted with the witnesses on
14 this, because the Board admonished that they did not wish
15 to carry 20 pounds of iron back to Bethesda with them.

16 JUDGE SMITH: I saw a piece that would approach
17 that weight.

18 JUDGE COLE: Is that three copies?

19 (Laughter.)

20 JUDGE SMITH: Let's proceed and see what the needs
21 are.

22 BY MR. MILLER:

23 Q Mr. Tuetken, would you first describe what you
24 have before you, as best you can, so that the record will
25 reflect, as best you can, what you were referring to later

1 in your explanation?

2 A (Witness Tuetken) Okay. Before I state that,
3 there are figures that can be made available, but may
4 represent -- I will identify first that we have figures
5 that can be made available, likewise to the physical product.

6 They are represented in diagrammatic forms of
7 weld defects, et cetera, which likewise can be entered.

8 The first specimen I have here is basically a
9 fillet weld associated with two structural shapes. It is
10 the most common means of adjoining these two materials in
11 the plant or materials of their like, nature. This special
12 case here has represented in at most, if not all, defects
13 that are possibly found in a weld inspection and I will
14 pass it through.

15 (Item handed to the Board.)

16 JUDGE SMITH: Would it be acceptable if these
17 physical items are offered and received into evidence?
18 Would it be acceptable that they be shipped to my office
19 in Bethesda?

20 MR. MILLER: Sure.

21 JUDGE SMITH: With physical exhibits, there is
22 only one and it travels with the forum -- it's in custody
23 of the forum that has jurisdiction. Let's call this one
24 Physical Exhibit -- Applicant's Physical Exhibit A and
25 let us renumber our exhibits -- I think it would be better

1 to begin with one again. There have been no previous
2 physical exhibits but all of these physical exhibits will
3 be designated as remand exhibits, in any event. This
4 will be Applicant's Physical Exhibit A. Physical exhibits
5 will differ from written exhibits because they will be
6 letters and it is an example of a fillet weld on a portion
7 of a beam on portions of a plate, with legends identifying
8 various defects such as porosity, underruns, slagging, and
9 so forth.

10 (The item referred to was
11 marked as Applicant's Physical
12 Exhibit A for identification.)

13 JUDGE SMITH: What is there about this weld that
14 makes it a fillet weld?

15 WITNESS TUETKEN: The means of joining the two plate
16 sections. The plates intersect in a perpendicular manner
17 created in a cross-sectional manner a triangular weld. In
18 industry terms, commonly called a fillet weld.

19 JUDGE SMITH: It forms -- we have two plates
20 joined at right angles. And the fillet weld forms a triangle
21 at the point of joining.

22 WITNESS TUETKEN: That would be correct.

23 JUDGE COLE: Are all the irregularities represented
24 on that specimen sufficiently bad for weld rejection?

25 WITNESS TUETKEN: Each and every one, either

1 independently or collectively.

2 JUDGE COLE: Thank you.

3 BY MR. MILLER:

4 Q Just so the record is clear, Mr. Tuetken,
5 would you just describe how that shape -- how those two
6 shapes were welded together, and what instructions you gave
7 to the welder?

8 A (Witness Tuetken) I told the welder to make the
9 good, the bad, and the ugly. All I got was the bad and the
10 ugly.

11 Q So the defects that are shown on that specimen
12 were put there at your express request, right?

13 A That is correct.

14 Q Go on to the next shape that you have in your hand.

15 JUDGE CALLIHAN: Before you leave this, THR?
16 Insufficient THR?

17 WITNESS TUETKEN: Throat. The throat of the
18 triangle is insufficiently large enough.

19 The next example are the same shaped materials,
20 both being two plates again, this time welded on both sides.
21 Both welds are acceptable. One would be identified as --
22 it was welded in the process of vertical up. The other side
23 will represent itself as being welded in the overhead
24 position. These welds have no rejectable defects.

25 (Item handed to Board.)

1 JUDGE SMITH: I think you have described it very
2 well. This will be Applicant's Physical Exhibit B.

3 (The item referred to was
4 marked as Applicant's Physical
5 Exhibit B for identification.)

6 JUDGE SMITH: It is two plates joined at right
7 angles, designated on one side overhead, on the other side
8 vertical up. And they are joined by fillet welds.

9 WITNESS TUETKEN: The next specimen is a fillet
10 weld associated with the joining of a piece of pipe to another
11 piece of pipe by means of a coupling. The coupling
12 attachment to the pipe is again via a fillet weld. This
13 time, you will see it in a circumferential format.

14 BY MR. MILLER:

15 Q Mr. Tuetken, is that also called a socket weld?

16 A (Witness Tuetken) It's called a socket weld
17 in it's nomenclature of normal application. It, in essence,
18 is a fillet weld.

19 JUDGE COLE: This is an acceptable weld?

20 WITNESS TUETKEN: That weld has defects in it
21 that were identified as rejectable. It's undersized in one
22 area. The area of interest would be if you look at the
23 shoulder of the socket, you can see unfused or no metal
24 deposit to the shoulder. Likewise, you will see a ground
25 area polished, identified as slag inclusion.

41b7

1 JUDGE SMITH: Are all socket welds a sub-class
2 of fillet welds? Well, in any event, this one is.

3 WITNESS TUETKEN: All socket welds employ a
4 process wherein it creates a fillet weld application. I
5 assume I can characterize it as a sub-class of fillet welds.

6 JUDGE SMITH: That was Physical Exhibit C.

7 (The item referred to was
8 marked as Applicant's Physical
9 Exhibit C for identification.)

10 WITNESS TUETKEN: The next specimen are two
11 pieces of larger diameter pipe being adjoined by welding.
12 In this case, the joint configuration connection detail is
13 called a butt weld.

14 JUDGE SMITH: We're talking about Physical Exhibit
15 D.

16 (The item referred to was marked
17 as Applicant's Physical
18 Exhibit D for identification.)

19 (Item handed to Board.)

20 WITNESS TUETKEN: That specimen has no rejectable
21 indications.

22 end4
23
24
25

page 5-1

1 JUDGE CALLIHAN: In the smaller pipe,
2 Mr. Tuetken, is there not some spatter as well?

3 WITNESS TUETKEN: I don't recall.

4 JUDGE CALLIHAN: I gather a cosmetic thing.
5 One doesn't really penalize for it, true?

6 WITNESS TUETKEN: If it's on the weld, metal
7 deposit itself, the inspectors will reject it as a defect
8 deficiency.

9 JUDGE CALLIHAN: This seems to be on the pipe
10 itself.

11 WITNESS TUETKEN: If it appears to be injurious,
12 the inspector may reject it. Many times it's a judgmental
13 feature well he will accept it.

14 JUDGE CALLIHAN: Okay.

15 WITNESS TUETKEN: The next specimens I am
16 passing around are cold bends. In this application, the
17 pipe direction in lieu of using a fitting to change the
18 direction, the pipe is bent. One of the items I am
19 passing around has ovality which is acceptable. The
20 other one has ovality which is unacceptable, the ovality
21 creating a thinning on the outer radius of the bend.

22 JUDGE SMITH: Ovality?

23 WITNESS TUETKEN: Ovality.

24 MR. MILLER: Mr. Tuetken, why don't you step
25 up and indicate to the Board members what pipe you

mgc 5-2 1 are referring to.

2 (The witness complies.)

3 JUDGE SMITH: We had testimony that there should
4 be a ratio between the diameter of the bend -- we had
5 testimony that there should be an appropriate ratio between
6 the diameter of the bend of the pipe and the diameter of
7 the pipe itself.

8 Is that observable on this specimen?

9 WITNESS TUETKEN: It is. The specimen
10 marked 555 on one end. You can observe a significant
11 thinning on the outer radius as compared to the specimen
12 marked with a 3, which has no thinner.

13 JUDGE SMITH: Is that a consequence of an
14 improper ratio of diameter to diameter of bend or radius
15 of bend?

16 WITNESS TUETKEN: Yes.

17 JUDGE SMITH: This bend went around the corner
18 too fast for its diameter?

19 WITNESS TUETKEN: That's correct. It's a
20 multistep process where you use shoes and change positions
21 and, as a step function, change the radius. In this one
22 case, they overpulled the pipe as they were coming across
23 the shoe.

24 JUDGE SMITH: All right. These are Exhibits
25 E-1, which is labeled by a series of 5's.

mgc 5-3

1 (The item referred to was
2 marked Applicants Physical
3 Exhibit E-1 for identification.)

4 JUDGE SMITH: And E-2, which is labeled by
5 a series of 3's.

6 (The item referred to was
7 marked Applicants' Physical
8 Exhibit E-2 for identification.)

9 JUDGE SMITH: The 5's showing that the
10 circular nature of the radius has been changed to an oval.

11 MR. MILLER: Judge Smith, we will certainly
12 have these available in the hearing room throughout the
13 hearing. We will then undertake to ship them back to your
14 office.

15 At this time, I would like to move into evidence
16 Applicants' Physical Exhibits A through E, Exhibit E being
17 comprised of two example of tubing and designated by the
18 Chairman as E-1 and E-2.

19 JUDGE SMITH: Are there objections?

20 MR. CASSEL: No objection, if the Board is
21 willing to carry these back to Washington.

22 JUDGE SMITH: We will be receiving them into
23 evidence only constructively. They are received physically
24 when they are delivered to our office.
25

mcc 5-4

1 (The items previously marked
2 as Applicants' Physical
3 Exhibits A, B, C, D, E-1 and
4 E-2 for identification were
5 received in evidence
6 constructively.)

7 MR. MILLER: I would like, Judge Smith, to
8 suggest that the Applicant will take custody of these
9 physical exhibits and be responsible for moving them wherever
10 the hearings will be located.

11 JUDGE SMITH: That will be very helpful.

12 MR. CASSEL: No objection.

13 MR. LEWIS: No objection here.

14 JUDGE SMITH: We have received them into
15 evidence constructively only.

16 That's fine. Those are quite helpful,
17 Mr. Tuetken.

18 BY MR. MILLER:

19 Q Mr. Tuetken, do you have with you samples of
20 Hatfield weld travelers and weld inspection forms?

21 A (Witness Tuetken) I do.

22 MR. MILLER: Judge Smith, I wasn't certain
23 that we were going to mark these as exhibits, so they
24 are not marked, and perhaps we ought to take a second and
25 just do that before we begin passing them out for review.

mqc 5-5 1

2 Judge Smith, I'm sorry, did you say you wished
3 these to be numbered as Applicants' Remand Exhibits in
4 sequence?

5 JUDGE SMITH: Yes. I think they should be
6 referred to -- I don't know if it's necessary to number
7 them -- well, let's make it R, just use the symbol R for
8 remanded exhibits. So this would be Applicants' Remanded
9 Exhibit R-1.

10 (The document referred to
11 was marked Applicants' Exhibit
12 R-1 for identification.)

13 BY MR. MILLER:

14 Q Mr. Tuetken, do you have before you a single
15 sheet of paper, which bears at the top righthand corner
16 the words "Revision 13" and a date of December 29, 1983,
17 under that sample weld traveler?

18 A (Witness Tuetken) I do.

19 Q That document has been marked as Applicants'
20 Exhibit R-1. Would you describe to the Board and parties
21 what that document is, and then perhaps it would be helpful
22 if you would go through each place where there is an
23 entry made or to be made and describe the sequence in
24 which this document is filled out.

25 A Okay. This one piece of paper represents a
photocopy of the front side and back side of what is called

mgc 5-6

1 a weld traveler card. It is a prenumbered series of
2 documents. The one we have in front of us is a photocopy
3 of 61600. Going left to right, top to bottom, the first
4 item, the welder and the weld date, the identification of
5 the welder who performs the weld and the date of the
6 performance.

7 Examiner is the inspector who examines the
8 weld and likewise the date of examination.

9 The next --

10 JUDGE SMITH: Is that the inspector?

11 WITNESS TUETKEN: The inspector, yes.

12 The next area of the traveler card has five
13 vertical columns, reading left to right: Material,
14 identification, the drawing, the column lines, examination
15 and reexamination. And these areas of material, ID, drawing,
16 and column lines, they are to identify the component,
17 identification within the plant, that is being welded.

18 This form is created by the welder as he is
19 performing the process, identifying those components which
20 he welded. Examination, reexamination, identify columns
21 A, U, of which A is identifying "acceptable" as a checkmark
22 activity. U is "unacceptable."

23 Reexamination, if an item was originally
24 inspected and found unacceptable, it is reexamined and
25 either acceptable or unacceptable at that point in time.

mgc 5-7

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JUDGE CALLIHAN: Is that necessarily after
rework, Mr. Tuetken?

2

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WITNESS TUETKEN: Yes, it is. The back side
of the card, if there are no questions --

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JUDGE SMITH: I think it would also be helpful
if a copy of this exhibit would be bound in the
transcript right about now.

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(Applicants' Exhibit R-1 follows.)

end 5

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Sample Weld Traveler

File ID: 13AA-03		WELD TRAVELLER CARD			61600		
WELDER _____		DATE _____					
EXAMINER _____		DATE _____					
Material ID	Drawing	Column Lines	Examination			Re-Exam	
			A	U	Init	A	U

DETAIL	REV	DETAIL	REV		
Criteria D1.1 <input type="checkbox"/> or (D1.3) <input type="checkbox"/>					
PARA	WELD	INSP		REINSP	
		A	U	A	U
5.3.2 (5.3.15)	TYPE & PROFILE SIZE LENGTH				
5.3.4 (5.3.17)	SURFACE CRACKS				
5.3.5 (5.3.18)	FUSION COMPLETE				
5.3.6	CRATERS FILLED				
5.3.8	PIPING POROSITY				
5.3.10 (5.3.14)	UNDERCUT				
5.3.11	SLAG INO				
Welder I.D. Verification: <input type="checkbox"/>					
Inspection I.D. Verification: <input type="checkbox"/>					
INSPECTOR _____		DATE _____			
LEVEL II REVIEW _____		DATE _____			

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appl. R-1

61b1

1 MR. LEWIS: Mr. Tuetken, what is that column
2 "init?" Is that the initials or something? Third column,
3 under examination.

4 WITNESS TUETKEN: I don't know. I have a blank right
5 now. Can I address that question at a later point in time?

6 MR. LEWIS: Please.

7 WITNESS TUETKEN: On the reverse side of the
8 card, the detail of the item being welded and its revision
9 level is identified in the upper column. The next
10 seven -- eight vertical columns identify the weld type and
11 cause for rejection or acceptance.

12 In other words, under weld type and profile, the
13 inspector will determine whether or not the fillet weld --
14 if it were specified on the drawing -- was present as a
15 fillet weld versus a groove weld.

16 Size and length are relatively straightforward.
17 The weld at the size has to meet the specified requirements
18 and the length. Surface cracks are cause for rejection.
19 Fusion, craters, porosity, undercut and slagging.

20 The inspector, in the lower sections of the column,
21 identifies the verification that the welder is qualified to
22 the process and type to which he welded. And then the
23 inspector again signs the back side of the form.

24 JUDGE CALLIHAN: Does the numeric refer to
25 paragraphs of AWS codes?

61b2

1 WITNESS TUETKEN: There's directly a paragraph under
2 contract procedures and in some cases there is, by coincidence,
3 the paragraphs of the AWS codes. They're extracts into his
4 procedures.

5 MR. LEWIS: On the parathetical numbers?

6 WITNESS TUETKEN: Referencing above Criteria D.1.1
7 with a check in the box for (D1.3) being the fourth --
8 approximately fourth line down from the time. The
9 parenthesis apply, in the paragraph forms, to the D1.3
10 criteria. Those without parenthesis are the D1.1 criteria.

11 MR. LEWIS: Mr. Tuetken, may I -- may I ask
12 some questions regarding this exhibit, Your Honor?

13 JUDGE SMITH: Yes, if there are no objections.

14 MR. MILLER: I don't have any objection. I
15 thought we would get this exhibit introduced and then we
16 could go back to the other preliminary matters. That might
17 be appropriate.

18 JUDGE SMITH: I would like to, before we get too
19 far down in the hearing, I would like to go back up to the
20 beginning. Don't forget, we still have preliminary matters.

21 MR. LEWIS: The questions I would have would
22 relate to understanding what the exhibit is and what it
23 covers.

24 JUDGE SMITH: Okay.

25 MR. LEWIS: I take it from the date of this exhibit,

61b3

1 that this is a weld traveler as it appeared in the reinspec-
2 tion program. Is that correct?

3 WITNESS TUETKEN: Not necessarily. The traveler
4 has evolved, with information, over time. It's a
5 representative style of the traveler. The lower portion on
6 this page has evolved over time, providing more specific
7 guidance as to cause for rejection to be recorded.

8 MR. LEWIS: Would a weld traveler card that was
9 not used as part of the reinspection program also have a
10 column for re-examination?

11 WITNESS TUETKEN: That is correct.

12 MR. LEWIS: Prior to the date that this revision
13 represents, which is 1983 -- late 1983, was the form that
14 had been used for weld traveler -- "weld traveler" similar?
15 In what way was it different prior to 12/29/83?

16 WITNESS TUETKEN: That top portion represents the
17 style that has existed since day one. Additional information
18 on the lower portion, which is the back side of the card
19 today, came into evolution in about early 1983.

20 MR. LEWIS: Is the list under weld, on the back
21 side, the entirety of the reasons why the weld can be
22 rejected?

23 WITNESS TUETKEN: The weld can be rejected for
24 causes other than these items, but they would be rejected
25 within these columns. In other words, an inspector may reject

1 an item on type of profile for cause other than specifically
2 type of profile with notation.

3 MR. LEWIS: Thank you.

4 MR. MILLER: Judge Smith, at this time if there
5 are no further questions on the exhibit, I'd like to move
6 it into evidence, Applicant's Exhibit R-1.

7 JUDGE SMITH: Are there objections?

8 MR. CASSEL: No objections.

9 JUDGE SMITH: You did clarify that this was a
10 Hatfield form?

11 WITNESS TUETKEN: It is a Hatfield form.

12 JUDGE CALLIHAN: Is this representative, however --

13 WITNESS TUETKEN: Of all contractors?

14 JUDGE CALLIHAN: Other contractors in question.

15 WITNESS TUETKEN: Hunter Corporation has a much
16 more voluminous detailed information format. You can draw
17 only similarity by the fact that it's a weld. The format
18 is totally different.

19 MR. MILLER: Does the Board wish to have a
20 sample of the Hunter weld traveler?

21 JUDGE SMITH: No thank you. Applicant's Exhibit
22 R-1 is received into evidence.

23 (The item previously identified
24 as Applicant's Exhibit R-1 was
25 received into evidence.)

1 MR. CASSEL: I see Mr. Miller looking at me,
2 Judge. Perhaps I will suggest a couple of preliminary matters
3 that we might address at this time.

4 JUDGE SMITH: Yes, I think this would be a good
5 time, before we go too far. In fact, it probably would have
6 been better, but at least now is a good time. So we will
7 take a break from this testimony and we will hear your
8 preliminary arguments.

9 MR. CASSEL: Thank you, Judge. A couple of
10 preliminary matters, first. We have additional attorneys
11 who are handling the Sargent & Lundy witnesses in particular.
12 Can I inquire whether the expectation, at this point, is that
13 the Sargent & Lundy witnesses will not be appearing, testifying
14 before Wednesday morning, or is there some possibility that
15 they might be going as early as tomorrow?

16 JUDGE SMITH: Much of that will be under your
17 control.

18 MR. MILLER: Just what I was going to say.
19 Sargent & Lundy witnesses are present and we are prepared to
20 present our witnesses in sequence I indicated.

21 MR. CASSEL: That answers my question, Judge. I
22 will tell them to have their track shoes on.

23 The second preliminary matter, and here I will
24 really have to ask for the indulgence and assistance of the
25 bench on a matter of procedure which I am not familiar with

1 NRC cases. Forgive me if I'm intruding unduly here.

2 In federal trials, with which I am familiar, it's
3 quite common to make what are known as witness exclusion
4 motions, when a witness who was to testify on a subsequent
5 date is present and observing the testimony being given
6 on a particular date, it is quite routine for motions to be
7 made and granted that the future witnesses are not to be
8 present during the first day's or the second day's testimony
9 on the feeling that it might influence or inform their
10 subsequent testimony.

11 I've noticed that there are some future witnesses
12 for Edison in the audience here today. I don't want to create
13 any landmark cases in NRC procedure, but if this is the kind
14 of motion which you do routinely consider, I would like to
15 offer a witness exclusion motion.

16 On the other hand, if it is your normal practice
17 not to exclude witnesses, I don't intend to . . . use questions
18 about your ordinary practice.

19 MR. MILLER: Judge Smith, I can say personally
20 that I've ever participated in a hearing where there was a
21 motion to exclude. I agree with Mr. Cassel, it is routinely
22 made and routinely granted in federal trials. However, the
23 basic reason for that where there is an issue of witness
24 credibility that goes to the heart of one side's presentation
25 or the other, all of our witnesses are essentially testifying

1 to matters which are more or less technical. And many of
2 them are giving expert opinion testimony.

3 I don't know that it would advance the record
4 before the Board to exclude these witnesses from the courtroom.

5 JUDGE SMITH: The general tradition at the NRC
6 has been not to segregate witnesses. We have had instances
7 where the issue has been integrity, cheating, lying and
8 that type of thing where witnesses have been separated. While
9 we are in issues that are technical in nature, the practice
10 is for each party to have with them the technical advice
11 they need.

12 So rather than not having the people here, the
13 preference is actually that they be present. So I don't see
14 it actually as a motion. I just see it as you wish to invoke
15 whatever tradition there is. And I will tell you that
16 tradition is that all those who have information should be
17 present if possible, but if you have a particular reason why
18 a particular witness should be excluded, then you should
19 pursue your motion. If you have a particular reason for it,
20 but there's just not a general reason.

21 MR. CASSEL: May I have a moment, then, Judge?

22 JUDGE SMITH: Certainly.

23 (Counsel for Intervenor conferring.)

24 MR. CASSEL: I would prefer, Judge, to have my
25 comments treated as an inquiry. My inquiry has been answered,

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1 thank you.

2 JUDGE SMITH: Thank you.

3 Proceed.

end6

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mgc 7-1

1 MR. CASSEL: Judge, I have a motion which
2 is to include a certain issue in this proceeding, which
3 was reserved by the Board's earlier ruling.

4 JUDGE SMITH: Off the record.

5 (Discussion off the record.)

6 JUDGE SMITH: On the record.

7 In informed the reporter that it was the
8 reporter's option either to bind these written motions
9 into the transcript or, if they prefer to copy them in,
10 but we would not waste time while the moving party reads
11 a written motion.

12 However, Mr. Cassel, would you please very
13 briefly, for the benefit of the public in the proceeding,
14 would you very briefly summarize your motion.

15 (The text of Intervenors' Motion to Include
16 Intervenors' Proposed Issue No. 1 with Respect to One
17 Allegor, within Scope of Hearing follows.)
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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
(Byron Nuclear Power Station,) 50-455 OL
Units 1 and 2))

MOTION TO INCLUDE INTERVENORS' PROPOSED ISSUE NO. 1,
WITH RESPECT TO ONE ALLEGER, WITHIN SCOPE OF HEARING

Pursuant to this Board's Order of June 8, 1984, p. 6, under the heading of "Intervenors' Proposed Issue No. 1," intervenors, by their undersigned counsel, hereby move to admit as an issue in this proceeding questions relating to the allegations of one of the allegers whose identity was disclosed under protective order of April 17, 1984.

Because the investigation is still ongoing, intervenors believe public disclosure of the name and specific allegations of the allegger at this time is not appropriate. However, since the Board and counsel for all parties are aware of the allegger's identity and some information about his allegations, it is possible to present and argue this motion without going in camera.

The grounds of this motion are as follows:

1. The allegger first made his allegations to the NRC staff in March, 1984, and his allegations concern events transpiring since the close of the record in the initial hearings.

2. The Board's June 8 Order (p. 6) recognized that the investigation of his allegations was pending and it was then "too early to determine whether the allegations will develop into issues for the remanded proceeding."

3. Since then, one of intervenors' counsel has interviewed the allegor and now represents the allegor as his legal counsel.

4. The allegor's allegations relate to one of the contractors which is a focus of this proceeding.

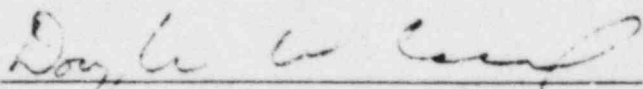
5. If true, the allegations raise serious questions about the accuracy and honesty of the QA/QC records of the contractor involved, as well as about the safety of that contractor's work. While not himself a reinspector in the Reinspection Program, the allegor was responsible for inspections, during the same time frame of the reinspections, relating to 14 of the attributes listed in Del George Exhibit B as reinspected, and 6 of the attributes listed therein as either "not recreatable" or "Reinspectable, But No Inspections Captured."

6. Intervenors' counsel, on the basis of discussions with the allegor, believes him to be truthful and reliable.

7. On information and belief, the pending investigation is likely to substantiate his allegations.

July 22, 1984

Respectfully submitted,



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Voters on matters pertaining to
quality assurance and quality
control

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1 MR. CASSEL: Yes, Judge. And I would like
2 to alert all of the counsel at the table that there is
3 some need to exercise care in the way in which we describe
4 this motion.

5 This motion asks the Board to include for
6 litigation in this proceeding certain allegations which
7 have been made by what is commonly referred to in NRC
8 practice as an "alleger;" that is, a person who makes
9 certain claims regarding alleged practices, in this case
10 at the Byron plant.

11 In this instance, the allegations and the
12 identity of the alleger are under a protective order dated
13 April 17, 1984, pursuant to which those allegations or
14 information pertaining to them and the identity of the
15 alleger have been provided, I believe, to each of the
16 three members of the Board, the counsel for Edison and
17 counsel for the NRC Staff and counsel for the Intervenors,
18 but has not been made public. And the reason it was not
19 made public on April 17, as I understand it, was, at that
20 time, there was an ongoing investigation into these
21 allegations, and if the investigation or if the alleger
22 and his accusations were made public, it might compromise
23 the investigation by alerting the people who are subject
24 to the accusations that they are being investigated or that
25 their activities are.

mrc 7-3 1

2 investigation is not yet complete, and for that reason,
3 until we know for certain that the investigation is
4 complete, the Intervenors do not want to take it upon
5 ourselves to disclose the identity of the specific
6 allegations until we know that the investigation is complete.

7 On the other hand, I think we know enough about
8 the allegations and the alleged, and we can describe them
9 sufficiently in public that there is no need to have
10 any in camera session. We are talking about an alleged
11 who only recently came forth in March of this year with
12 respect to allegations that had only recently arisen since
13 the close of the record in the initial hearings. He is now
14 represented by legal counsel by one of the attorneys for
15 Intervenors. That attorney for Intervenors has interviewed
16 this alleged and has obtained information in some detail
17 on the nature of his allegations. They relate to one of
18 the contractors who are the focus of this rehearing.

19 The allegations question -- do more than
20 question -- they raise serious questions about the accuracy
21 and honesty of the QA/QC records pertaining to the
22 inspections of one of the contractors at issue in this
23 proceeding, and, if true, further raise questions about the
24 safety of that contractor's work.

25 JUDGE SMITH: One of the three main contractors?

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1 MR. CASSEL: That is correct, Judge. The
2 inspections in question relate to inspections performed
3 during the very same time period as the reinspections at
4 issue in this case, and they relate specifically to
5 fourteen of the attributes listed in Exhibit B to
6 Mr. Del George's testimony as having been reinspected in
7 the reinspection program, as well as to six additional
8 attributes listed by Mr. Del George as either not
9 recreatable or reinspectable, but no inspections captured
10 in his exhibit.

11 On the basis of our interview of this alleger,
12 Judge, we represent to the Board that we believe the alleger
13 to be both truthful and reliable, and we further have
14 information and belief that leads us to believe in good faith
15 that the pending investigation will substantiate the
16 allegations by the alleger.

17 If this issue is admitted as an issue for this
18 hearing, we will be prepared on the basis of direct testimony
19 from the alleger and documents pertaining to his allegations
20 to present evidence to the Board which we believe would be
21 of interest to you in your determinations.

22 If, on the other hand, the Board's desire were
23 to wait until the pending investigation is completed, we
24 would have no objection to that. But we did not want to
25 wait until a later date to raise that issue. We wanted to

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1 put it on the record at this time, even though as far as
2 we are aware, the investigation is not yet complete.

3 If the Board rules that this is an issue in
4 the proceeding, we will be ready to file this witness'
5 prefiled testimony as the same date as our others, namely
6 August 13, and to have him take the stand during the week
7 of August 20th.

8 MR. MILLER: Judge Smith, the Applicant finds
9 itself in the same position as always where allegations
10 are sought to be made the subject of this proceeding.
11 We have received in camera the allegations at the same time
12 that Mr. Cassel did. What we have here is a piece of paper
13 that says that the Intervenors move to admit as an issue
14 in this proceeding questions related to the allegations of
15 one of the allegeders. I think I know who the allegeder is.
16 I'm not sure I know what the questions are that are sought
17 to be raised, and I'm not sure what issue it is that the
18 Intervenors seek to raise as a new issue in this proceeding.

19 The document that we have been handed today
20 doesn't identify either of those things and could simply
21 be viewed, -- for example, paragraph 5 on page 2 -- as
22 a suggestion that Intervenors may wish to use this
23 information as a basis for cross-examining Mr. Del George
24 or somebody else.

25 I believe if we are going to have an expansion

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1 of the scope of this hearing, that the Board and the parties
2 are entitled to more specific identification of what issue
3 it is that Intervenors seek to litigate and what evidentiary
4 proof they have in their possession which will meet the
5 tests that the Board referred to in its June 8th order with
6 respect to opening the record. If this is truly a new
7 issue, if it's simply a question of going into it in cross-
8 examination, then we'll have to wait until the questions
9 come and see whether the questions are appropriate ones,
10 given the scope of this witness' direct testimony.

11 But I am not prepared to respond orally to the
12 substance of this. I don't believe I could, under any
13 set of circumstances. I am perfectly willing to have
14 Mr. Cassel supplement this with a further document in
15 camera which gives such details as one would normally
16 expect to find in a motion to reopen the record or to
17 expand the scope of this proceeding. But I don't believe
18 that this is adequate to give any of us notice as to just
19 what is involved here.

20 JUDGE SMITH: Mr. Lewis?

21 MR. LEWIS: Mr. Chairman, I'm having a similar
22 problem to that of Mr. Miller. I believe, as Mr. Cassel
23 recognized, there is a severe restriction on what he is able
24 to say of substance in his motion in the open session.
25 And indeed, his motion reflects that. It says essentially

mac 7-7

1 nothing of substance to inform the Board, to enable the
2 Board to rule.

3 So although I know the Board entertains a
4 reluctance, except in a necessary circumstance, to go into
5 some kind of in camera consideration, I believe that the
6 only way that the necessary information can be provided
7 to the Board and the only way in which the parties can
8 be advised of the Intervenor's theory as to why the matter
9 which is the subject of this motion fits within this
10 proceeding is for a supplemental presentation to this
11 motion to be made by the Intervenor to the Board in camera,
12 perhaps in writing, perhaps not necessitating an in camera
13 session.

14 JUDGE SMITH: Mr. Lewis, isn't this the same
15 matter as discussed in our telephone conference call? As
16 I understand it, the Staff does not assert on behalf of
17 the allegor or as a matter of its own standing the need for
18 in camera testimony or anonymity of the allegor.

19 MR. LEWIS: No, that's perhaps a little bit of
20 an oversimplification. Let me state it this way.

21 There are considerations in this case regarding
22 our relationships with other agencies or other entities
23 which have to be taken into consideration in deciding
24 whether or not the matter should be made public, and it cannot
25 simply be said that Staff believes that there would be no

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1 prejudice by the public airing of this issue. I think we
2 have been very careful to state that there may be. We
3 could not promise to anybody that it would be out position
4 that there might not be prejudice by going into this in
5 public at this time. It is a pending matter.

6 JUDGE SMITH: As you know, the Board and the
7 law and the regulations do not favor nonpublic evidence,
8 and the Board, I don't believe, can entertain a request
9 or motion for anonymity or private evidence or nonpublic
10 evidence from someone who has no standing to request it.

11 MR. LEWIS: I believe that the Staff would
12 rest its standing not so much upon the question of whether
13 or not this particular individual wanted to maintain his
14 anonymity or not. We would view that as essentially his
15 choice. However, there can be in the situation other
16 considerations that might counsel against the wisdom of
17 this matter being aired publicly at this time, and that
18 goes to the Staff's investigatory functions.

19 JUDGE SMITH: I know, but somebody is going
20 to have to come forward. If this is to be in camera,
21 someone, a party to this proceeding, is going to have to
22 come forward and make a specific request, supported by
23 law and fact to this Board that the information be in
24 camera. Otherwise, we are without authority to grant.

25 MR. LEWIS: But, Your Honor, it seems to me

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1 conceptually the moving party here should have the initial
2 burden to demonstrate that the matter they wish to raise
3 as an additional matter in the proceeding is, indeed, within
4 the scope of this proceeding.

5 JUDGE SMITH: Okay. I'm not trying to foreclose
6 that. It just is difficult to discuss it without referring
7 to what I may -- I'm not sure my discussion of it is
8 appropriate unless I know if it's open. However, I think
9 we can learn several things from the papers before us in
10 the discussion.

11 One is that in our last prehearing conference,
12 the Board asked that we be informed as to the papers we
13 should bring to the hearing. I, for one, did not bring
14 the papers relating to this matter, so I have to go by
15 memory. We don't have those papers. And I might say,
16 as important as that matter was to the parties in this
17 proceeding at that time, it did not surface to us to be
18 a matter of primary importance, because, you recall, it
19 was even before the remand. So I as one Board member am
20 not able to even discuss in very much detail what this is
21 all about.

22 But two, based upon your own papers, don't we
23 have here -- taking your motion on its face, don't we
24 have here a matter not of issue, but of evidence?

25 You allude to Mr. Del George's Attachment B to

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2 his testimony. You state that this allegor can apparently
3 bring into question those statements, and you make statements
4 here which go to the bases of quite a few items of testimony
5 in this proceeding.

6 Why is it not simply rebuttal? Why must it be
7 viewed as a matter of a new issue?

8 You are saying that you have a witness here
9 who can demonstrate that the testimony of the witnesses
10 already prepared is not reliable. So why don't you just
11 approach it that way?

12 MR. CASSEL: I would have no objection to
13 approaching it that way, Judge, as long as we can bring
14 evidence concerning this individual's allegations before
15 the Board. I have no position, nor do I care whether it
16 is called a new issue or merely evidence on an old issue.

17 JUDGE SMITH: We can't rule now. It's
18 premature. But here's what we can say.

19 We can say, if your motion is correct, you have
20 described a rebuttal matter, or perhaps even a case of
21 cheating, I don't know, but you've described relevant
22 information. Now whether you can bring that witness forward
23 or not is going to depend upon something else. The most
24 important thing that it will depend upon is that you,
25 without any delay, inform your adversaries as to who he is
and what he's going to testify to. That is number one

mgc 7-11 1

2 on your priority, that you finally identify the nature of
3 his testimony.

4 MR. CASSEL: Judge, we identified the particular
5 individual by name to Mr. Miller in a telephone call or
6 by letter, I forget which, some time ago, at the time that
7 you asked us to identify our potential witnesses.

8 JUDGE SMITH: No problem with name. All right.

9 MR. CASSEL: With regard to the papers, I do
10 have with me the papers under protective order. Obviously
11 not right now, but at the Board's convenience, we would be
12 happy to have copies of those made and supply them to the
13 Board and any parties who may not have them with them.

14 JUDGE SMITH: I sense you're seeking a
15 declaratory ruling now from the Board that you have a
16 witness who is going to be allowed to testify. I think it's
17 premature for that. Whether a witness testifies or not
18 depends upon whether you comply with the procedural rules
19 that have been set out.

20 Are you providing them notice, as provided for
21 in the prehearing conference order? Is it relevant? Is it
22 the proper sequence? Is he qualified or anything else?

23 We can't give you an advance ruling that this
24 witness is going to be allowed to testify. However, if you
25 state that he has information relevant to the issues and
if he has information relevant to the testimony of the

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1 witnesses who are going to testify, and he meets otherwise
2 the requirements, we have to listen.

3 MR. CASSEL: I believe, in fairness, Judge,
4 I think I've gone about as far on this motion as I can
5 go in public at this time. But without getting into the
6 substance of it, I think it is fair to say that while
7 one could argue that all of his allegations are relevant
8 to the already admitted issues, one could probably also
9 argue that some of his allegations are not all that directly
10 relevant. And what we are really saying is, we would like
11 some guidance from the Board, after you have all the
12 information you need, to determine whether we will be
13 permitted to present -- to raise the issues in the
14 allegations he's going to raise.

15 I do want to clarify, he is perfectly prepared
16 to come forward at this time in a public way. Our only
17 concern is because there is an official investigation under-
18 way, we do not want to be responsible for causing any
19 interference whatever with that investigation. We believe
20 that some information concerning the substance of his
21 allegations is set forth in the materials available to the
22 parties since April 17th under the protective order,
23 and which, as I said, we can copy for the Board. There
24 is perhaps additional information -- not perhaps -- there
25 is additional information which he has provided directly

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to us which would supplement that April 17 document. We
would be prepared to present that at any time in any manner
that the Board deems appropriate in order for you to make
a determination.

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1 (Board conferring.)

2 JUDGE SMITH: With respect to the motion itself,
3 really there is nothing that we can rule on. We simply cannot
4 grant this motion. It doesn't tell us anything that
5 would enable us -- sitting here today -- to tell you that you
6 can do what you're asking to do here. You have too many
7 bases to cover.

8 We can't rule it out. And as I indicated,
9 taking it on the fact of it, you say it is relevant to
10 issues already in and it's relevant to testimony already
11 there. To that respect, you are invited to proceed on
12 that basis. But we can't give you a blank check or a
13 guarantee that on a fixed day or a certain time he can
14 come in and testify.

15 You're going to demonstrate, just as it is still
16 the burden of Mr. Miller to demonstrate even that these
17 witnesses may testify. Do you understand that? It's got
18 to be your responsibility to demonstrate that they have
19 either -- in the nature that he has either information or
20 proposed testimony relevant to the reopened proceeding.
21 Or if, as you suggest, it exceeds that scope, then it's
22 going to be your burden to move to have the scope enlarged
23 or the record re-opened, whichever it may be.

24 So far, there's nothing for us to rule upon.
25 We can't do it.

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1 Now, Mr. Lewis, he has -- on behalf of his
2 client -- he has waived any request for anonymity. It is
3 going to be up to you -- we charge you with the duty of
4 seeking a protective order or in camera testimony, or
5 whatever relief is necessary, because no one else has
6 standing to do it, unless Mr. Miller wants to allege it is
7 proprietary information.

8 MR. MILLER: No, sir.

9 JUDGE SMITH: He's not alleging that. So it's
10 up to you, Mr. Lewis. Otherwise, everything that happens
11 with this alleged is going to be on the public record.

12 MR. CASSEL: Judge, could I clarify the nature
13 of that waiver? What our position is that the alleged
14 has no objection to his identity being made public. However,
15 Intervenors in this proceeding are concerned of their
16 not being a disclosure, if it would jeopardize the investiga-
17 tion.

18 JUDGE SMITH: It's a question of standing,
19 Mr. Cassel, standing. You have standing, in this proceeding,
20 to assert the alleged's rights. And there is a recognition
21 that there is an imputed right to an alleged to be anonymous.
22 And that derives from, among other places, Section 7 of
23 2.790, which is also the same as Exemption 7, the Freedom
24 of Information Act, that the identity of information and
25 people being used in this type of thing is subject to

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1 withholding from public disclosure. But you are attempting,
2 apparently, to assert a public interest. It is Mr. Lewis's
3 responsibility to assert the public interest as to this
4 witness, not yours.

5 MR. CASSEL: I may lack -- I don't know whether
6 our clients lack the legal standing or not, Judge, but I
7 did want to state that position, for what it's worth.
8 There is a concern here, about the public interest. If
9 only Mr. Lewis is legally permitted to raise it, so be it.
10 But I wanted to make our position clear for the Board.

11 JUDGE SMITH: If you have standing to raise it,
12 I'm not aware of it. Mr. Lewis?

13 MR. LEWIS: Your Honor, we understand the charge
14 you have put to us and I don't believe that there is any
15 motion that we would have to make at this time, because it's
16 my understanding that your position is that at such time
17 as the Intervenors, for example, seek to cross-examine
18 during the course of these two weeks, on that subject
19 matter, we will then --

20 JUDGE SMITH: Perhaps it may come up earlier.
21 He may be submitting his admonishment that if he proposes
22 to come up with a rebuttal witness, he better identify that
23 witness and the nature of his testimony without delay.
24 That is a matter of the procedure in this hearing.

25 MR. LEWIS: At such time as he does that, we will --

1 JUDGE SMITH: I don't see that there's anything
2 for you to do now.

3 MR. LEWIS: We will move, if it appears necessary,
4 at that time, for a protective order.

5 JUDGE SMITH: Anything else on this issue,
6 Mr. Miller?

7 MR. MILLER: No, sir.

8 MR. CASSEL: Judge, that time -- in light of the
9 admonition you just gave -- I did not prepare a more
10 detailed motion only because I did not know how the Board
11 would react. We will be prepared as early as tomorrow
12 to come in with name, details of allegations, and so forth.

13 JUDGE SMITH: I will ask you to consult with
14 Mr. Lewis and Mr. Miller to tell them what you are going
15 to talk about, so that Mr. Lewis can timely raise -- seek
16 any relief he wants.

17 MR. CASSEL: Yes, sir.

18 JUDGE SMITH: If you anticipate an in camera
19 session tomorrow, would you please -- for Ms. Peterson's
20 benefit -- announce it promptly. That's the Rockford register
21 that is interested in this.

22 Anything further. Do you have any other
23 preliminary motions?

24 MR. CASSEL: Two other matters, if I may, Judge.
25 First of all, one of the issues reserved by the Board's June

1 8th order, as then premature, was the integrated design
2 inspection review. That is, I believe, still currently
3 underway. And the last document that I saw indicated
4 that it was scheduled to be completed on July 31.

5 The Board reserved the issue at that time on the
6 ground that the inspection review was still underway and not
7 yet complete. I have reviewed certain interim reports
8 prepared by Edison and the interim reports indicate -- not
9 prepared by Edison but supplied by Edison -- that the review
10 is still underway and that any conclusions in the interim
11 report is only tentative. Further information and findings
12 are forthcoming.

13 For that reason, Intervenors do not propose
14 today to offer a motion one way or the other on that issue.
15 But we did want to alert the Board and the parties that our
16 intention is immediately, upon receipt of a report of that
17 review, to make a determination whether or not to ask that
18 it be admitted as an issue in the proceeding.

19 JUDGE SMITH: You are simply are giving us a
20 notice. There is nothing, of course, to rule on.

21 MR. CASSEL: I believe that's correct, Judge.
22 Secondly, there is another issue relating to the systematic
23 analysis of licensee performance report, which was
24 issued in a report dated 13 days ago, by I believe NRC
25 Region III, on July 10 for the Byron Station.

1 I believe we will be prepared to address that
2 issue if we may, Judge, first thing in the morning. We
3 had hoped to be prepared to address it right now. And if
4 the Board requires, we are prepared to proceed with it.
5 I think it would serve the efficiency for all parties if
6 we could present that motion or discussion relevant to it
7 first thing in tomorrow morning's session.

8 Frankly, our preparations on the motion are not
9 quite yet complete and if we could defer it until tomorrow
10 morning, we would prefer to do so.

11 Thank you, Judge.

12 MR. LEWIS: Your Honor, I think one thing I
13 should report on is that, at the most recent conference
14 call we had, and the discussion about the issuance of the OI
15 report on previous allegations. As was reflected during that
16 call, the Board Chairman had identified certain additional
17 matters that might have to be looked at in that report,
18 regarding promosed anonymity of certain witnesses.

19 We are, I think, in the process of completing
20 that review. We were asked, by the Chairman, to consult
21 with OI -- the Office of Investigations -- and to expedite
22 the transmittal of that report to the Board and parties and
23 to the public. And we are in the process of doing so.

24 It is my understanding that the Office of the
25 Executive Legal Director will transmit that to us, here in

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1 Rockford, later this week.

2 JUDGE SMITH: I would like the record to be
3 somewhat more complete, with respect to this problem. I
4 received -- and I believe it was July 10 -- from
5 Ben Hayes, who is the Director of Office of Investigations,
6 a copy of the inspection report into certain allegations at
7 Byron. I assume that the report had been served in the
8 proceeding. I learned that I was mistaken about that in
9 the telephone conference call of this past Wednesday.

10 It seems I have just about the only copy that is
11 outside the management, so I turned over to Mr. Wilcove
12 of the Staff. And as I understand, Office of Executive
13 Legal Director is, as you state, looking at it to see if
14 all of the protective information has been excised from it.
15 I have simply looked at it. I haven't read it. I can't
16 tell you it has been or it has not been.

17 But in the meantime, even the copy I had is no
18 longer in my possession. It was turned over to Mr. Wilcove.

19 Anything further?

20 MR. MILLER: No, sir.

21 JUDGE SMITH: Anything more?

22 MR. CASSE: I thought I understood Mr. Lewis's
23 statement to indicate that Edison and the Intervenors would
24 be receiving a document in the near future, perhaps later
25 this week, and we can take the matter up once we receive it.

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1 Is that correct?

2 MR. LEWIS: Yes.

3 MR. CASSEL: Thank you.

4 JUDGE SMITH: Any other preliminary matters?

5 (No response.)

6 JUDGE SMITH: If not, let's take a ten minute
7 break and we will return and begin the cross-examination
8 then.

9 (Recess.)

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2 JUDGE SMITH: Ladies and gentlemen, we are
ready to proceed.

3 Mr. Miller, these witnesses are now available
4 for cross-examination?

5 MR. MILLER: Yes, sir, they are.

6 JUDGE SMITH: You may proceed, Counselor.

7 MR. LEARNER: Thank you, Judge Smith. If
8 I could, for the record, enter an appearance, I have
9 recently come on this case due to the illness of one of
10 our co-counsel. My name is Howard Learner. I am an
11 attorney who is registered to practice in Illinois and
12 admitted to the Illinois Bar.

13 CROSS-EXAMINATION

14 BY MR. LEARNER:

15 Q Mr. Del George, you had lead responsibility
16 for managing the development of the Byron reinspection
program for Commonwealth Edison; is that true?

17 A (Witness De. George) Yes, sir.

18 Q Are you a statistician?

19 A No, sir.

20 Q Have you had substantial formal training at
21 the graduate level in statistics?

22 MR. MILLER: Objection to the word "substantial."
23 It is vague.

24 JUDGE SMITH: Is it vague to you, Mr. Del George?

25 WITNESS DEL GEORGE: I have had some statistical

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training at the graduate level.

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BY MR. LEARNER:

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Q How much statistical training at the graduate level have you had, Mr. Del George?

4

A (Witness Del George) I have had one course in statistics at the graduate level.

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Q Other than the one course of statistics at the graduate level, have you had any other formal graduate level training in statistics?

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A No.

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Q Did you develop the reinspection program according to specified statistical sampling plans?

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A No.

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Q Did you focus on developing a sampling plan to demonstrate the quality of the work from the reinspection plan?

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A No.

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Q Did you consult with a statistician in developing the reinspection plan?

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Q Did you participate in developing various reinspection programs at LaSalle?

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A Yes, I did.

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Q Did you participate, for example, in developing the HVAC hanger welder, hanger welding reinspection program?

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1 A Yes.

2 JUDGE SMITH: HVAC, being H V A C (spelling
3 acronym.)4 MR. LEARNER: Thank you, Judge Smith. I should
5 have explained.

6 BY MR. LEARNER:

7 Q Were you the person with lead responsibility
8 for developing the HVAC reinspection program at LaSalle?

9 A (Witness Del George) No.

10 Q Did you participate in developing a reinspection
11 program at LaSalle concerning mechanical systems supports
12 and piping?

13 A Yes.

14 Q And were you the person with the lead
15 responsibility for developing that reinspection program?

16 A No.

17 Q Did you participate in developing a reinspection
18 program involving structural steel installation at LaSalle?

19 A Yes.

20 Q Were you the person with lead responsibility
21 for developing that reinspection program?

22 A No.

23 Q Finally, did you participate in developing a
24 reinspection plan at LaSalle involving bolt torquing?

25 A Yes.

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2 Q Were you the person with lead responsibility
for developing that program?

3 A No.

4 Q Did you have lead responsibility for developing
5 any specific reinspection programs at La Salle?

6 A No, I did not.

7 Q Was the bolt torquing reinspection program at
8 La Salle primarily concerned with hardware or with
9 inspector performance?

10 A Could you explain what you mean by "concerned
11 with"?

12 Q If I could rephrase, was the principal focus
13 of that reinspection program directed to work quality or
14 to inspector performance?

15 A It was directed to work quality.

16 Q With respect to the HVAC reinspection program
17 we spoke of earlier, was that principally focused on work
18 quality or on inspector performance?

19 A Work quality.

20 Q With respect to the structural steel
21 reinspection program that you participated in at LaSalle,
22 was that principally focused on work quality or on
23 inspector performance?

24 A Work quality.

25 Q Finally with respect to the mechanical support

mgc 9-5

1 and piping program at LaSalle, was your participation
2 focused on work quality or inspector performance?

3 A Work quality.

4 Q Isn't it true that the principal purpose of
5 the reinspection programs at LaSalle that you participated
6 in were directed toward work quality and not to inspector
7 performance?

8 A That was their principal focus.

9 Q With respect to the Byron reinspection program
10 and its concentration on the first three months of
11 inspector performance, did you develop the mechanism to
12 test the first three months of inspector performance?

13 MR. MILLER: I'm going to object.

14 MR. LEARNER: Let me rephrase.

15 BY MR. LEARNER:

16 Q In developing the Byron reinspection program to
17 sample the first three months, did you rely on a similar
18 use of that first three months' sampling for inspectors at
19 another plant?

20 A Perhaps before we continue, you refer to my
21 having developed the Byron reinspection program, and I'm
22 not certain -- before I respond, I would appreciate your
23 clarifying what you mean by my having developed the program.
24 I think in response to a previous question, I indicated
25 that I directed the development of that program.

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1 Q Did you have lead responsibility for developing
2 the methodology used in the Byron reinspection program?

3 A As I indicate in my testimony, a number of
4 organizations within the Commonwealth Edison Company were
5 brought together under my direction to develop the Byron
6 reinspection program. In that respect, I had lead
7 responsibility for assuring that an adequate program was
8 developed.

9 Q Was the final judgment in terms of what that
10 program ought to contain that of Mr. Del George?

11 A The judgment was one reached by the group,
12 and it was a decision which I forwarded to our management
13 for presentation to the NRC Staff.

14 Q Did you have lead responsibility for making
15 the final decision for Edison as to what that program
16 ought to contain?

17 A I made that decision, yes.

18 Q In developing the Byron reinspection then,
19 turning back to the question of the first three months
20 of inspector performance, did you rely on a similar use
21 of the first three months performance at another plant or
22 in another reinspection?

23 MR. MILLER: Judge Smith, I'm going to have
24 to object. I think there's a foundational question missing
25 as to whether or not there was, in Mr. Del George's

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1 experience, some other plant at which the first three
2 months of inspectors' inspections were reviewed.

3 JUDGE SMITH: In that event, if Mr. De'George
4 were to answer no, counsel would not have received much
5 information. I do think the question is not going to
6 provide much information.

7 MR. LEARNER: I'll try it this way, then, to
8 satisfy Mr. Miller.

9 BY MR. LEARNER:

10 Q Are you familiar with reinspections conducted
11 at any other plants that have used the first three months
12 of inspector performance as the critical period for review?

13 A (Witness DelGeorge) None with which I am
14 familiar.

15 Q So is it fair to say that you did not use past
16 experience with the first three months of inspector
17 performance in another context to support the development
18 of that methodology for the Byron plant inspection?

19 A Yes.

20 Q In developing similarly the Byron reinspection
21 plan, to use the 90 percent acceptance criteria standard
22 for subjective attributes, did you rely on similar such use
23 in other plants?

24 A I and my colleagues relied on experience gained
25 from other reinspection programs developed for other plants,

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1 but the specific value of 90 percent was not one relied
2 on in a previous plant.

3 Q Are you familiar with reinspection programs at
4 other plants that specifically relied on 90 percent as
5 the acceptance criteria for subjective attributes?

6 A That specific acceptance criteria? No.

7 Q In the LaSalle reinspections that you described
8 earlier, did the reinspectors know the names of the
9 individual's work that they were reevaluating?

10 A I don't know.

11 Q Do you know if they knew the results that
12 previous inspectors had obtained?

13 A I don't know.

14 Q Do you know if the same contractors were ever
15 used to reinspect their own results?

16 A Yes.

17 Q Were they always used to reinspect their own
18 results?

19 A To the best of my knowledge, they were
20 typically used. That is, contractors were typically used
21 to reinspect their own work.

22 Q Do you know the average job tenure of the
23 inspectors employed by Hatfield?

24 A No, I don't.

25 Q Do you know the average job tenure of the

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1 inspectors employed by Hunter?

2 A No, I don't.

3 Q The average job tenure of the inspectors
4 employed by either PTL or Peabody?

5 A No, I don't.

6 Q When you set up the minimum quantity of 50
7 reinspections for Hunter and Hatfield and 25 for PTL and
8 Peabody reinspection program methodology, did you take this
9 job tenure into account?

10 A We did not take job tenure into account in
11 arriving at those criteria.

12 Q Was Mr. Reed of Commonwealth Edison involved
13 with the program development of the reinspection program?

14 A He was aware of its development and endorsed
15 its adequacy.

16 Q Was he involved in the decision-making leading
17 to the development of the program?

18 A He participated in the discussions with the
19 NRC that forwarded the information to them, and in that
20 respect, I believe him to be involved in the process.

21 Q Was he actually involved in the program
22 development?

23 A I think I just answered that question.

24 Q You answered, yes, he was involved in the
25 program development?

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MR. MILLER: I'm going to object to that.

2 Mr. DelGeorge has described Mr. Reed's involvement, what
3 Mr. Reed's involvement was. This is the third time Counsel
4 has asked the same question.

5 JUDGE SMITH: He wants an opinion as to whether
6 that participation was, in his view, involvement. Is it
7 that simple?

8 MR. LEARNER: It's that simple, Judge Smith.
9 Also referring to the deposition conducted of Mr. DelGeorge
10 last week, he was asked specifically if Mr. Reed was
11 involved in the program development.

12 MR. MILLER: May I have a page number?

13 MR. LEARNER: Page 21. Question: Was he
14 involved in the program development?

15 Answer: He was not.

16 That's the reason for my confusion here.

17 JUDGE SMITH: Well, I don't think that the
18 question is going to resolve your confusion, but I don't
19 want to propose to you how to resolve it. I think, just
20 ask him, how does he distinguish between the statements
21 and --

22 MR. MILLER: Judge Smith, if that was intended
23 as impeachment, I would like to read some of the following
24 questions and answers into the record, so as to clarify
25 it.

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2 MR. LEARNER: It's not intended right now as
3 impeachment. It's simply designed to illuminate why I'm
4 somewhat confused with respect to his answers. I think
5 I can go at it another way.

6 JUDGE SMITH: I think that would be helpful,
7 because so far, we're quibbling with words.

8 BY MR. LEARNER:

9 Q Mr. DelGeorge, was anybody -- Mr. DelGeorge,
10 apart from the NRC, was anybody outside of Edison involved
11 in the program development?

12 A (Witness DelGeorge) No.

13 Q Did Sargent & Lundy help develop the program
14 at Byron?

15 A No.

16 Q And this was the first time that you had had
17 the lead responsibility for a major reinspection program?

18 A Yes.

19 Q Do you know what percentage of attributes were
20 inaccessible, non-recreateable for each of Hatfield, Hunter,
21 and PTL?

22 A At what point in time?

23 Q At the time the reinspection program was
24 complete.

25 A No -- I'm sorry -- could you state that question
again? I may have misheard you. Did you say at the time

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it was completed?

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Q At the time it was completed.

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1 A I had a judgment as to the scope of those
2 attributes that were inaccessible or not recreatable at the
3 time the program was completed.

4 Q At the time the program was developed, did you
5 know specifically what percentages of the attributes would
6 be inaccessible and non-recreatable?

7 A I did not have that specific knowledge at the
8 time the program was developed.

9 Q Do you know what percentage of the actual work
10 conducted at the Byron facility is represented by the
11 reinspection program?

12 A I have a judgment as to the percentage of that
13 work.

14 Q What is that, please?

15 A I believe it to be between five and ten percent
16 of the work conducted for the contractor's in question.

17 Q Do you know what percentage of the actual work
18 conducted is reflected by the inaccessible or non-recreatable
19 attributes?

20 A You will have to help me. When you say the
21 actual percentage, I do not know the actual percentage, but
22 I have a judgment as to the percentage. I couldn't answer
23 that question with a specific number.

24 Q What's your judgment, please?

25 A My judgment is that there is much more work that

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1 there is much more work that was subject to reinspection than
2 what was not subject to reinspection.

3 Q I think the question I asked was what percentage
4 of the actual work was inaccessible or non-recreatable?

5 A In the context of my previous response, that
6 work which was not subject to inspection would have been that
7 work which is inaccessible or non-recreatable.

8 Q In your judgment, what percentage of the overall
9 work did that represent?

10 A As I previously indicated, I can't speak to a
11 specific percentage.

12 Q I've asked you again what your judgment would be?

13 A And in that regard, it is my belief that there is
14 more work that was subject to inspection than there was work
15 not subject to inspection. And by that, I mean work that was
16 either inaccessible or not recreatable.

17 Q But you don't have a judgment as to specific
18 percentages?

19 A - That's correct.

20 Q Is it correct that the Byron reinspection program
21 was designed to review inspector performance, rather than
22 work quality?

23 A The purpose of the Byron reinspection program was
24 to assess the adequacy of the qualification and certification
25 of inspectors at the Byron site.

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1 Q Was it a primary purpose of the Byron reinspection
2 program to confirm the adequacy of construction work
3 quality itself?

4 A In as much as that was not a question presented
5 at the time this program was developed, it did not represent
6 a primary purpose of the program.

7 Q Is the answer then essentially no?

8 A In the context of my previous response, I believe
9 the answer is no.

10 MR. LEARNER: Judge Smith, I don't want to get
11 extremely formal here, but I think some of the question I'm
12 asking could be answered yes or no.

13 JUDGE SMITH: He just answered it.

14 BY MR. LEARNER:

15 Q Isn't it true that you made an inference, on the
16 basis of this reinspection program, that the work quality
17 at Byron was adequate?

18 A (Witness DelGeorge) That is an inference that
19 I have drawn from the results of the program.

20 Q Your answer is yes?

21 A Yes.

22 Q What I would like to do is confirm some of the
23 links in your chain of assumptions leading to that conclusion.
24 What I would like to do is ask you whether certain elements
25 were assumptions you made in making that inference.

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1 MR. MILLER: Judge Smith, I guess I really should
2 have said this earlier, but as the Board and the parties are
3 aware, Mr. DelGeorge is planning on appearing twice, once
4 as a member of this panel concerned with inspector
5 qualification, and again as a member of the panel with
6 Mr. Behnke and Mr. Laney, giving the quality of work.

7 Now there are specific questions which I believe
8 begin with question 38, in Mr. DelGeorge's prepared
9 testimony, that go to the issue of quality of work. And I
10 would like to suggest that counsel might wish to reserve
11 cross-examination of Mr. DelGeorge on work quality issues
12 until such time as that is before the Board and the parties
13 later in the week.

14 MR. LEARNER: I'm quite willing to reserve those
15 questions on work quality. The next set of questions, I
16 think, goes to one directly of program design and implementa-
17 tion which I think falls more or closer to the box that we're
18 in with this panel.

19 Judge Smith and Mike, if you think those are
20 too far astray, we'll reserve them for later.

21 BY MR. LEARNER:

22 Q With respect then to the inference, jumping from
23 inspector performance to work quality, I would like to ask
24 you about some of the assumptions you had made in that sort
25 of chain of assumptions.

1 Is it true that you assumed that the reinspection
2 program produced the statistically meaningful data?

3 MR. MILLER: I'm going to have to object, unless
4 the words "statistically meaningful" is defined for the
5 witness.

6 MR. LEARNER: Judge Smith, I don't think we
7 have to define what statistically meaningful is.

8 MR. MILLER He's just elicited from the witness
9 that the witness is not an expert statistician. Indeed, I
10 don't believe anybody on this panel claims those qualifications.
11 The Intervenors do have a witness who has apparent qualifica-
12 tions as an expert statistician and I believe that it is
13 simply fair for these witnesses to have a definition of
14 the terms that they have to respond to in this highly
15 technical area.

16 JUDGE SMITH: Let's see if he has a feeling for
17 what the meaning of it is. He can explain what he means by
18 it, rather than what a lawyer means by it, and then we might
19 have a better record. Can you answer that?

20 WITNESS DEL GEORGE: Judge Smith, from my
21 perspective, the Byron reinspection program was developed
22 on the basis of our cumulative engineering judgment. And it
23 was developed in such a way that its results could be
24 reliably applied where those results were accumulated
25 on a sampling basis, that they could be reliably applied

1 to assess the population from which the sample was
2 drawn. That's the way I would describe the basis upon
3 which we developed this program. In that way.

4 JUDGE SMITH: Would you call that a statistically
5 meaningful approach, or is that -- would you call it that?

6 WITNESS DEL GEORGE: Without arguing that it is
7 a statistical sampling program, I believe it to be a
8 statistically meaningful program.

9 JUDGE SMITH: Okay, for the reasons you gave?

10 WITNESS DEL GEORGE: Yes, sir.

11 BY MR. LEARNER:

12 Q Did you assume, in making the inference we spoke
13 of earlier, that the sampling method covered a substantial
14 range of attributes?

15 A (Witness DelGeorge) Yes.

16 Q Did you assume that it was statistically valid
17 to sample only eight out of the 19 contractors at Byron?

18 A Again, it goes to the question of what is
19 statistically valid. I believe that the basis upon which the
20 eight contractors chosen were selected, that there was a
21 defensible basis for that selection.

22 Q What was that defensible basis, that led to your
23 assumption to make the inference that you made?

24 A I think that's discussed -- I don't recall having
25 made any inference to reach that conclusion.

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1 Q Let me go back then and get to the inference again.
2 I understand in your testimony you have said that there is
3 an inference that can be drawn from inspector performance,
4 ultimately to adequate work quality. Is that correct?

5 MR. MILLER: Does counsel mean for all work at
6 the Byron station or does counsel mean for all contractors
7 whose work was sampled?

8 MR. LEARNER: That's precisely what I'd like to
9 get into, what Mr. DelGeorge believes. In Mr. DelGeorge's
10 testimony, he says based on the inspector performance that
11 he can infer that work quality at Byron was adequate. What
12 I'm trying to get at is what assumptions, what are the links
13 that Mr. DelGeorge has in that chain of assumptions that lead
14 him to make that conclusion.

15 JUDGE SMITH: I believe we started down a road
16 which would question him on given the fact that they selected
17 eight out of 19, how can you explain that in his chain
18 of assumptions? Is that it?

19 MR. LEARNER: That's correct.

20 JUDGE SMITH: I don't understand why you retreated
21 from that direction.

22 MR. LEARNER: I'm not. I'd like to know, in his
23 judgment, whether eight out of 19 contractors was a sufficient
24 sampling.

25 MR. MILLER: I guess I really have to object that

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1 there is no foundation established that there is anything
2 in the inspection program, or in Mr. DelGeorge's testimony,
3 which indicates that he is drawing any inference about the
4 work of 19 contractors at the Byron site.

5 MR. LEARNER: Mr. Miller, let me refer you to
6 page seven of Mr. DelGeorge's testimony. At the end of
7 answer number six, he discusses that the data associated with
8 the program does produce a strong inference of the adequacy
9 of construction quality at the site.

10 What these questions are directed to is what were
11 the assumptions Mr. DelGeorge made -- was the chain of
12 assumptions he made to get from the data on inspector perfor-
13 mance to the conclusion that he makes regarding work quality.
14 It's a fair set of questions to ask here, whether he used
15 certain aspects as his assumptions to make that inference.

end 0

mgc 11-1 1

2 MR. MILLER: I would call attention to the
3 fact that what Mr. DelGeorge has, with respect to his
4 opinion with respect to the adequacy of work quality,
5 that's limited to Hatfield and Hunter, on page 7.

6 JUDGE SMITH: He makes the statement, and he
7 can be examined on it. Overruled. I don't know if there
8 was an objection, but it's an appropriate question.

9 BY MR. LEARNER:

10 Q Let me get back to where we were a couple of
11 minutes ago with respect to the assumptions you made.

12 Was one of the assumptions that you made in
13 drawing your strong inference that it was statistically
14 valid to sample only eight of the nineteen contractors at
15 Byron?

16 A (Witness DelGeorge) The judgment to sample
17 eight or nineteen contractors was not made on a statistical
18 basis.

19 JUDGE SMITH: I don't believe you've answered
20 his question. I think the question is, having selected
21 the eight out of the nineteen for whatever reason, do
22 you believe that the result is statistically valid?

23 Was that your question?

24 MR. LEARNER: I'll take that as a fair
25 rephrasing.

WITNESS DEL GEORGE: I'm afraid that I can't --

mgc 11-2

1 I personally can't make a judgment on the basis of
2 statistics as to the significance of the results -- that is,
3 on the basis of statistics alone.

4 BY MR. LEARNER:

5 Q Was one of the assumptions you made in the chain of
6 assumptions leading to your inference, that reinspections of
7 some inspectors could be used to confirm the adequate
8 performance of all inspectors?

9 A (Witness DelGeorge) That is not the logic
10 that I employed.

11 Q So you didn't make that assumption when you
12 made your inference?

13 A I didn't go from that -- that was not the
14 chain of logic that I employed.

15 Q Was that one of, if you will, the links on the
16 chain?

17 A I think that incorporates more than one of the
18 links on the chain.

19 Q Did you assume that reinspections of some of
20 the inspectors could be used to confirm the adequate
21 performance of all the inspectors?

22 A Along with other information developed, yes.

23 Q So that is, if you will, one of the links
24 in the chain, but not the only link?

25 A Yes.

mgc 11-3 1

2 Q Similarly, did you assume that the reinspections
3 of some inspectors could be used to confirm the adequacy
4 of all inspections?

5 A Along with other information developed, yes.

6 Q It was one of the links on the chain?

7 A Yes.

8 Q Did you assume that if the inspector performance
9 was adequate, then the work quality would be sound?

10 A That was an inference that I believed could
11 be logically drawn.

12 Q Was that one of the assumptions in your chain
13 of assumptions leading to your inference that the work
14 quality was adequate?

15 A I guess I'm having a problem. I don't want to
16 say something that's misleading, and we're talking about
17 my assumptions. There were facts that were developed from
18 which I made -- I and my colleagues made inferences. I
19 believe you have characterized those inferences as
20 assumptions. I'm not sure I would characterize them as
21 assumptions, but I did draw an inference on the basis of
22 the facts developed by this program.

23 Q Let me make clear what I mean by "assumption."
24 If I understand right -- please tell me if I misunderstand
25 somewhere -- you have said you have a large volume of
data on inspector performance. We follow that chain all

mgc 11-4 1

2 the way down. One can make a strong inference after all
3 the links of that chain, what I'm calling the chain of
4 assumptions that the work quality was adequate; is that
5 right?

6 A See, I think that's where we part. I'm not
7 sure that each of those links represents necessarily an
8 assumption, but a demonstrated fact based on evidence from
9 which the inference flows.

10 Q Fair enough. What I would like to focus in on
11 was whatever factual basis, if you will, or assumptions
12 that form the links of that chain, if you can just comment
13 whether that was a fact, or in my words, an assumption, say,
14 demonstrated by fact that leads to that inference that
15 you made at the end?

16 MR. MILLER: Judge Smith, I think the record
17 is going to be very confused, if every time that
18 Mr. Learner uses the word "assumption," it means "fact,"
19 which is what I understood his instructions to
20 Mr. DelGeorge to be.

21 MR. LEARNER: Maybe we can get through that,
22 Mike. I'll refer to "link."

23 BY MR. LEARNER:

24 Q Do you understand what I mean, Mr. DelGeorge,
25 if I say "link"? Is that one of the links that led to
your inference?

mgc 11-5 1

2 A (Witness DelGeorge) I understand your
3 purpose to develop the chain of logic by which I reached
4 a conclusion -- that is, an inference about the quality of
5 work performed.

6 Q And was one of your assumptions, for example,
7 that reinspecting the first three months of inspector
8 performance would lead to a conservative bias in the results?

9 A Yes.

10 Q And was one of your assumptions that certain
11 attributes were appropriately designated as inaccessible,
12 non-recreateable?

13 A I'm sorry. Is that a complete question?

14 Q Yes.

15 A Then I don't understand it.

16 Q Was one of the assumptions you made as you went
17 along the chain, that there would be some attributes that
18 were either inaccessible or non-recreateable, couldn't
19 become part of the data base?

20 A We expected that there would be some inspection
21 points that would not be accessible or recreateable.

22 Q Did you also assume that the failure to
23 reinspect these inaccessible or non-recreateable attributes
24 would not leave significant work quality problems
25 undiscovered?

26 A Could I have that question repeated, please?

JUDGE SMITH: Restate the question, please.

end 11 26

1 BY MR. LEARNER:

2 Q Was one of the assumptions you made, Mr. DelGeorge,
3 that the failure to reinspect these inaccessible or
4 non-recreatable attributes, would not leave significant
5 work quality problems uncovered?

6 A (Witness DelGeorge) There's a double negative
7 in that question. I don't believe I made such an assumption,
8 if I understand your question correctly.

9 JUDGE SMITH: Is everyone clear as to whenever
10 these assumptions, or links -- or whatever you decided
11 to call them -- were made at the conceptual stage, under
12 the special program, or an evaluation of results or in
13 the execution of it or what? Are we clear on that?

14 MR. LEARNER: If it would clarify for everybody,
15 I'm referring to at the time that Mr. DelGeorge made the
16 inference that he testifies to at page 7. I assume that
17 was at the time the program was done, or at the formulative
18 stage, that he made the program.

19 JUDGE SMITH: Let's find out if he agrees. It
20 doesn't appear that way to me.

21 WITNESS DEL GEORGE: I understood the question to
22 request of me the assumption, whether or not I made a
23 specific assumption at the time the program was developed.
24 And in that sense, I may have misunderstood the specific
25 question, but not misunderstanding that misunderstanding.

1 I don't think I made such an assumption at the conclusion
2 of the program either.

3 MR. MILLER: Judge Smith, could we inquire of
4 the witness as to whether he understood Mr. Learner's earlier
5 questions to relate to the conclusion of the program or
6 its inception? I think the record is quite confused at
7 this point.

8 MR. LEARNER: Let me go back and phrase it this
9 way.

10 BY MR. LEARNER:

11 Q Mr. DelGeorge, at what time did you make the
12 inference that appears on page 7 of your testimony?

13 A (Witness DelGeorge) That is an inference that
14 I drew at the conclusion of the program, based on all the
15 results and their assessment by me.

16 Q What I'm asking you is, in making that inference,
17 what assumptions did you make?

18 A Okay, I understood.

19 Q Is there any need to go over the previous
20 questions, in terms of clarifying your answer, or does your
21 answer apply to the situation as you just explained it?

22 A I'm afraid that as we went through the prior
23 question, because you had indicated that you were pursuing
24 my judgment at the time -- you were pursuing the developmental
25 aspects of the program -- that I responded in the context of

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1 what I thought at the time the program was developed.

2 Q Would any of your answers have been different?

3 A I'm afraid.

4 Q Let's see if we can trace back very quickly.

5 A Okay.

6 Q For example, when you made the inference that
7 we referred to -- you referred to at page 7 of your testimony,
8 did you assume that it was statistically valid to have
9 sampled only eight out of the nine contractors at Byron --
10 19, excuse me?

11 A I did not make a statistical assumption.

12 Q Did you assume that it was valid for program
13 results that you sampled eight out of the 19 contractors at
14 Byron?

15 A Given the inference that I drew, I believed it
16 to be valid.

17 Q Was it similarly one of the links on your chain,
18 that the sampling method that had been employed at Byron,
19 the reinspection program, covered a sufficient range of
20 attributes?

21 A Yes.

22 Q Was it further one of your assumptions that the
23 reinspections of some of the inspectors could be used to
24 confirm the adequate performance of all of the inspectors?

25 A Along with other information, yes, other

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1 information developed by this program. •

2 Q But that was one of the links on the chain?

3 A Yes.

4 Q Was it similarly one of the links on the chain
5 of assumptions, that the reinspections of some of the
6 inspectors could be used to confirm the adequacy of all the
7 inspections?

8 A That was one of the bases, yes.

9 Q Was it similarly one of the assumptions you made
10 in these links that if inspected performance was adequate,
11 then the work quality was sound?

12 A That played a part, in my judgment, yes.

13 Q Was it one of the links of assumptions we're
14 referring to?

15 MR. MILLER: Judge Smith, again Mr. Learner
16 keeps talking about assumptions. Mr. DelGeorge keeps talking
17 about evidence, facts that he relied upon.

18 JUDGE SMITH: Use the word factors. Is that a nice
19 word?

20 MR. LEARNER: Factors is fine.

21 WITNESS DEL GEORGE: It was a factor.

22 BY MR. LEARNER:

23 Q Was it similarly one of the factors, in your
24 judgment, that the reinspections for the first three months
25 of the inspector's performance would lead to a conservative

1 bias?

2 A (Witness DelGeorge) Yes.

3 JUDGE SMITH: Did you ask that question before?

4 MR. LEARNER: Yes, I did, but we have the
5 difficulty here dealing with timing. I'm simply trying to
6 clarify timing. We're almost at the point where that
7 problem arose before.

8 BY MR. LEARNER:

9 Q Was it similarly one of the factors, in your
10 judgment, that certain attributes were appropriately defined
11 as inaccessible, or non-recreatable?

12 A (Witness DelGeorge) You're asking me if it was --
13 the appropriate identification of inaccessible or not
14 recreatable work was an assumption that I made?

15 Q Yes.

16 A Yes, I did assume that the work identified as
17 inaccessible or not recreatable was appropriately done.

18 Q Did you also assume that the failure to
19 reinspect these inaccessible or non-recreatable attributes
20 would not leave significant work quality problems undiscovered?

21 A Yes.

22 Q And did you also assume that the reinspection
23 results obtained from inspector performance on accessible
24 and recreatable attributes could be transferred over to
25 inaccessible and not recreatable attributes?

1 A That played a part in my judgment, yes.

2 Q Was that one of the factors?

3 A So that I am clear, I could not say that that
4 alone -- that is the assumption that accessible work was
5 acceptable, or proper inspections had been done for certain
6 work, would necessarily demonstrate that all other work,
7 whether inspected or not, was acceptable. But it was
8 a factor in my judgment.

9 Q That's essentially one of the links on the
10 chain of assumptions that I'm talking about?

11 MR. MILLER: We agreed we're talking about
12 factors.

13 WITNESS DEL GEORGE: I think we're getting to
14 the problem I had with the links on the chain. As I
15 understand the formulation of your questions, you refer to
16 the links as being in series and I don't mean to be difficult,
17 but some of these links represent redundant links at a
18 specific point, if you understand what I'm saying.

19 MR. LEARNER: I understand. I regret I don't
20 have a better analogy.

21 BY MR. LEARNER:

22 Q Let's cluster those links together. Was it a
23 factor in making the inference that you made?

24 A (Witness DelGeorge) It was a factor.

25 Q And you're referring there to the transferability

1 of accessible and recreatable reinspections to inaccessible
2 and non-recreatable inspections?

3 A Yes, sir.

4 Q Was it similarly a factor that the use of
5 minimum quantities, of 50 reinspections for Hunter and
6 Hatfield inspectors and 25 inspectors to Pittsburgh Testing
7 Lab inspectors, did not bias the results?

8 A That was not a factor that I considered.

9 Q Not at all?

10 A It was not a factor that I considered.

11 Q Was it a factor, in your judgment, that contractors
12 reinspecting the work of their own inspectors did not bias
13 the results?

14 A I did not believe that contractors reinspecting
15 their own work biased the results.

16 Q And in making the strong inference of the
17 adequacy of construction quality at the site, is it fair
18 to say that you assumed that contractors reinspecting their
19 own work did not lead to a bias?

20 A I believe that's what I just testified to, yes.

21 Q Similarly, in drawing that inference, did you
22 assume that the fact that reinspectors drew the names of
23 the inspectors whose work that they were inspecting
24 similarly did not bias the results?

25 A I know of no reasons why that fact should have

1 biased the results.

2 Q Your answer is yes? Would you like me to repeat
3 the question?

4 A If you would, please.

5 Q Was one of the assumptions that you made the fact
6 that the reinspectors knew the names of the inspectors
7 whose work they were inspecting did not bias the results?

8 A Yes.

9 Q Similarly, was one of the assumptions you made
10 that the reinspectors knowing the results that the original
11 inspector had obtained did not bias the results?

12 A Yes.

13 JUDGE SMITH: That answer indicates that you
14 agree with the premise of the question, it seems to me, which
15 is in itself a question that the Board members have. Would
16 you state that question again?

17 MR. LEARNER: I'll be pleased to.

18 BY MR. LEARNER:

19 Q Was one of the assumptions that you made, in
20 drawing your inference, that reinspectors knowing the
21 results that the original reinspector had obtained did not
22 bias the reinspection results?

23 A (Witness DelGeorge) To the extent the reinspector
24 was aware of the results of the inspection activity that he
25 was reinspecting, I do not believe that knowledge biased his

1 performance.

2 Q And that was one of the assumptions that you made
3 in making the inference of the adequacy of construction
4 quality at the site?

5 A The definition of assumptions aside, I did not
6 believe that that factor introduced bias into the program
7 results.

8 Q Was one of the other factors you assumed, in
9 drawing your inference, that Sargent & Lundy being both the
10 alleged independent third party reviewer as well as the
11 architect/engineer for the plant did not bias the results?

12 A I know of no reason why those two roles, played
13 by Sargent & Lundy, would have biased the results. I think
14 it only fair to state, however, that Sargent & Lundy alone
15 did not perform the third party inspections.

16 Q Was Sargent & Lundy one of the third party
17 inspectors?

18 A Yes.

19 Q With respect to the reinspections that it,
20 Sargent & Lundy, was a third party reviewer was, was it
21 fair to say that one of the factors you took into account
22 in making your inference was that Sargent & Lundy being both
23 the alleged independent third party reviewer as well as the
24 architect/engineer for the project would not bias the results?

25 A As I previously stated, that double role I viewed

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1 as -- I did not view that double role as having the potential
2 for biasing the results.

3 Q Is the answer to that yes?

4 A I believe so, yes.

5 Q Thank you.

6 Did you assume the fact that the constructors --
7 strike that, please.

8 Was one of your assumptions the fact that
9 Pittsburgh Testing Lab, which I'll refer to as PTL, the
10 overinspector was a contractor and that did not bias its
11 results? Let me rephrase that question.

12 Was one of your assumptions that the fact that
13 PTL was both an overinspector and a contractor for the project
14 not lead to any bias in the results?

15 A I'm having a hard time answering these questions
16 yes or no. I don't believe that the two roles that were
17 played by Sargent & Lundy introduced bias into the program
18 results.

19 Q And that was one of the factors leading to your
20 inference?

21 A It may not have been a factor leading to the
22 inference, but it was not a factor that compromised the
23 inference. As I mentioned earlier, you know, when we
24 talk about these chain of links or points in a chain of logic,
25 I'm not sure that I always agree that it represents a

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1 discrete point. It does represent a fact and I have tried to
2 explain how I considered that fact in reaching my inference.

3 Q Similarly, did you assume that the fact that
4 PTL was both an overinspector and a contractor did not
5 lead to a bias in the reinspection results?

6 A I do not believe it led to a bias.

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2 Q Did you assume that the fact that contractors
3 knew that a passing score was either 95 percent or 90
4 percent in the objective and subjective attributes would
5 not have an effect on the results?

6 A I did not believe that knowledge to have an
7 effect on the results of the program.

8 Q Did PTL's own inspectors fail to meet the
9 90 percent standard for subjective attributes on
10 reinspection?

11 A There was one individual who did not meet the
12 90 percent criteria specified in the program.

13 Q Referring to page 6 of Attachment E to your
14 testimony, do I correctly understand that the 85.3 percent
15 figure under "Third Party Review for Reinspection Results"
16 is the cumulative result obtained by the PTL inspectors?

17 JUDGE SMITH: I'm sorry. We have a procedural
18 concern. As a consequence, I didn't follow your question.
19 But Dr. Cole suggests it was not your intention. We did
20 not receive the attachment to Mr. DelGeorge's testimony
21 into evidence, only his testimony.

22 MR. MILLER: I neglected to move the attachments
23 to each of Mr. DelGeorge's, Mr. Tueken's and Mr. Shewski's
24 testimony into evidence. I so move at this time.

25 JUDGE SMITH: Yes. I didn't catch any --
I assumed that you had intended to move it all into evidence.

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2 MR. CASSEL: We have no objection, other than
3 the one we stated previously, which was overruled.

4 JUDGE SMITH: That resolves it. The testimony
5 of Mr. DelGeorge previously offered into evidence includes
6 the numbered pages plus attachments through E, A through E.

7 MR. LEARNER: For the Board's convenience, I am
8 referring to DelGeorge Attachment E at page 6, a chart
9 entitled "Reinspection Results, Pittsburgh Testing."

10 BY MR. LEARNER:

11 Q Have you got that page, Mr. DelGeorge?

12 A (Witness DelGeorge) Yes.

13 Q Mr. DelGeorge, do I understand correctly that
14 the figure, 85.3 percent, listed under the column, "Third
15 Party Review, Type-Subjective," refers to the cumulative
16 results of the reinspection of PTL's original inspections?

17 A Not of its original inspections. It refers to
18 the average for all inspectors reinspected after the
19 third-party review.

20 Q And that 85.3 percent figure for subjective
21 attributes would be a failure under the 90 percent subjective
22 attributes acceptance test; is that correct?

23 A I don't understand how it would be.

24 Q Do I understand correctly that the appropriate
25 test level, if you will, for acceptable results was 90
percent for subjective attributes?

mgc 13-3 1

A For an individual, yes.

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Q And the average reinspection results for subjective attributes for Pittsburgh Testing's inspectors was 85.3 percent after third-party review?

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A Including those parties who did not pass the 90 percent criteria, that is a statement of the average.

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Q And was the final result, if you will, for Pittsburgh Testing, after the expansion of the sample had been completed, 77 percent acceptable?

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A That does not represent a cumulative average for the population as a whole. It represents the average for two individuals.

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Q I see. So, if you will, the cumulative results of the whole would be 85.3 percent for the first fourteen who were reinspected, and then 77 percent for the two who were reinspected in the expanded sample period; is that correct?

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A The 85.3 percent represents the cumulative average for all inspectors whose subjective work was reinspected in the program. It has not been rectified to eliminate the work of those specific individuals who did not pass the 90 percent criteria.

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Q Would you try to look for a term to describe that 85.3 percent? Would you call that the overall rating for Pittsburgh Testing?

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mgc 13-4 1

A No, I wouldn't call it that.

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Q What would you call it?

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A I would call it the mean of the data -- that is, the average of the data accumulated for Pittsburgh Testing subjective inspectors.

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Q To save me a mouthful, can we call that Pittsburgh Testing final data, subject to the way you just explained it?

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MR. MILLER: Why don't we call it what it is. It's described in the table, and Mr. DelGeorge has given a precise definition, and Mr. Learner, for some reason, doesn't want to use that definition. He wants to call it something else. I think there is a perfectly valid description of the statistic on page 6 and 7 of DelGeorge's --

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BY MR. LEARNER:

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Q How about PTL average? Is that an effective shorthand. I'm trying to avoid question that would be about two paragraphs long.

A (Witness DelGeorge) It represents an average for all the data accumulated for PTL in the subjective area.

Q I'm going to refer to that as the PTL average. I take it, you'll understand what I'm saying?

A Yes.

mgc 13- 1

2 Q Does the fact that PTL's own inspectors had an
3 average of less than 90 percent for subjective attributes
4 undermine your confidence in the validity of PTL's
5 inspection?

6 A No.

7 Q Does the fact that PTL's own inspectors had an
8 average of less than 90 percent of the subjective attributes
9 undermine your confidence in the validity of PTL's
10 reinspections?

11 A Well, first of all, that average represents
12 only the average as to subjective work, and I do not use --
13 I do not draw that conclusion on the basis of that
14 statistic.

15 Q So is one of your assumptions -- I'm sorry --
16 one of your factors in making the inference of adequate
17 work quality, the fact that PTL's own inspectors having
18 achieved an average of 86 percent for subjective attributes
19 did not undermine your confidence in the validity of their
20 reinspection?

21 A No, it didn't.

22 Q That was one of your assumptions?

23 A It's not an assumption.

24 Q Is that one of your factors?

25 A You asked me whether it undermined my
conclusion, and I say it didn't. And I'll be happy to

mgc 13-6 1

2 explain why it didn't, but I'm not sure -- well, you haven't
3 asked me that.

4 Q Let's assume that PTL's average had been 10
5 percent. Would that have been a factor that would have
6 affected your inference that the work quality was adequate?

7 A If I believed that that average could
8 be appropriately assigned to the individuals who were
9 performing reinspections or performing overinspection, then
10 it would have affected my conclusion. But I think it's a
11 misues of that statistic to apply it in that way.

12 Q But in terms of how you apply that statistic,
13 be it 85.3 percent, your treatment of that was one of the
14 factors that led you to the inference that work quality was
15 adequate?

16 MR. MILLER: Excuse me. I think we ought to --
17 I believe there's a foundational question missing as to
18 whether, in fact, Mr. DelGeorge considered this statistic
19 in drawing his inference of quality. I think we have to
20 establish that.

21 BY MR. LEARNER:

22 Q Did you consider the 85.3 percent PTL average
23 as one of the factors in your inference of inspector
24 performance which led to adequate work quality?

25 A (Witness DelGeorge) No, because I did not
believe it appropriate to assign to the PTL inspectors

mgc 13-7 1

2 performing reinspections or overinspections the average
3 that is represented in this table.

4 Q Did the fact that the PTL inspectors failed
5 to achieve a 90 percent average in any way undermine your
6 confidence in the quality of their inspector performance?

7 A That statistic alone did not undermine my
8 confidence. It was considered in light of all the other
9 information developed by this program.

10 Q If you will, is that one of the factors you
11 took into account?

12 A No, I don't think I'll admit to that. I don't
13 believe that it was.

14 Q So that was a factor that you didn't consider?

15 A I recognized the existence of this number, and
16 in that sense, I considered it. But it was not a factor
17 upon which I reached a conclusion. We continue to have
18 this running -- I have a problem, okay, in using the same
19 words that you do. The results are as they are shown,
20 and I considered that in reaching my conclusions.

21 I don't think, as I previously testified, that
22 you can apply this statistic to impugn the capabilities
23 of people performing reinspections or overinspections. And
24 inasmuch as all Hatfield inspectors who performed
25 subjective work, with the exception of two individuals,
had their work reinspected, I don't believe this statistic

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2 to compromise the integrity of the work, the inspection work
performed by PTL.

3 Q So, if you will, in making your inference from
4 inspector performance to the adequacy of work quality, was
5 one of the assumptions you made that this statistic, PTL
6 85.3 percent average, did not compromise work quality?

7 A I don't believe this statistic to compromise
8 the overall conclusion that I reached relative to work
9 quality.

10 Q Was one of the assumptions leading to your
11 inference that the 95 percent conformity for objective
12 inspections was a conservative acceptance level?

13 A That was a judgment I made, yes.

14 Q That was one of your assumptions?

15 A My engineering judgment was and is that the
16 95 percent criteria was a conservative basis for
17 assessing inspector capabilities. I don't know whether it
18 was an assumption or a fact. I don't know what the best
19 way of characterizing it is, other than the way I described
20 it.

21 Q Call it a factor. Is it one of the factors
22 leading to your inference?

23 JUDGE SMITH: He just doesn't want to agree to
24 a label that you've put on it, but he's describing it
25 precisely and exactly.

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2 MR. LEARNER: I'm not trying to get hung up
3 on labels. Maybe that time, he described it enough. I'm
4 looking, as I said before, to see what were the elements,
5 the factors, the assumptions. I realize we're having a
6 problem with nomenclature here. I've heard him to say,
7 "I think the inspector performance leads me to infer that
8 the work quality is adequate."

9 Maybe I'm getting too bogged down on
10 nomenclature with him. If that becomes a problem, let's see
11 if we can work that out.

12 WITNESS DEL GEORGE: I'll be happy to explain
13 my answers.

14 BY MR. LEARNER:

15 Q Was one of the factors that you took into account
16 in reaching your inference, one, that very little subjective
17 determination is involved in objective inspections?

18 A (Witness DelGeorge) I'm not sure that I would
19 say that there is very little.

20 Q How would you characterize it?

21 A I would characterize an objective inspection as
22 one that is capable of reproduction because of its nature.
23 There is a limited amount of subjective judgment that is
24 required in order to arrive at an inspection result.

25 Q Was one of the factors that led you to make the
inference we described before the 90 percent conformity

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2 level for subjective inspections was a conservative
3 acceptance level?

4 A I'm not sure what "conservative" really means.
5 I believe -- it was my engineering judgment and that of
6 the group that developed this program, that the 90 percent
7 criteria represented an appropriate criteria for assessing
8 inspector capability.

9 Q Did you believe that the 90 percent conformity
10 figure for subjective attributes was a conservative accept-
11 ance level?

12 A I personally believe it to be conservative.

13 Q And was that one of the factors that you took
14 into account in drawing the inference of the adequacy of
15 the work quality?

16 A Yes.

17 Q Was one of the other factors that you took into
18 account in inferring the adequacy of the work quality that
19 visual examination is the only means of determining whether
20 welds were acceptable?

21 MR. MILLER: I'm going to have to object to that
22 question. I do not believe there was any foundation for
23 the question as stated. The fact is that the inspection
24 program, the reinspection program, looked at inspections as
25 they were conducted by inspectors, subject to the ANSI
standard.

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2 JUDGE SMITH: I think he's about to rephrase
the question.

3 MR. LEARNER: Let me try to rephrase it.

4 BY MR. LEARNER:

5 Q Were visual weld inspections the only subjective
6 attribute?

7 A (Witness DelGeorge) Yes.

8 Q Were there other ways of inspecting the
9 adequacy of welds apart from visual examination?

10 MR. MILLER: At what point in time?

11 BY MR. LEARNER:

12 Q In conducting your reinspection.

13 MR. MILLER: That's irrelevant, Judge Smith.
14 I'm sure that there could have been a lot of different ways
15 of looking at those welds, but the stated purpose of the
16 program was to reproduce as closely as possible conditions
17 under which the original inspection took place.

18 MR. LEARNER: Judge Smith, with all due
19 respect, I'm asking if the witness believed there were many
20 other ways of inspecting the welds. That's my question.

21 MR. MILLER: My objection as to relevance.

22 JUDGE SMITH: I don't where you're going. I
23 don't see how you're going to end up with a relevant
24 result.

25 MR. LEARNER: What I'd like to ask the witness,

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2 Judge Smith, is whether he assumed, in making his inference,
3 that the results would not have been biased by Edison's
4 failure -- excuse me -- the contractor's failure to use
5 other techniques to examine welds that were otherwise
6 inaccessible.

7 JUDGE SMITH: You mean in a reinspection
8 program?

9 MR. LEARNER: That's correct.

10 JUDGE SMITH: Wasn't the purpose to duplicate
11 what the initial inspector did in the same fashion to see
12 if it's repeatable?

13 MR. LEARNER: Except that there are some welds
14 that are, by definition, Mr. DelGeorge's definition,
15 inaccessible or non-recreatable, that therefore cannot be
16 visually inspected, having already, though, been once
17 visually inspected.

18 JUDGE SMITH: Is that what the thrust of your
19 question was?

20 MR. LEARNER: That is the thrust of my question,
21 whether he believed that the inability to inspect those
22 welds that have been inspected once before would somehow
23 bias the results of the program.

24 Let me move on to another question. I don't
25 believe that's essential.

End 13

1 BY MR. LEARNER:

2 Q Was one of the factors leading to your inference
3 that the work was adequate, that the failure of one PTL
4 inspector after both the first third and second three
5 months, did not undermine your confidence in the validity
6 of the program results?

7 A (Witness DeGeorge) Would you please restate
8 that question?

9 Q Did you believe that the one PTL -- let me
10 rephrase it.

11 Did you believe that the failure of one of the
12 PTL inspectors to achieve successful results after both the
13 first third and second three months lead to a lack of
14 confidence in the result of the program?

15 A Because of the consequence of that failure and
16 the fact that the program data base for PTL was expanded
17 in recognition of that and the fact that those additional
18 inspector's review were found to be acceptable and the fact
19 that all of the work -- notwithstanding the discrepancies
20 identified -- were determined on the basis of engineering
21 evaluation not to have design significance.

22 I did not see that single failure to compromise
23 the conclusion I reached, that is the inference I drew,
24 relative to work quality.

25 Q That was then one of the factors that you took

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1 into account in drawing your inference of work quality?

2 A It was a fact of which I took into account, but
3 it did not influence my conclusion because of other factors,
4 which I also took into account.

5 Q It didn't influence your conclusion at all?

6 MR. MILLER: I think the witness has described
7 quite fully just how we took it into account.

8 JUDGE SMITH: He has some difficulty now with the
9 use of the word influence, perhaps. I don't know whether
10 he intended that word rather than control your conclusion.
11 Did you actually testify that it had no influence on your
12 conclusion or it was offset by other considerations?

13 WITNESS DEL GEORGE: It is certainly true, Your
14 Honor, that had there not been a failure on the part of PTL
15 with respect to this one attribute, that I would have drawn
16 a stronger inference relative to the quality of the work that
17 they inspected. But that fact alone does not compromise the
18 conclusion that I reached.

19 JUDGE SMITH: So there was no net adverse inference
20 to be drawn considering other factors?

21 WITNESS DEL GEORGE: Yes, sir, that's right.

22 BY MR. LEARNER:

23 Q Did you believe that the failure of two PTL
24 inspectors, one Hatfield inspector, and one Hunter inspector
25 to meet the 95/90 acceptance criteria for the first three

1 months lead to a lack of confidence in the validity of
2 the reinspection program results?

3 A (Witness DelGeorge) I can't agree with the premise
4 of that question. It does not accurately reflect the results
5 of the program.

6 Q Did two of the PTL inspectors fail to meet the
7 90 percent threshold for subjective attributes?

8 A One must remember the program requirement that
9 needed to be met before a failure could be identified. I
10 do not believe that the results that you describe represent
11 a failure within the context of the program, as it was defined.

12 Q Let's step back then from definitions. Were
13 two of the PTL inspectors found not to have met 90 percent
14 acceptance level in the first three months of their
15 performance?

16 A Yes.

17 Q And was one of the Hatfield inspectors found not
18 to have met the 90 percent threshold in his first three
19 months?

20 A Yes.

21 Q Similarly, was one of the Hunter inspectors found
22 not to have met the 90 percent acceptance criteria for
23 subjective attributes in his first three months?

24 A Yes.

25 Q And did the finding that these four inspectors had

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1 not met the 90 percent acceptance criteria in the first
2 three months lead you to question the validity of the program
3 results?

4 A No.

5 Q Was that a factor that you took into account in
6 making your inference that the work quality at the site was
7 adequate?

8 A I accounted, in making that inference, for all of
9 the results from this program.

10 Q And was that one of the results of the program?

11 MR. MILLER: By definition, Judge, if you account
12 for them all -- and this was one of them -- he took it into
13 account.

14 BY MR. LEARNER:

15 Q That was a factor you took into account?

16 A (Witness DelGeorge) Yes.

17 Q Did you also take into account the factor leading
18 to the inference that of the almost 6,000 observed
19 discrepancies, none were found to have had design
20 significance?

21 A Yes.

22 Q Did you also assume, in making your inference,
23 that the work quality was adequate, that the sampling
24 process was statistically valid?

25 MR. MILLER: Once again, Judge, I think we need a

1 definition of statistically valid. Mr. DelGeorge already
2 described how, with respect to the sampling program, how
3 he used statistics.

4 MR. LEARNER: Judge, I think Mr. DelGeorge is
5 competent to answer that. He either believes it was
6 statistically valid, he believes it was not statistically
7 valid, or he doesn't know if it was statistically valid.

8 JUDGE SMITH: I think you have to see if he
9 agrees with you. Can you answer it?

10 WITNESS DEL GEORGE: Judge Smith, I understand
11 the question to be whether one of the factors, in reaching
12 the inference about work quality, was that the program was
13 statistically valid. That, as I understood it, was the
14 question.

15 The basis for my inference was engineering
16 judgment and there were a number of factors that have been
17 specifically identified in my direct testimony which comprise
18 that judgment. Statistics was not one of those factors that
19 I relied upon to reach a conclusion about the adequacy of
20 work.

21 MR. LEARNER: Thank you, Mr. DelGeorge.

22 The next set of questions I have go more into
23 the work quality issues Mr. Miller mentioned earlier. If it's
24 the rule of the Board, I'll be glad to hold those over until
25 the next panel.

1 JUDGE SMITH: I think that would be -- I think
2 you had already agreed to do that.

3 MR. LEARNER: I'm trying to draw a reasonable
4 break in the questions.

5 JUDGE SMITH: Now I understand that there are
6 depositions scheduled for soon this evening, and it's going
7 to be by the same reporter.

8 MR. CASSEL: Let the record reflect the
9 reporter just blinked.

10 JUDGE SMITH: For that reason, we should adjourn
11 perhaps earlier than we had planned to. If there are no
12 objections, if everyone agrees, we will adjourn at this
13 point.

14 MR. CASSEL: Judge, could I ask what time and
15 where we are resuming in the morning?

16 JUDGE SMITH: At 9:00 a.m. -- it's in the Federal
17 Courthouse. I don't remember whether it's in the
18 Magistrate's Courtroom or in the main courtroom. It's in
19 the Magistrate's Courtroom, yes.

20 All right. We are adjourning for this evening.
21 We're off the record.

22 (Whereupon, at 5:35 p.m., the hearing was recessed
23 to resume at 9:00 a.m. on Tuesday, July 24, 1984.)
24
25

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the
NPC COMMISSION

In the matter of: Commonwealth Edison (Byron Units 1 & 2)

Date of Proceeding: 7/23/84

Place of Proceeding: Rockford, Illinois

were held as herein appears, and that this is the original
transcript for the file of the Commission.

Mimie Meltzer
Official Reporter - Typed

Mimie Meltzer
Official Reporter - Signature