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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

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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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Conference Room B
United States Nuclear Regulatory
Commission
799 Roosevelt Road
Glen Ellyn, Illinois

Thursday, June 21, 1984

Deposition of KAVIN D. WARD, called for examination
by counsel for the Applicant, beginning at 8:55 a.m., taken
pursuant to agreement of parties, before Ann Riley, a Notary
Public and Court Reporter in and for the State of Maryland,
County of Montgomery.

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APPEARANCES:

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Region III

C O N T E N T S

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P R O C E E D I N G S

1
2 MR. GALLO: Let the record show this is a
3 continuation of the depositions in this case that began on
4 June 20, and by agreement of the parties and the witness, we
5 are taking the deposition today of Mr. Kavin Ward.

6 Are there any preliminary matters?

7 MR. PATON: I have none.

8 MS. WHICHER: Not for me, except this is no
9 continuation, but it is a commencement.

10 MR. GALLO: The second deposition. All right.

11 MS. WHICHER: No, it is the commencement of his
12 deposition.

13 MR. GALLO: All right.

14 Whereupon,

15 KAVIN D. WARD

16 was called as a witness and, having been first duly sworn,
17 was examined and testified as follows:

E X A M I N A T I O N

18
19 BY MR. GALLO:

20 Q Mr. Ward, could you state your full name and
21 address for the record?

22 A Kavin Dennis Ward, 23 West 371 Buena Vista Drive,

1 Glen Ellyn, Illinois.

2 Q By whom are you employed?

3 A United States Nuclear Regulatory Commission.

4 Q How long have you worked for the NRC?

5 A Approximately six and a half years.

6 Q What are your job responsibilities?

7 A I am a reactor inspector, and I deal in welding
8 and nondestructive examinations, and one of my duties is
9 pre-service and in-service inspections, and various modifica-
10 tions that might be on construction and operating plants.

11 Q And have you been discharging those duties with
12 respect to the Byron Plant?

13 A Yes.

14 Q Is Byron the first nuclear power reactor that you
15 have worked on?

16 A No.

17 Q Can you name some of the others?

18 A LaSalle, Clinton, Prairie Island, Monticello,
19 Davis-Besse, Zimmer, Midland, Quad Cities, Callaway, Fermi.
20 Now this was just with the Commission. I don't know if I
21 named all of them or not.

22 Q That's good. That gives me a general idea.

1 Have you been a reactor inspector the full six
2 and a half years you have been with the NRC?

3 A Yes, sir.

4 Q And you conducted inspections with respect to the
5 reactors you just named?

6 A Yes, sir.

7 Q And were you involved in inspecting for welding
8 and nondestructive testing in those applications -- I
9 should say in those reactors?

10 A Maybe not all of them was welding and nondestructive
11 examinations. It could have been just in the NDE or it
12 could have just been welding, you know; not necessarily both.
13 I really don't know.

14 Just as an example, last year I went on 57 trips
15 to these various, and I've been on 35 trips this year, and
16 this is the 25th week, so you can see I do a lot of traveling,
17 and I --

18 Q These are trips to these various reactors?

19 A Yes, sir.

20 Q But generally that's what you do, you inspect
21 for welding and NDE?

22 A Yes, sir.

1 Q Can you state your educational background?

2 A I have a B.S. in Mechanical Engineering from
3 Pacific Western University in California, and I am a
4 Registered Professional Engineer in Quality Engineering from
5 the State of California.

6 Q When did you receive your degree in Mechanical
7 Engineering?

8 A 1979.

9 Q Are you qualified as a welding inspector in any
10 respect?

11 A Not in being certified. Is that what you mean?

12 Q Yes, Level I, II or III.

13 A No, sir. I have been with other companies.

14 Q You have?

15 A Yes, sir.

16 Q Presently you are not?

17 A No, sir. The NRC does not establish levels of
18 qualification on that.

19 Q All right. Let's talk about your previous work
20 experience. Before you joined the NRC, with whom did you work?

21 A Bechtel Corporation in San Francisco.

22 Q How long were you with them?

1 A Approximately seven years.

2 Q And what were your duties with Bechtel?

3 A I was a supervisory engineer -- engineering
4 supervisor, and my main duty, my main responsibility was to
5 the Level III test examiners in the various methods of
6 nondestructive examinations.

7 As an example, ultrasonics, radiography, liquid
8 penetrant, magnetic particle, and visual examinations.

9 Q Now were you supervisor of a group of Level III
10 inspectors?

11 A Yes, sir.

12 Q How many? Just general, approximately.

13 A Approximately six.

14 Q Were you certified as a Level III inspector
15 yourself?

16 A Yes, sir.

17 Q In which one of these disciplines?

18 A Ultrasonics, radiography, liquid penetrant and
19 magnetic particle.

20 Q Does a Level III inspector have to be certified
21 for visual inspection purposes?

22 A Not necessarily, but whenever an individual does

1 any type of nondestructive examinations, first of all, he
2 does a visual examination to make sure that the weldment or
3 whatever he may be examining is acceptable on the surface. To
4 perform any method of NDE it has to be -- depending on whatever
5 method is being done, depends on the surface.

6 Q So a Level III inspector is qualified to make
7 visual inspections of welds?

8 A Yes, sir.

9 Q Now prior to Bechtel, where did you work?

10 A Let's see.

11 Q Eventually we will back into your graduation from
12 school.

13 A You mean high school?

14 Q No, college.

15 A Well, see, this was 1979. Through various --
16 see, I have been here since 1978.

17 Q All right.

18 A Through -- so my degree as a B.S. was because --
19 the way I got that --

20 Q All right, go ahead.

21 A -- was, as an example, the NRC sends us to
22 various schools, and the last welding school -- let's see,

1 the welding course I went to was at Ohio State, which they
2 gave us seven points. And other -- let's see, in Skokie
3 there was a concrete school, they gave us six points. And
4 so together with various points in various schools in the
5 Navy and correspondence courses, this is how I received my
6 B.S.

7 Q I see.

8 Did you have any work-related experience -- let
9 me strike that question and start again.

10 Did you have any work experience related to
11 welding inspections prior to your employment with Bechtel?

12 A Oh, yes.

13 Q Could you describe that?

14 A Well, prior to Bechtel was Nebraska Testing Lab,
15 which I was manager of the NDE Lab, which is nondestructive
16 examination. And this was doing various methods of NDE.

17 Q What is the Nebraska Testing Lab? Is that a
18 private corporation?

19 A Yes, it is. It is owned by an individual or --
20 now this is -- I left there in 1971. I don't know what's
21 become of it since I left, but this was owned by, I believe,
22 one or two individuals.

1 Q Where was the company located?

2 A In Omaha, Nebraska.

3 Q How about prior to that time, did you have any
4 experience related to welding?

5 A Yes, sir. Peter Kewit & Sons Company in Omaha,
6 Nebraska. I was an engineer there, again, looking at various
7 welds. I was a QC engineer, quality control/quality
8 assurance type, and this again was making sure that the
9 material that arrived was acceptable, mainly in welding and
10 nondestructive examinations on site.

11 Q What were the years of your employment with
12 Peter Kewit generally?

13 A It was from 1979 to -- 1969 to '70. It was
14 just about a year.

15 Q And the period of employment with Nebraska
16 Testing?

17 A About a year also.

18 Q '70 to '71?

19 A Yes, sir.

20 Q How many years overall experience do you have
21 with respect to inspection of welds and NDE?

22 A I first started November 1946.

1 Q And if I take it up to the present, that will
2 give me roughly 38 years?

3 A Yes, sir.

4 Q All right. Well, since I've only taken you back
5 to '69, I want to know a little more about your previous
6 involvement. Let's start from 1946. What was your involve-
7 ment with NDE and weld testing then, or weld inspecting then?

8 A Okay, I joined the Navy in July of 1946. Out of
9 boot camp, they sent me to Port Huemene, California in
10 October or November in 1946, which was a plumbing and welding
11 school. And this was -- even prior to that, when I was a
12 civilian, I helped my dad as a plumber. He was a plumber
13 and we used to do welding, but I mean this is -- was putting
14 up welding fixtures in houses. I mean this is '45 and '46.
15 Jeepers.

16 Q Where was that place you went to welding school?

17 A In Port Huemene, California.

18 Q How do you spell that?

19 A H-u-e-m-e-n-e, something like that. It's 60
20 miles north of Los Angeles.

21 Q Okay. All right. How long were you in the
22 service then?

1 A 20 years.

2 Q And what was your -- did they use the term MOS
3 in those days?

4 A Well, when I retired, I was a First Class
5 Shipfitter, and I went to several years altogether of welding
6 and nondestructive examination schools, and this is where --
7 one of the reasons why I worked at the NRC, because of my
8 background. And I was mainly attached to submarines in
9 doing my work. My last three and a half years was at the
10 submarine base in Pearl Harbor, from '63 to '66, where I had
11 to plan and estimate all the nondestructive examination on
12 nuclear submarines coming into Pearl Harbor. And I was always
13 in those 20 years either a pipefitter or in the pipe shop
14 in welding or an NDE inspection.

15 Q Did you attend any Level III training activities
16 after you joined Bechtel?

17 A Yes, sir.

18 Q Can you just briefly summarize?

19 A In accordance with SNT-TC-1A, which is
20 certifications of nondestructive examination personnel,
21 there is an outline in there which states the requirements
22 of what people have to have to be a Level I, II or III, and

1 they had a procedure which required the various training.
2 And I first went through this in 1979 -- or '71, when they
3 first certified me. And -- boy, this was in '71. I can
4 hardly remember exactly what all I did go through.

5 Q Were you certified as a Level I or immediately
6 as a Level III?

7 A As a Level III, because of all my previous years
8 of being -- I was certified in the Navy also in the '60s.

9 Q As a Level III inspector?

10 A They didn't have Level Is or IIs or IIIs until
11 1968. This was NAVSHIPS 250-1500-1, which I was an ultra-
12 sonic, I think they called it, inspector.

13 Q You were certified as a Level III inspector since
14 what year, then?

15 A Since '68, I have been a Level III, because this
16 is when SNT came in, and they had the various levels.

17 Q The standard you referred to is the supervisory
18 standard or a standard published by Bechtel?

19 A Oh, no, sir. This is worldwide. This is
20 personnel qualifications of how people certify their -- it's
21 a program of how -- what the requirements are to certify
22 people, what their background and experience should be.

1 Q Do you know who the sponsoring organization is
2 for this?

3 A Society of Nondestructive Testing, I believe it's
4 Columbus, Ohio.

5 Q Are you aware of the Licensing Board decision in
6 this case?

7 A You mean that they rejected the license?

8 Q Yes. You're aware of that fact?

9 A Right. From TV.

10 (Laughter.)

11 Q Have you had an opportunity to read the decision
12 itself?

13 A No, sir.

14 Q How about the decision from the Appeal Board
15 which remanded the case for further hearing? Have you had
16 an opportunity to read that?

17 A No, sir.

18 Q Are you aware of what the focus is of the hearings
19 for these remanded proceedings, what the subject is?

20 A I gather, being I'm here, it's the reinspection
21 program, and all I know is my input, which you have my
22 reports.

1 Q And with particular attention to Hatfield,
2 Hunter, and Pittsburgh Testing Laboratories; is that correct?

3 A This is what I have heard.

4 Q Do you know what a CAT inspection is?

5 A Yes.

6 Q Were you involved in the CAT inspection for Byron?

7 A No, sir.

8 Q Are you aware that when it was determined
9 appropriate to initiate a reinspection program for the quali-
10 fication of welders that Edison made some various proposals
11 to Region III with respect to the nature of the program?
12 Are you aware of that activity?

13 MS. WHICHER: Joe, I think you may have misspoken.
14 You might want the question read back and restated. The
15 qualification of welders --

16 MR. GALLO: Did I say welders? I'm sorry.

17 MR. PATON: You did. I thought you did it
18 intentionally.

19 MR. GALLO: I stand corrected. Thank you.

20 BY MR. GALLO:

21 Q Qualification of inspectors.

22 A Ask the question again.

1 Q Are you aware at the time when it was determined
2 that a reinspection program of inspectors was deemed
3 appropriate, that Edison had made several proposals as to
4 the structure of the program to Region III?

5 A I wasn't involved in that.

6 Q You weren't?

7 A No, sir.

8 Q All right. But you're aware that that went on, I
9 take it?

10 A Yes, sir, I heard up and down the halls.

11 Q I take it from your testimony that you are aware
12 of the reinspection, from your inspection reports, you are
13 aware of the reinspection program. Have you had the opportunity
14 to review the final report issued by Edison in February 1984?

15 A Yes, sir.

16 Q Could you tell me what sections of the report
17 you were responsible for, for review purposes? I'll give
18 you this, if you want to look.

19 A Well, it's anything related mainly to -- like I
20 say, looking at the welding, at the welds, and just about
21 everything, you know. It would take me a long time to go
22 through that, but just about anything relating to the welds

1 for those people I was involved in.

2 Q You were talking about the -- when you say
3 relating to the welds, does that include the engineering
4 evaluations of the weld discrepancies?

5 A No, sir. Another individual did that.

6 Q That was Mr. Muffett?

7 A Yes, sir.

8 Q What is your understanding of the purpose of the
9 reinspection program for Byron?

10 A To make sure that the QC inspectors that -- being
11 the original finding, like a high school diploma, wasn't in a
12 certification package, to make sure that the people that were
13 involved did actually do a good job of inspecting the welds.

14 Q In other words, it involved the qualification of
15 those inspectors?

16 A That was the problem, originally, the qualification
17 of inspectors, the certification packages not being complete.
18 Like an example, high school diploma not being in the package.

19 Q That was a discrepancy that was noted by the NRC;
20 is that correct?

21 A Yes, sir.

22 Q Was the reinspection program for the purpose of

1 determining whether, despite that the welders --

2 A -- did do a good job, the QC inspectors, yes, sir.

3 Q Did it have another purpose involving the quality
4 of the work?

5 A As far as I was concerned, that was -- the main
6 thing was that these people that did have problems with their
7 personnel certifications, that the job they did do was a good
8 job.

T.2
9 Q All right. Can you tell me how many inspections
10 you were involved in with respect to the reinspection program?
11 I'm not really interested in a number like four, five or six,
12 but I'd like to identify the inspection reports involved in
13 the reinspection program that you participated in.

14 A Let's see. I gave a list. I think there was
15 four inspection reports I wrote on the reinspection program.
16 I gave it to Mike. It listed all my inspection reports.

17 Q You don't have it with you?

18 A No.

19 MR. PATON: Let's go off the record.

20 (Discussion off the record.)

21 BY MR. GALLO:

22 Q Mr. Ward, I want to identify the inspection reports

1 concerning the reinspection program that you had a personal
2 involvement with. I readily can identify two of them. One
3 is dated April 16, 1984, and it is Inspection Report 84-13
4 and 84-09. Is that correct? Here, let me show it you.

5 (Document handed to witness.)

6 A Yes, sir.

7 MS. WHICHER: Joe, we have generally just been
8 using the first unit number. I think it's a lot simpler for
9 everybody.

10 BY MR. GALLO:

11 Q I have identified another one, which is dated
12 December 23, 1983, which is 83-39; is that correct?

13 (Document handed to witness.)

14 A Yes, sir.

15 Q Now the others I just have numbers. There was
16 an inspection report issued on February 14, 1984, 84-05.
17 Do you recollect, do you have any involvement in that one?

18 A I think I do. I think I --

19 Q Let me see if I've got that one.

20 A I can run up and get that, if you'd like.

21 Q I'll show you mine.

22 (Document handed to witness.)

1 MS. WHICHER: 84-05 is the last one you mentioned,
2 Joe?

3 MR. GALLO: Yes. I was going to check. It
4 doesn't seem to have his name on it.

5 (Witness examining document.)

6 THE WITNESS: That's Bill Keyes' report. I am not
7 familiar with that at all.

8 BY MR. GALLO:

9 Q All right. It won't take too much longer, because
10 I've got --

11 MR. PATON: I think I know where that list is.
12 Is that it? Is that your list?

13 THE WITNESS: Yes, that's it.

14 (Discussion off the record.)

15 BY MR. GALLO:

16 Q Did you have any involvement in 83-15? Do you
17 know which one that is, off the top of your head?

18 A It sounds familiar.

19 Q All right. Let's see if I don't have it.

20 (Document handed to witness.)

21 A Yes, sir.

22 Q Did this inspection report involve the reinspection

1 program?

2 A Yes, sir. On page 3, this one paragraph here, it
3 was just my first time into the reinspection program, and
4 this one paragraph here is all I had to say about the
5 reinspection program. It was just starting.

6 MS. WHICHER: Joe, would you identify that?

7 MR. GALLO: Yes. For the record, the witness
8 just referred to page 3 of Inspection 83-15, and he referred
9 in particular to a paragraph in the middle of page 3 which
10 is just a summary of an open noncompliance concerning the
11 qualification of inspectors. In particular it deals with
12 82-05.

13 Off the record.

14 (Discussion off the record.)

15 BY MR. GALLO:

16 Q Mr. Ward, we have identified three inspection
17 reports related to the reinspection program in which you were
18 involved. Are there any more, to the best of your recollection?

19 A No, sir.

20 (Discussion off the record.)

21 BY MR. GALLO:

22 Q Mr. Ward, in conducting your inspections of the

1 welding that was reinspected as a part of the Byron inspection
2 program, did you look at AWS welds?

3 A Yes, sir.

4 Q How about ASME welds, did you look at those, too?
5 Or I should say welds covered by the ASME code.

6 A On -- now I believe on Hunter, being they are
7 involved in piping, that that was ASME. Basically the
8 acceptance criteria is the same on that.

9 Q Can you tell me what AWS stands for and the
10 general applicability of that code?

11 A American Welding Society, and it is mainly for
12 structural welding, and it is not only welding, but NDE in it,
13 ultrasonics also.

14 Q And the ASME code, what is the application of that
15 code in the welding area?

16 A Well, that's for not only structural but for pipes
17 also. But mainly I was looking at like hangers and things
18 like that, which -- in the visual examinations only. That's
19 the only part I was interested in.

20 Q What code applies to the welding of hangers?

21 A The AWS.

22 Q I notice in looking at the reinspection report that

1 there was a reference to another code, I think an ANSI
2 standard.

3 A Yes. For visual welding inspectors, there is an
4 ANSI standard which refers really to SNT-TC-1A, which is
5 personnel certification of how to certify people by, you know,
6 what experience they should have, what type of training
7 and what-have-you. I don't remember that ANSI spec right now.

8 Q I'm going to ask you a series of questions from
9 84-13, and if you had a copy of that, it might be easier.

10 A Do you want me to run up there and get it?

11 MS. WHICHER: It's from Love Exhibit No. 3.
12 That's Love Exhibit No. 3.

13 BY MR. GALLO:

14 Q Mr. Ward, I show you what has been previously
15 marked as Love Deposition No. 3 -- I'm sorry, Love
16 Deposition Exhibit No. 3, which is Inspection Report 84-13,
17 and ask you if that's correct.

18 A Yes, sir.

19 Q I'm going to ask you a series of questions from
20 that inspection report and feel free to refer to the exhibits
21 as I suggest that you might.

22 Now, can you tell me with respect to Love Exhibit

1 No. 3 what portions of the report, the inspection report, you
2 were responsible for writing? Take your time; no rush.

3 A (Witness examining document.)

4 I was completely responsible for Section 1, and
5 then in the first part of the report it was the combined
6 effort of Jim Muffett and, I believe, -- I'm not sure, I
7 believe Danielson and Bill Little was -- we all had an input
8 on the summary and conclusions.

9 Q You say that's Mr. Little and Mr. Danielson?

10 A Yes, sir.

11 Q Mr. Muffett and yourself?

12 A Yes, sir.

13 Q Turning to the conclusions on page 5, which, if
14 any, of the conclusions on page 5 did you have input to?

15 A (Witness reading document.)

16 All of them.

17 Q Do you agree with those statements?

18 A Yes, sir.

19 Q Turn to page 14 of Love Exhibit 3. At the top
20 of the page, second paragraph, it says the performance and
21 results of visual weld reinspections were reviewed by the
22 NRC inspector. Was that you, Mr. Ward?

1 A Yes, sir.

2 Q It goes on to explain that paragraph what the
3 review consisted of. It said that you had discussions
4 with supervisory/lead weld inspectors. Can you explain
5 what supervisors -- I'm not so much interested in names, but
6 just who they worked for and what their responsibilities were?

7 A I really will need the other report to refer to
8 all the different companies and people that I talked to.

9 Q You're referring to 83-39?

10 A I believe, yes.

11 (Document handed to witness.)

12 Q Well, let me ask you a preliminary question, first.
13 We'll strike the last question.

14 What is a supervisory/lead weld inspector?

15 A Various companies call people various things.
16 One individual in one company might be, you know, a super-
17 visor. The next company with the same level will be called
18 something else. And I was afraid if I just named one -- give
19 one term, somebody might say, "Well, we don't have any."

20 Q Well, what did Hatfield call theirs?

21 A On the details of this procedure -- of this report,
22 it says -- names the individuals that I talked to, and this

1 was the lead welding inspector from Pittsburgh -- well, he
2 worked for Hatfield, but --

3 Q He was assigned to Hatfield from --

4 A From Pittsburgh Testing Labs, yes, sir.

5 MS. WHICHER: I think the record should show
6 that the witness is referring to Report 83-39 at this time.

7 MR. GALLO: Has that been admitted as an exhibit?

8 MS. WHICHER: No, it hasn't, but he referred to
9 that.

10 (Discussion off the record.)

11 MR. GALLO: I'd like to mark as Ward Deposition
12 Exhibit No. 1 an NRC Inspection Report dated December 12,
13 1983, with respect to the Byron Station, and it is designated
14 as 83-39 (DE).

15 (The document referred to was
16 marked Ward Depo. Exhibit No. 1
17 for identification.)

18 BY MR. GALLO:

19 Q I will give you what now has been identified as
20 Ward Deposition Exhibit 1. Let's get back to -- is my
21 understanding, therefore, then that the terminology
22 "supervisory/lead weld inspector" was an individual for each

1 of the companies that were a part of the reinspection program,
2 who was in charge of welding inspections?

3 A Yes, sir. I could have added even more onto those
4 slashes. As an example, Pittsburgh Testing Lab, he was
5 called a site manager. And, you know, they were called
6 different things.

7 Q Okay. Now in Love Exhibit No. 3, you indicate
8 that you conducted discussions with these people. Could
9 you just tell me what the gist of your discussions was,
10 general subject and that sort of thing?

11 A Well, first of all was to look at various welds
12 to make sure that the people that were looking at the welds
13 were doing an acceptable job.

14 Q Let me interrupt you. You did this, or this was
15 something that --

16 A No, sir. This was talking -- I would go to the
17 various companies, I think I went to -- I don't remember the
18 exact number, half a dozen companies at least I went to, to
19 start out with, and I talked to the head person. He would
20 be a supervisor, whoever he might be, and then to ask to look
21 at a sample of the individuals -- of the various welds that
22 people had been looking at, at this particular company, to

1 get a feel on how good of a job -- you know, how the
2 reinspection program was really going, and to look at
3 various situations, welds that the people were saying were
4 unacceptable, welds that the people were saying were acceptable.
5 And then there was a third party, Sargent & Lundy, who would
6 give an over inspection for unacceptable welds. I would look
7 at their performance on welds that they had accepted, welds
8 that were not -- that they said were not acceptable, to see
9 if I agreed with the whole program at these various companies.
10 And then I would speak to various inspectors after looking
11 at the welds, because in reading my report, you would find
12 where the people are very conservative.

13 I would ask the people, you know, why are they
14 in some cases I felt rejecting welds that I felt were
15 acceptable, and using a slang expression, they were gunshy,
16 you might say. People would tell me, "Well, I'd rather
17 have the NRC criticize us for finding -- rejecting good welds
18 than not finding, you know, rejecting bad welds."

19 Q All right.

20 A And I would talk to them like, you know, "Too bad
21 that you don't use your experience in looking at these welds,
22 instead of thinking what the NRC is going to think." You

1 know, this would go on and on.

T.3 2 Q Now did you talk to the lead weld inspector or
3 supervisor at Hatfield? I think it was your testimony that
4 you did.

5 A Yes, sir, I talked to him several times.

6 Q How about at Hunter?

7 A Yes, sir.

8 Q And at Pittsburgh Testing Laboratories?

9 A Yes, sir.

10 Q Now you indicate at the top of page 14 of Love
11 Exhibit No. 3 that you examined your original inspection
12 records.

13 First of all, what are original inspection records?

14 A Records that people had of the original
15 inspections from day one of what the people did, day one,
16 how they -- you know, what problems they had, what --

17 Q This was the original inspection records for
18 the QC inspectors who did the inspections in the first
19 instance?

20 A Yes, sir. I didn't look at every one of them,
21 you know. I would just look at a sample to get a feel on how
22 Commonwealth was looking at them.

1 Q Did you examine a sample of the original
2 inspection records at Hatfield?

3 A Yes, sir.

4 Q How about Hunter?

5 A Yes, sir.

6 Q And PTL?

7 A Yes, sir.

8 Q Can you give me some sort of idea just how large
9 a sample you selected, say, for Hatfield?

10 A Hundreds, you know. I didn't count them.

11 Q But it's on the order of a hundred?

12 A I'd say hundreds for Hatfield, and probably
13 for the others, a couple of dozen, because they didn't --
14 they weren't as much involved as Hatfield.

15 Q How did you make your sample selection?

16 Let me ask a better question: Was it random?

17 A It was a random, here, there, you know, it
18 wasn't one big package like this. It was various. They
19 had file cabinets and, you know, I would just look here
20 and there and every place.

21 Q Did you pull them out of the file cabinets
22 yourself?

1 A No, I did not. I didn't pull them out myself.

2 Q Did you identify the ones you wanted the
3 Hatfield person to pull out of the file?

4 A Yes. I would say I would like to see this section
5 here, or let me see this, or they might be lying different
6 places.

7 Q So you actually made the random selection; is
8 that correct?

9 A Yes, I did.

10 Q Now what was the purpose of reviewing these
11 original records? Why did you do it?

12 A The main purpose was Commonwealth did this. I
13 followed what Commonwealth was doing in trying to establish
14 the program, and I just also looked to see if I could find
15 any problems in the original records, as part of my inspection,
16 which I did not find problems.

17 Q You're talking about completeness of the records?

18 A Yes, sir, completeness. I didn't find any
19 different than what anybody else did. In reviewing this, I
20 thought that people were thorough in what they were doing.

21 Q These are the original records you're talking
22 about?

1 A Yes, sir.

2 Q Now you also say on the top of page 14 of Love
3 Exhibit 3, that you looked at the reinspection records?

4 A Uh-huh.

5 Q Now tell me what a reinspection record is.

6 A Okay. A reinspection record looks something like
7 -- something like what I have in my Exhibit 1. This is
8 something like what their records would be.

9 MR. PATON: Say the page number.

10 THE WITNESS: 20.

11 MR. GALLO: Let the record show the witness is
12 pointing to page 20 of Ward Exhibit No. 1.

13 Go ahead.

14 THE WITNESS: This is just an example of what
15 the various companies -- some of what their records would look
16 like. And again I would look to see that it was complete.
17 What did the "UC" mean, meaning undercut, and various terms.
18 And I was satisfied with their records.

19 BY MR. GALLO:

20 Q I assume that you looked at the reinspection
21 records of Hatfield, Hunter and PTL; is that correct?

22 A Yes, sir.

1 Q And I assume you just reviewed a sample again?

2 A Yes, which were hundreds of -- you know, I think
3 there's 25 approximately on a page, and I don't know, pages
4 and pages, how many hundreds I looked at.

5 Q Well, let me ask the question differently:

6 With respect to Hatfield, how many approximately
7 reinspection records did you look at?

8 A Golly. All I can say is hundreds. I don't know,
9 really.

10 Q And the other companies were in the dozens, again?

11 A In the dozens, I would say.

12 Q Were these reinspection records selected by you
13 at random?

14 A Yes.

15 Q Now what was your purpose of reviewing the
16 reinspection records?

17 A I wanted to see how many problems that they had,
18 how much undercut, how many acceptable ones, you know. In
19 general I just wanted a feel on how -- what problems they
20 were having.

21 Q All right. You say again on page 14 of Love
22 Exhibit 3 that the review consisted of a visual examination of

1 500 welds which had been reinspected by several companies. Did
2 you do that visual re-examination?

3 A Yes, sir. Yes, sir. It was about this time last
4 year when the temperature was in the 90s and I got really slim.

5 (Laughter.)

6 Q That sounds like an exercise I might try.

7 MS. WHICHER: I hope that comment was on the
8 record.

9 THE WITNESS: And I looked, for instance, at
10 corners that were far away. I'm 55 years old, and I would
11 have maybe a hard time getting to, and where people, you
12 know, tend to maybe look at them a few feet away and say,
13 "Well, they're okay." But in looking at these 500 plus --
14 later I looked at a couple hundred -- they were always marked,
15 I always knew somebody had been there, no matter how hard it
16 was to get to these welds. And that really impressed me,
17 you know. I really felt good that the people were again
18 doing a good job.

19 BY MR. GALLO:

20 Q Did you report the results of your examination of
21 those 500 welds in an inspection report?

22 A Yes, sir. This is part of it in Exhibit No. 1

1 that gives all the results.

2 Q Can I have that?

3 (Discussion off the record.)

4 BY MR. GALLO:

5 Q Mr. Ward, I asked you about where the 500 welds
6 that you had examined visually -- the results of that
7 examination, where it was reported, and you indicated it
8 was in Ward Exhibit No. 1.

9 A Yes, sir.

10 Q Starting at pages 20 through -- well, why don't
11 you tell me how many of the pages, starting with page 20,
12 reflect the results of the 500 welds that you visually
13 inspected?

14 A Well, 20 up to the end of my report, which is on
15 page 38, which also includes on page 36 the 100 worst welds
16 that were -- I have to read my report, it's been so long.

17 As you can see on page 35 at the bottom, there
18 was a meeting held between CECO and the NRC, and CECO stated
19 that the FSAR committed -- let's see.

20 Anyway, they said that there were 100 of the
21 worst welds that they did an analysis on and looked at, and
22 they talked about these 100 special welds at this particular

1 meeting.

2 So then later I went back and I looked at these
3 100 welds also, which is, I think, really makes it like 600
4 welds altogether instead of the 500, were of these various
5 companies, plus 100 of the worst welds here.

6 Q As long as you have mentioned page 36, let's look
7 at page 36 and they are characterized as the worst welds.
8 Does that add up to 100 or something less than that?

9 A As you can see on the end down there, this is the
10 unit and these are like 12, 24 --

11 Q It looks like around half of them, 53 or so.

12 MR. PATON: That's right. It's close to 50.

13 THE WITNESS: Yes, it looks like half.

14 BY MR. GALLO:

15 Q So you correct your testimony that I take it
16 you only looked at 53 of the worst 100?

17 A I guess I did, yes.

18 Q All right, let's go back to page 19 of Ward
19 Exhibit No. 1. I am going to ask you some questions that
20 deal with these weld inspections abbreviations on page 19.
21 I am going to ask you to define these terms.

22 What is arc strike?

1 A When a welder is -- starts to weld, say, a
2 bracket, and say he is going to weld this bracket and he
3 wants to start down at the corner, so he gets his welding rod
4 up here and then he has to shake his head to put the helmet
5 down.

6 Well, when he shakes his head, sometimes he could
7 miss the little area where he wants the weld and he could
8 have struck his arc adjacent to, one way or the other. And
9 so when he finds out, when he looks through this and finds
10 out that, gee, he goofed, you know, he doesn't continue,
11 naturally, or sometimes maybe when the individual has completed
12 his weld and as he draws it away, there might be another
13 support close or he might accidentally hit the edge of a
14 bracket, not meaning -- you know, they don't mean to put these
15 arc strikes on, but sometimes it's an accident one way or the
16 other.

17 Q Well, what is the effect of an arc strike?

18 A I'm not a metallurgist, but really, on hangers,
19 it doesn't make a whole lot of difference. But, for instance,
20 on piping it could form a stress -- it could start a corrosion
21 type -- this is what I have been told -- it would take, you
22 know, a long period of time.

1 Q The arc generates a lot of heat, I take it?

2 A Yes, sir.

3 Q And that's what one is worried about?

4 A Yes, sir.

5 Q The second abbreviation is called "undersize leg
6 or throat." I call that an abbreviation. Actually it's
7 not an abbreviation, it's the second term. What is undersize?
8 Explain it to me in terms of a leg and then in terms of
9 throat.

10 A Well, the throat would be right in the middle
11 of the groove where maybe the diameter should be a quarter
12 of an inch, and its ends up being, say, an eighth of an inch.
13 Naturally that isn't big enough. The leg would be where it's
14 coming down the size of --

15 Q It is the weld you're talking about?

16 A Yes, sir, when the individual is making the
17 weld. And the same way, when he comes to the edge of the
18 weld, which sometimes -- people call it different terms. In
19 this case they call it a leg. The only reason I use that
20 term is they used that term. Ordinarily I wouldn't.

21 Q I see.

22 A But, so, on the edge of the weld, maybe they didn't,

1 the individual didn't put enough weldment there, and so that's
2 the bottom line. Undersize is not enough weld.

3 Q Is there a specification that indicates the amount
4 of weld that's supposed to be there?

5 A Yes, sir, very -- in AWS, there are welding
6 procedures and specifications, various documents, depending
7 on what you're welding, will state how heavy, how much
8 material is to be there.

9 Q If there's not enough welding material, it's
10 designated as being undersized?

11 A Yes, sir.

12 Q What is nonfusion?

13 A Nonfusion is when the weld is not fused to the
14 base material, and you can see sometimes on the edge where
15 the weld is to be fused to the material, and because there
16 wasn't enough heat generated through the welding, it just
17 kind of lays there, which it isn't fused.

18 Q What accounts for the fact that not enough
19 heat is generated by, I take it, the arc?

20 A Yes, sir.

21 Q What accounts for that?

22 A Sometimes the material is very heavy, and so that

1 absorbs the heat. Just as an example, too, in one case
2 where they are welding pan hangers, the brace will be very
3 heavy. The pan that they are welding to this brace is like
4 a sixteenth -- the material is only 1/16th of an inch, and
5 the hanger is a quarter of an inch. So naturally the heat is
6 going to go into that metal, that 16th of an inch, very fast,
7 and so they try to put more effort onto the heavy structure.

8 But say he goes too fast, he isn't waiting long
9 enough for the heat, the welding, to fuse into the metal, he
10 is going too fast, so it lays on top. Again, if he goes too
11 slow, he will burn everything. And then he has to make sure
12 that he doesn't get this metal, light thin material, he's
13 got to go fast enough where it's fusing and then he has to
14 slow down enough on the heavy to fuse. The welder has a very
15 hard job.

16 Q We've been talking about material welding. What
17 is the welding material?

18 A The welding rod?

19 Q Is that what it is, the rod? Explain how the rod
20 melts and all that.

21 A Well, the welding rod, they somewhat -- they have --
22 the rod is as equal and tough as the material being welded,

1 or better than, is what it's supposed to be. And naturally
2 stainless, you have to have a stainless rod, and the
3 ingredients in the welding rod should be again equal to or
4 better than, and then there is a flux around the rod which
5 melts off when you are welding to keep the impurities away.

6 Q What kind of rod do you use when you're welding
7 two different pieces of material together?

8 A Well, if it's carbon steel it's -- mainly this
9 was carbon steel, and so it was carbon steel welding rod.
10 Basically the same type of material, or better than.

11 Q All right. Well, what about when you're welding a
12 16th inch pan against a strut or support?

13 A That's carbon steel also.

14 Q They're both carbon steel?

15 A Yes, sir. This was all carbon steel. Again, I
16 keep thinking about piping, because I mainly deal in pipe.
17 This is hangers.

18 Q What is undercut?

19 A Undercut is -- again on the hangers you have a
20 corner, and the welder is putting in -- trying to put in a
21 good weld, and maybe he might start a little offcenter one
22 way or the other, or he might be cramped and turn his rod

1 one way or the other, and as he is welding, he will not
2 hesitate long enough to leave the rod weld deposit there,
3 and it will form an undercut on the base material. It is
4 almost impossible to weld without making an undercut, but by
5 using the right heat, amperage, voltage, the right position,
6 right speed, you can generally come out without any undercut.

7 Q You can at least minimize it?

8 A Yes, sir.

9 Q Okay. What is overlap?

10 A Overlap is when an individual comes to the end
11 of a weld, mostly on these hangers, and then he hesitates a
12 little too long and the weld builds up, and he's at an angle
13 and so then it kind of leans over. That's an overlap.

14 Q How about profile?

15 A How good the weld looks in general.

16 Q What are the -- can you describe generally what
17 an inspector looks for, for purposes of profile?

18 A Well, it's supposed to be a -- it's supposed to
19 be -- come out to the very end of the weld, or at the end of --
20 it's supposed to stop at a certain place, just to make sure
21 that it did stop where it was supposed to, that it started
22 where it was supposed to, he didn't weld in any other place.

1 You know, it's just a general starting and stopping.

2 Q Anything else?

3 A That's about it.

4 Q Porosity. What is porosity?

5 A Porosity is like, oh, when you're welding along
6 and there is dirt in the metal, it will bubble up, and then
7 it will leave a, oh, like a water drop, a dish type, and
8 that is porosity. Sometimes when the welder's rod has been
9 wet or the flux has been broken off and he's welding along,
10 and then this flux is not melting off to protect the impurities,
11 so therefore the impurity gets in, and then it bubbles up
12 and forms a porosity.

13 Q And does that make the weld less strong, if there
14 is enough of these defects?

15 A Yes, sir.

16 Q What is slag?

17 A This is when a welder is welding along and -- well,
18 in most cases like he will put down his pass, and then on the
19 next pass if he doesn't clean the flux out really good off of
20 the original pass, and he starts welding over, sometimes he
21 will trap the flux or -- again, it could be an impurity and
22 it's just a hunk of slag. It's a void. It's -- you know,

1 it's not good material in there.

2 Q I see.

3 Spatter?

4 A Well, when the weld -- any welder that welds,
5 there is weld spatter that comes off of the slag and --

6 Q Comes off of the slag?

7 A It comes off of the -- the flux. And so, therefore,
8 it spatters and really this should be cleaned off to make
9 it look nice. If you leave this weld spatter there, and then
10 you put in another pass, that could come up as slag.

11 Q I see.

12 What is a crater?

13 A A crater is when a welder is welding along and
14 all of a sudden he just pulls his rod out. When he's welding
15 along, he should hesitate just a second and fill up this
16 crater that he has so he doesn't have a crater. But if he
17 is welding along and he pulls it out, there is a void right
18 there, and it could form crater cracks because of the hole.

19 Q So it's a kind of depression in the weld?

20 A Yes, sir.

21 Q What is excessive leg?

22 A Gee, that kind of goes just the opposite of

1 undersize. It's too much. And if you wanted to look at it --
2 well, a leg is coming down on the side. It's just too big,
3 it's too much weld.

4 Q I think that's pretty well self-explanatory.

5 Excessive convexity? ← *oh the*

6 A Convexity. That's misspelled.

7 Q I wondered what that word was. I was going to
8 ask you about that. So it's excessive convexity?

9 A Yes, sir.

10 Q What is that?

11 A Good. I didn't sign my report.

12 Convexity? Well, it's being dished out. It is
13 not completely full. Like, for instance, a corner, he's
14 going along and he hasn't filled it up completely. You know,
15 I don't know any other way how to describe that.

16 Q What's the difference between -- well, are we
17 talking about excessive convexity? And I hear you telling
18 me it's not enough weld material being included.

19 A Okay, that's the -- like a pipe weld, it's really
20 easy to describe. Like, for instance, when he's welding
21 the weld up and right in the middle he should have put another
22 pass, but he didn't. So, therefore, it's dished out, convex,

1 there isn't enough, he should have put in another pass.

2 Q I see.

3 My advisor tells me you are referring to excessive
4 concavity.

5 A That's the opposite. Right. Right. Yeah.
6 Concavity. Okay, the other way. There's too much on top.
7 Right, right, right. I'm sorry.

8 Q So the record is clear, excessive convexity is
9 what, again?

10 A Instead of having less of the weld, the guy made
11 the weld acceptable and then he probably thought, well, gee,
12 maybe there ought to be another weld in the center, and then
13 he put too much. It goes the opposite direction. I got
14 that mixed up.

15 Q Is there a category called excessive concavity,
16 then? And if so, what is the difference between that and
17 undersize?

18 A Right. All these terms are not in -- as an
19 acceptance criteria in AWS. I don't know who really -- if
20 Commonwealth or who established these acceptance criteria,
21 but -- maybe S&L did, I don't know. Somebody established
22 these criteria as being what they are.

1 Q Do they change from job to job?

2 A Yes, sir. Some of them just stick to the code,
3 and then others go over and beyond. Like some situations,
4 some contractors, they might want to show the Licensee that
5 they do such a good job that they have their own terms as
6 being unacceptable.

7 Q I see.

8 A I mean -- I don't know why.

9 Q Let's follow up on that thought, because if I go
10 to Love Exhibit No. 3 on page 11 --

11 A That's this here?

12 Q Yes. Just turn back the page. -- I see a new
13 list of definitions, and there is a number on there that are
14 not listed in Ward Exhibit 1.

15 A Uh-huh.

16 Q Is that what accounts for the difference, your
17 explanation about variances?

18 A Yes, sir, right. And I took my list off of the
19 list that was presented to me, you know, as them using those
20 particular terms.

21 Q Now when you say "them," who do you mean?

22 A Commonwealth. The individual that I mainly dealt

1 with.

2 Q This was a representative of Commonwealth Edison?

3 A Yes, sir.

4 Q All right. Let's complete our recitation of
5 the terms shown on page 19 of Ward Exhibit 1.

6 Overweld, what is overweld?

7 A Well, maybe the weld called for a quarter of an
8 inch. Again you are going to say what you said before, they
9 put too much, they just put too much weld on the weld itself.
10 It maybe called for a quarter of an inch, and they just put
11 too much weld, but by putting too much weld, they didn't come
12 up with an overlap or anything. It was just too much weld.
13 And when there is too much weld, it's going to put a strain
14 on -- say there is a small hanger and it's just welded and
15 welded and welded, there could be some stress and strain
16 because of all the weldment.

17 Q Finally, what is nonpenetration?

18 A Nonpenetration is mainly found in the root of
19 a weld. Like, for instance, maybe there is an angle like
20 this and they weld it down and you can see at the end where
21 in the middle they did not fuse these two joints together.
22 So that would be lack of penetration.

MILLERS FALLS

EXHIBIT

1 Q Are any of these particular types of welding
2 defects -- can I use that term, call them welding defects?

3 A Yes, sir.

4 Q Are any of these types of welding defects
5 particularly difficult for an inspector to see when he makes
6 his inspection?

7 A Well, let's go down the line again.

8 Q Sure.

9 A Arc strikes. Anybody can see an arc strike.
10 Undersize. You really don't know what an undersize
11 is unless you have the code with you, and to know what is
12 acceptable or unacceptable.

13 Q Would the inspector normally have that?

14 A Yes, sir. He should know whatever he's looking at.
15 The nonfusion, that one on the very end, nonfusion
16 and nonpenetration, some people call everything nonfusion. I
17 mean if it's fused and it doesn't penetrate, it's the same.
18 But the code does spell it out, and so that is confused
19 sometimes, but nevertheless they are unacceptable, no matter
20 what you call them.

21 Q Is there a tendency among welding inspectors to
22 confuse nonfusion with overlap, in your opinion?

MILLERS FALLS
BEVERAGE
COTTON CONTENT

1 A Not overlap. Well, there could be, there could be.
2 Like, for instance, when it comes over -- well, if it was
3 in excess, I guess -- I guess he could call it that.

4 Q All right.

5 A But they would both be unacceptable. But in my
6 case, what I looked at, these -- I don't see how there would
7 be any confusion on the ones that I looked at, because mainly
8 the ones that I looked at were kind of borderline type,
9 where like I said in my report, an overlap, it was because
10 the welder, he hesitated and he let it build up a little too
11 long, and people would call that overlap, you know.

12 I really got on your people, or Commonwealth's
13 people, like, "Gee, why did you call that like you did?
14 There's no problem there."

15 Anyway, --

16 Q All right. I think the next one was undercut.
17 Is it difficult for an inspector to determine undercut?

18 A Well, the code allows anything over 1/32nd of an
19 inch as unacceptable. So, therefore, like for instance
20 when you're up in a corner and it's hard to see, even though
21 you have a flashlight -- and like I say, every time a welder
22 welds, he just about puts an undercut. So, therefore,

BEVERAGE

COTTON CONTENT

1 sometimes you might see a little discolor on the edge and
2 you take your fingernail and you wouldn't hardly feel any
3 undercut. But it really looked worse than what it really is,
4 and some people would say unacceptable.

bu3 5 And you couldn't get a gauge in, you couldn't
6 measure it.

7 Q I was going to ask you, how do you measure for
8 the 1/32nd?

9 A Well, the people have gauges, although the code
10 doesn't say you should use a gauge. It says in so many
11 words use whatever it might take for you to do this. But
12 the people -- I understand from day one they did not have
13 gauges, but when I was out there, they had gauges and they
14 were measuring. But sometimes because of the configuration
15 and where it's at, you just can't get a gauge in. You just
16 have to go by your experience. And again, the people were
17 overconservative, you know. It was wrong, you know, but
18 really, in my feeling it wasn't.

19 Q Well, I'm going to ask you some questions about
20 that.

21 A All right.

22 Q Profile. Is it difficult for an inspector to

1 determine profile?

2 A Well, like me trying to explain to you profile,
3 people kind of buzz through that real quick like. But you
4 can basically see where it starts, where it stops, you know.
5 That isn't really -- just about anybody, if they know how
6 that weld should be, shouldn't have any trouble with that.

T.4 7 Q I've looked at a couple of welds. Sometimes
8 they look like nice even application of welding material,
9 and other times it's kind of wavy. Would that be a profile
10 effect?

11 A That could, if the waves were too great, but
12 ordinarily you will see a little wave, because when a welder
13 welds, he hesitates, builds up a little puddle, then he will
14 build up a little puddle and in some cases it might look
15 like stacked-up dimes.

16 And then there are other welders, where he can
17 go along and almost not have any waves, you know. There are
18 welders and there are welders, you know.

19 Q So it's normal to have these waves in the
20 weldment?

21 A Yes, it is, especially in the carbon steel.
22 Like in stainless, it generally flows much nicer.

1 Q Porosity. Is it difficult for an inspector to
2 determine porosity?

3 A No, it's well -- the problem with porosity is
4 like the code will allow you so many porosity holes or so
5 much, and so it's kind of hard to determine, say there's a
6 lot, on what would be acceptable and would not be acceptable.

7 But, you know, in this case it would be -- you
8 know, I always felt like from what I looked at, the major
9 problems had been taken care of. These were just borderline
10 types. That's pretty cut-and-dried.

11 Q You said the code has some sort of standard or
12 guideline for porosity?

13 A Yes, sir.

14 Q How is it expressed?

15 A On how many -- what the diameter of the porosity
16 hole may be, and how many, depending on the size, is allowed
17 in a certain area.

18 Q I see.

19 A So if it's like salt and pepper, you might be
20 counting one, two, three, and it's only allowed --

21 Q Does the inspector actually do that?

22 A Yes, sir.

1 Q Measures the area and then counts?

2 A Yes, sir. When it's right down to the nitty-gritty,
3 they should.

4 Q Slag. Is it difficult for an inspector to determine
5 slag?

6
7 A It's pretty easy because you will see it laying
8 right adjacent to the weld, in most cases.

9 Q All right. I'll conclude myself that it's easy
10 to look at spatter. Would you agree with that?

11 A Yes.

12 Q And crater. Is it easy or difficult for an
13 inspector to determine crater?

14 A Well, as you noticed, in one of my reports, to me
15 a crater is when there is a slightly small hole in the bottom
16 which could concentrate or start cracks to propagate out.
17 But in this case where the people call craters, where the
18 individual was -- where the guy was welding, he didn't
19 hesitate a fraction of a second long enough to make another --
20 to build up just a little bit more weld. So therefore it was
21 like a spoon, not like a thimble, but like a spoon which was
22 smooth. In most cases I wouldn't call it anything, but these

1 people called it craters.

2 Q Is it difficult for an inspector to detect
3 excessive leg or excessive convexity?

4 A Yes.

5 Q Let's take excessive leg. Explain the difficulty.

6 A Too much, there's too much there, and you could
7 see there's too much.

8 Q Is it difficult to determine that?

9 A No.

10 Q All right. I think you misunderstood my question.

11 A I'm sorry.

12 Q That's all right.

13 Is it difficult for an inspector to determine
14 excessive convexity?

15 A Not really, no, not excessive.

16 Q How about overweld?

17 A Yes, that would be easy to detect when there is
18 just too much there.

19 Q All right. And you have covered nonpenetration
20 already, so I won't ask with respect to that.

21 Now, in your experience, is it common for welding
22 inspectors to detect these kinds of weld defects?

1 A Yes, sir. You know, he's trained and, you know,
2 you have to have so much experience before they can even start
3 in. They go through training programs and, you know, they
4 have no problem, really.

5 Q In your experience, have you ever conducted
6 an inspection where you found no defects of welds?

7 A No. I don't know of a welder that could put in a
8 perfect weld. That's why they have acceptance criteria and
9 code, because you would never get anything built if you didn't
10 have -- allow certain -- I hate to call them defects, but
11 that's what they are, to allow a certain amount of slag, a
12 certain amount of porosity. There is just nobody and no
13 machine that could put in a perfect weld.

14 Q You mean machine welding suffers from the same
15 problem?

16 A Not exactly the same, not as much. I mean
17 naturally they do a better job, but still a machine weld
18 can have its problems, and generally when it has its
19 problems, they are bad problems. Right?

20 Q I don't want to belabor that point, but can you
21 just give me an example of a problem that you are referring to?

22 A Well, when I worked for Bechtel at the shipyard

1 in Seattle, I forget exactly what they were building, but
2 they had this machine that filled up -- I even forget the
3 name of it, but when it would weld, it would fill up like
4 two inches of metal all at the same time. What the heck is
5 that called?

6 Anyway, when it was welding, I mean it would put
7 in all this weldment and it would do such a beautiful job,
8 and then maybe the welder wasn't watching just right how
9 the welding rod was coming out of the machine. It would get
10 tangled up a little bit. The rod would start missing or
11 sometimes the manufacturer of the rod -- you'd just get a
12 bad case of rod also.

13 Q So the application of the weld was nonuniform; is
14 that it?

15 A Yes, sir.

16 Q I see.

17 A But not -- there was no machine welding or anything
18 here, you know. This was all craft.

19 Q I understand.

20 There was one question I forgot to ask you when
21 we were talking about your view of the reinspection and
22 the original inspection records and the reinspection records.

1 You said you pulled a sample from the original and
2 reviewed those, and then you pulled a sample of the
3 reinspection records and reviewed those. Did you ever
4 correlate the two? Did you pull a reinspection record that
5 related to the original reinspection record that you had
6 reviewed?

7 A No, sir.

8 Q So you just did it at random?

9 A Did not do that.

10 Q Would there have been any benefit, in your
11 opinion, in making that correlation?

12 A Not as far as I could see. That wasn't the issue,
13 you know.

14 Q All right. Thank you.

15 Turn to Ward Deposition No. 1, Exhibit No. 1, page
16 20. I want to ask you a few general questions on how one
17 should read the information displayed on page 20.

18 Now let's just take the first line across on page
19 20. It says --

20 A Let's see. This is in Deposition 3?

21 Q No, it's in your No. 1, it's 83-39.

22 A On No. 20?

1 Q Page 20. Take the first line, the first column
2 is headed up "Package or Traveler," and the first line is
3 9887. Now what is that?

4 A That is the package of -- how the package was
5 identified. That's what was on the package.

6 Q What is a package or a traveler?

7 A Well, it's -- it's the information that -- let's
8 see. In this case -- let me think now. Like, for instance,
9 when they inspected this, they had -- mainly it was the
10 travelers. This was identification that you looked at this
11 card, and then it would give the ID number, the rejects,
12 the installation.

13 Q It kind of contained the history of that weld?

14 A Yes, right, there you go. Yes.

15 Q And when I look at weld in the second column,
16 "Weld ID," and then for that line that we are talking about,
17 there's the figure 1. What does that mean?

18 A That was the first weld number and weld number 2
19 was the second one, second weld in that traveler.

20 Q The next column says "Contractor Results," and
21 you have it divided into "Acceptable" and "Reject-Defects".
22 When you say "Contractor Results," what inspector are you

1 talking about?

2 A The reinspector -- the inspector that is doing
3 the reinspection.

4 Q All right.

5 "3rd Party Results." Who was the third party?

6 A S&L.

7 Q All right. Now if I go down four lines, there's
8 Weld ID No. 2 and under "Contractor Results" it says "reject,
9 undercut," and then if I look at third party results it
10 said -- I guess it says "disagree, undercut." What does that
11 mean?

12 A That means that he disagreed.

13 Q The third-party inspector disagreed with the
14 reinspector?

15 A Yes.

16 Q And do you know what the result of that disagreement
17 was? How did they resolve it?

18 A Well, that was the idea, that the third party
19 would make the final decision, and if the third party dis-
20 agreed, then that's what it was, and that's why I looked at
21 these, to see if I really did agree with the third party, and
22 I did. The only way I did not is because sometimes the third

1 party was overconservative also.

2 But the people from the third party I have known --
3 well, I knew this one individual from other places, and he
4 was very competent and very -- I had a good feeling for him.

5 Q This is one of the third-party inspectors?

6 A Yes, sir. Russ Vannier.

7 Q Now there is no column that indicates your
8 agreement or disagreement. How am I to interpret your review
9 or the results of your review on these welds?

10 A Some place I said that I agreed.

11 Q Well, you don't have to show me the place. You
12 can just tell me if that's the case.

13 A Okay. Maybe at the very end I said that -- just
14 by me saying there's no items of noncompliance or unresolved
15 items, it's an automatic. If I'd had a problem, it would
16 have been a noncompliance or that, but that's just our policy
17 on how we write our reports. If we don't have a problem,
18 you don't -- you know, that's -- you don't say it.

19 Let's see. I'm trying to see if I made a comment
20 there at the very end.

21 Q Well, it's really not necessary for you to find it
22 as long as you can testify right now that you agreed with

1 these assessments. Is that your testimony?

2 A Yes.

3 MR. PATON: Can we go off the record?

4 (Discussion off the record.)

5 BY MR. GALLO:

6 Q Mr. Ward, you have indicated on occasion through
7 the course of the answers to my questions that you disagreed
8 in some respects with respect to the calls by the reinspectors,
9 and in some cases the third-party inspector with respect to
10 whether or not a weld was defective. Is that a correct state-
11 ment?

12 A Yes.

13 Q Can you explain what you meant when you indicated
14 those disagreements?

15 A By being -- by having a disagreement was because
16 of the people being overconservative.

17 Q What does that mean?

18 A Rejecting welds that in my opinion were acceptable.

19 Q Do you have any notion as to how many of the welds
20 you looked at fell in that category?

21 A No, sir.

22 Q Did you discuss this tendency with any of the

1 Edison people or contractor people?

2 A Both. And also at my exit interviews, I brought
3 this out on the very first time, and I was informed that they
4 do have training programs, Edison had training programs.
5 And, you know, you can only do so much and then the people
6 are out there and -- this was always my --

7 Q What reaction did you get from the people you
8 talked to when you indicated that the inspectors were being
9 overly conservative?

10 A They were concerned also, and they informed me,
11 you know, they do -- they met, I think, once a week, and also
12 I talked to all the contractors after I looked at their
13 welding in telling them how overconservative I felt that
14 the people were.

15 Q Now was there -- I think it that the reinspectors
16 in their inspections were overconservative, in your opinion?

17 A Yes, sir.

18 Q Was that tendency more prevalent with the
19 reinspectors or the third-party inspectors?

20 A No, the third-party pretty well corrected that.
21 The reinspection people, they're the ones that were really
22 overconservative. But then when S&L came along, they took

1 care of most of this.

2 Q But there still were some instances --

3 A Some instances, yes.

4 Q Let me finish the question. There were some
5 instances when you disagreed with the reinspector -- strike
6 that.

7 There were some instances when you disagreed
8 with the third-party inspector's call on a defect?

9 A Once in a while. Not too often, but once in a
10 while.

11 Q You thought it wasn't a defect; is that correct?

12 A Yes, sir. And again it would be this overlap,
13 you know. I mean it is pretty well cut-and-dried, nonfusion,
14 lack of penetration. But it was the overlap. Maybe there'd
15 be a little bit too much, which -- boy.

16 Q The overlap defect was the one where there seemed
17 to be --

18 A That was the biggest, the biggest problem.

19 Q How is it your report doesn't -- let me strike
20 that and start again.

21 How is it you didn't quantify this disagreement
22 in your report somewhere?

1 A I did. I have it in my report, being over-
2 conservative.

3 Q Yes.

4 A Oh, yes, I have this.

5 Q But you didn't tabulate the number of welds that
6 were affected by this opinion?

7 A No.

8 Q Now how is it you didn't do that? That's my
9 question.

10 A Well, probably if it would have been the other
11 way, you know, I would have, because I would have had to
12 document; whenever you find anything bad, you document it,
13 because it becomes a big issue. But, you know, I felt that
14 really wasn't my job to do this. I informed, like I say,
15 Commonwealth people who were responsible, and I felt I would
16 be doing their job for them, and that isn't part of the NRC,
17 to do their job for the people.

18 Q I take it -- I'm sorry, go ahead.

19 A You know, in fact, it's unusual, I guess, for the
20 NRC to complain because people are being overconservative on
21 things like this.

22 Q I take it that being overconservative in this

1 respect carried with it no safety implication?

2 A No. No, that's making sure that everything is --
3 is really right, you know. I mean being overconservative.
4 But I worked in other places besides the NRC, and I know how --

5 Q All right. These welds that you visually inspected,
6 the results of which are described on pages 20 through 25 of
7 Ward Deposition Exhibit No. 1, are you able to tell me what
8 companies produced these welds, the welders -- let me state
9 that question again. It was clumsily stated.

10 What I can't determine is who the welders worked
11 for that produced these welds. Are these from all the
12 companies or just some of the companies? Can you tell me that?

13 A I don't know.

14 Q Well, are some of the welds from Hatfield, do
15 you know that, that are listed on these pages?

16 A Well, these are Hatfield -- I guess Hatfield
17 did the welding, being these are Hatfield welds.

18 Q That's what I don't know.

19 A I don't, either. I don't -- didn't really care,
20 I guess. You know, I was just making sure that the welding
21 reinspection program was going okay.

22 Q Well, I might conclude that all these welds --

1 strike that and start again.

2 I take it you are sure that these welds were from
3 the reinspection program. I take it you are certain of that?

4 A Yes. Yes. Because I reviewed their reinspections
5 after I got done to make sure, you know.

6 Q Well, if I look at the reinspection report produced
7 by Edison -- maybe I'll just show you Appendix C, page C-1
8 in the report. It indicates for Powers-Azco-Pope, 6607
9 welds were inspected. You can just verify that number at
10 the bottom of the table.

11 A Yes.

12 Q How do I know these 500 welds weren't all Powers-
13 Azco-Pope welds?

14 A You just have to ask the people from Commonwealth.
15 You know, they're the ones that came up with this figure.

16 Q How do you know that these welds are representative
17 of the total population, if you don't know where they came from?

18 A Well, they have records to review and they know
19 where they came from.

20 Q They know.

21 A Right.

22 Q What I'm addressing is the basis for your judgment

1 that the welding was reasonably well done, that's my own
2 characterization, based on these samples of welds that you
3 visually inspected, and if -- I'm concerned that you only
4 looked at one contractor's welds and therefore you didn't
5 get a complete picture of the welding, the reinspection that
6 was going on under the welding program.

7 A No, in my report I looked at six or eight different
8 contractors.

9 Q How do I know that?

10 A It's in my report.

11 Q Well, I just asked you with respect to pages 20
12 and 24 whose welds those were and you didn't know.

13 A Oh. I'm sorry. I'm sorry. I thought you meant
14 where the welders come from.

15 Q No, I was probably obtuse in my question.

16 A No, sir. On page 18, see number 1, it says
17 Hatfield Electric Company.

18 Q Yes.

19 A Okay. Now that goes all the way to number 2 on
20 page 25, which says Hunter Corporation.

21 Q I see. So these welds that we have been talking
22 about in page 20 through 24 were all Hatfield?

1 A Yes, sir. I'm sorry.

2 Q No, that's my fault. I'm sure I didn't make
3 my question clear.

4 A And then on page 22, 2 goes all the way to page
5 26, where number 3 is Nuclear Installation Service. And
6 then these are their welds and so on, of what I looked at.

7 Q All right.

8 A I'm sorry, I misunderstood you.

9 Q Now if I look at Love Exhibit 3, which is 84-13,
10 and there it indicates that the inspector looked at 800
11 welds, visually examined 800 welds, I believe that is stated
12 on page 4 of the inspection report.

13 A Yes.

14 Q Were you the inspector who looked at those 800?

15 A Yes, sir.

16 Q So in addition to the ones that were reported
17 in Ward Exhibit 1, you looked at some additional -- examined
18 some additional welds; is that correct?

19 A Yes, sir.

20 Q And are they reported in Love Exhibit 3?

21 A Yes. Right. Uh-huh.

22 Q All right. Beginning on page 32, is that correct?

1 No, I'm sorry, beginning on page 12.

2 A Yes, page 12.

3 Q At the bottom of page 4 of Love Exhibit 3, it
4 says the Region III inspectors have identified no significant
5 areas of disagreement with these evaluations. I take it
6 that's referring to the engineering evaluations. Can you
7 confirm that for me?

8 A That's both for Muffett and myself.

9 Q All right. Well, the use of the word "significant"
10 suggests to me that there was some disagreement, but you
11 didn't --

12 A Maybe that could be with him, but not with me.

13 Q All right. And again on page 4, it is indicated
14 that no welds identified as free of discrepancies should
15 have been classified otherwise. Do you see that statement
16 on page 4, the beginning of the final paragraph on that
17 page? It's about line four.

18 Q Let's see. What was that again?

19 A That the inspector found no welds identified as
20 free of --

21 MS. WHICHER: He found.
22

1 BY MR. GALLO:

2 Q Let me start again. "He," I assume is referring
3 to you?

4 A Uh-huh.

5 Q You found no welds as identified free of
6 discrepancies that should have been classified otherwise?

7 A No.

8 Q That's your testimony?

9 A Yes.

10 Q There is one other place I am looking for, I
11 thought I had it marked.

12 A The only difference again, as I said, is being
13 overconservative. Now that would be -- but I didn't -- you
14 know, I couldn't point out what welds those were.

15 Q All right, the bottom of page 10, I think there
16 was another area. Bottom of page 10, the very last sentence,
17 it says the NRC inspector -- and again I assume that's you?

18 A Yes, sir.

19 Q -- reviewed the inspection records and visually
20 examined the following 240 welds, and basically found the
21 same results as the third-party inspector.

22 A Right.

1 Q I have added "inspector," again. The word
2 "basically" suggests to me that perhaps there was some
3 difference. Could you explain that, if that is the case?

4 A The only difference would be overconservative.

5 Q All right. You may not know the answer to this
6 question, but I'll ask it, to find out. Page 3. It says
7 the -- it's one, two, three, four, five, six, seven, eight --
8 eight lines from the bottom. It says the Region III senior
9 resident added -- let me start again.

10 The Region III senior resident inspector selected
11 two to four additional inspectors for each contractor to be
12 added to the random sample of inspectors.

13 Do you know whether -- do you know what the basis
14 was for the senior resident's selection?

15 A No, sir.

16 Q Okay. I have a number of questions with respect
17 to the 240 welds, but I think it would only be repetitive, and
18 I'm not going to ask them. That's the 240 welds starting
19 on page 11.

20 A Uh-huh.

21 Q On page 14, this is a small matter, but there is
22 this paragraph, the third paragraph that explains how

1 discrepancies were handled.

2 Now did you have responsibility for that
3 paragraph? Maybe I am asking the wrong witness. It says
4 they were either reworked or they were evaluated.

5 A Yes. The engineering analysis was always -- you
6 know, I didn't have anything to do with that. That was -- I
7 made that -- I made that paragraph, but that was -- they were
8 either physically reworked or they were engineered, you know,
9 engineering analysis to determine acceptability.

10 Q And to determine which cost more as to which they
11 did?

12 A Yes, sir.

13 Q What puzzles me is that in the middle of that
14 paragraph there is a statement that says, "All welds that
15 were repaired were also evaluated and it was determined that
16 they would have met specification, even if they had not been
17 repaired.

18 A Yes, sir.

19 Q That seems to tell me that they really evaluated
20 them all, even the ones they repaired?

21 A Exactly.

22 Q So cost wasn't a consideration?

1 A That's right. But -- this is what they told me
2 before, and some of them, as the reinspection program was
3 going along, they just automatically repaired in some cases.
4 And I asked, you know, why being they were so -- everybody
5 felt so strong that they didn't need to be, and they said it
6 was cheaper to do it than to analyze it away, but they ended
7 up doing it all, anyway.

8 Q I have a question with respect to Ward Deposition
9 Exhibit No. 1. This is 83-39. And in particular the --
10 page 36. That's our recitation of the worst case welds.

11 My understanding is that based on the reinspection
12 program, two welds were determined to have cracks in them.
13 Is that your information?

14 A This is what I have heard.

15 Q Did you look at those two welds?

16 A No, sir.

17 Q Why not?

18 A I don't know why.

19 Q Was it important, in your opinion, to have looked
20 at those two for purposes of your review?

21 A No.

22 Q Why not?

1 A In looking at all these other welds, I felt that
2 it wouldn't take the NRC to look at two cracks and to make,
3 you know, to make any judgment or anything. I mean I have a
4 level of confidence in the people that were doing the job
5 that if there were cracks, they would be dealt with as needed,
6 and I didn't see any need for me to --

7 Q Was that crack or cracks that takes no
8 sophistication to see?

9 A Cracks are completely unacceptable and something
10 has to be done, and CECO and Sargent & Lundy, they -- you
11 know, this is a minor situation that they would have had no
12 problem taking care of without me looking into that.

13 Q Do you have an opinion with respect to -- let
14 me start again.

15 Based on your review as reflected in these two
16 inspection reports that we have been focusing on, do you
17 have an opinion with respect to the qualification of the
18 Hatfield QC inspectors for welding?

19 A I thought they were good inspectors.

20 Q Did you think they were qualified?

21 A Yes, sir.

22 Q How about Hunter Corporation?

1 A Same.

2 Q Pittsburgh Testing Laboratories?

3 A Yes, sir.

4 Q And the other contractors?

5 A Yes, sir.

6 Q Do you have an opinion with respect to the quality
7 of the welding based on your review of the welding produced
8 by the Hatfield welders?

9 A They did an acceptable job, or there would have
10 been all kinds of unacceptable repairs, you know. That kind
11 of stands by itself.

12 Q So is it your opinion that the Hatfield welding
13 work was acceptable?

14 A Sure. Sure it was.

15 Q How about an opinion with respect to Hunter in
16 that same question?

17 A All the rest of them, too, uh-huh. You know, I
18 only look at -- we only look at a very small portion, you
19 know.

20 Q I understand that. Is that a satisfactory portion
21 upon which to base the opinions that you gave?

22 A Yes. What I looked at, I looked at enough welds

1 until I had a feeling of confidence that, you know, that what
2 the reinspection program was supposed to be, that it really
3 was.

4 Q Are you aware that NRC has requested additional
5 information concerning weld discrepancies from Edison?

6 A No.

7 Q You are not aware of that?

8 A (Witness shaking head no.)

9 Q Do you know what a welding inspector checklist is?

10 A Well, they have different checklists. It all
11 depends on the individual. I really don't -- you know,
12 ordinarily it's for what -- to make sure that they, you know,
13 they've checked for weld spatter and they've checked for this
14 and they've checked for that.

15 Q It's a piece of paper that has all those items
16 listed on it?

17 A Yes.

18 Q When they check for these things, do they mark
19 off what they've looked at?

20 A Ordinarily, to make sure they've got the right
21 location, what information they feel that they need to do
22 their job, to make sure they don't miss anything, you know.

1 Q Do you know whether or not welding fit-up is
2 one of the items listed on the checklist?

3 A I don't know.

4 Q I understand that you are going to be a witness
5 in the upcoming hearings; is that correct?

6 A That's what I understand, yes, sir.

7 Q Can you tell me what the scope of your testimony
8 is going to be?

9 A The bottom line?

10 Q No, just the area that you're going to cover.
11 You can tell me the bottom line, too, if you'd like, but
12 the question is really the area that you are going to cover.

13 A Looking at welds, the welding.

14 Q The subject matter that we have been talking about
15 here today?

16 A Yes, sir, right.

17 MR. GALLO: Let's go off the record a moment.

18 (Discussion off the record.)

19 BY MR. GALLO:

20 Q Looking at Love Exhibit 3, on the bottom of page
21 16 of Love Exhibit 3, there was this question of whether or
22 not the welds that were discrepant because of overlap perhaps

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1 might contain other defects that were masked by the overlap.

2 A Uh-huh.

3 Q Were you responsible for writing the information
4 on this particular issue that appears at the bottom of 16
5 and the top of 17? Really it's the top of 17, not the bottom
6 of 16. The information is at the top of 17.

7 A Yes, sir. The NRC findings? Yes, sir.

8 Q And can you state for the record just what
9 your finding was?

10 Well, let me withdraw that question and ask a
11 different question.

12 Did you find that in fact overlap was masking
13 other defects with respect to these discrepancies?

14 A No, sir.

15 Q And what was the basis for that judgment, that
16 conclusion?

17 A Well, they did grind any of the overlap, they
18 ground it off, and it spoke for itself. When you looked at it,
19 there was nothing there.

20 Q Do you know how many welds they did that to?

21 A 50.

22 Q 50?

1 A Uh-huh.

2 Q Let me ask you this question. It occurs to a
3 neophyte, in grinding the overlap, might they not have ground
4 away another defect in the process?

5 A They could have. Probably not. The overlap wasn't,
6 you know, a lot of overlap. I mean it was just enough where
7 you could barely call it overlap, you know. Maybe if it would
8 have been a mountain of overlap, they might have found some
9 porosity or something inside, but it -- they didn't have to
10 grind too much off to make the weld acceptable.

11 So, you're right, they could have ground out some
12 porosity, they could have ground some slag out.

13 Q Well, where did the notion come from that it was
14 possible that overlap would mask some other defect? Where
15 did that notion come from? Was it your idea?

16 A No, sir. That's a reason for overlap. That's
17 just a noted reason, that it could possibly be masking some-
18 thing, an extra, you know, some extra weld that's there.
19 You don't know what is underneath it until you grind it away.
20 You know, it's too much over -- over something.

21 Q Well, what distinguishes between -- I mean the
22 same problem could exist with respect to a weld that did not

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1 suffer from overlap, couldn't it?

2 A Yes, sir.

3 Q So what prompts one to think that overlap
4 presents a problem where in a normal weld it would not?

5 A That's an acceptance criteria that says there
6 shall be no overlap.

7 Q All right.

8 A And, you know, engineers make up the code and so
9 that's what we live by, and if there's excessive overlap, it
10 has to be removed.

11 Q Well, is there something unique about overlap
12 that might suggest another discrepancy, when that might not
13 be the same with respect to a weld that's just normal, that
14 did not suffer from overlap?

15 A Well, again it could be masking something, and if
16 a weld is acceptable and doesn't have overlap, naturally
17 it isn't masking something.

18 Q I'm not making my question clear. I understand
19 that that's the point. My question was trying to get at
20 what suggests to anyone that overlap masks anything since
21 the same problem could occur with respect to a normal weld?

22 A Because it's -- once in a while it does mask

1 something. It just so happened that in this situation they
2 did not.

3 Q I see.

4 A But again, with this program, most of these were
5 borderline types, like ordinarily in the original -- maybe
6 on the original inspection when they said they found overlap,
7 I mean it was overlapped, and there was probably things
8 underneath there. That's the way the real world is. But
9 on the reinspection program, it had already been looked at
10 once before, and so there was a little bit there, and it
11 could have been.

12 Q I see.

13 A And so that's why when they did 50, it didn't
14 surprise me they didn't find anything. But this was another
15 proof that there wasn't anything there.

16 Q You had indicated that overlap was one defect
17 that the reinspectors were conservative about.

18 A Yes.

19 Q Was that true of PTL inspections?

20 A That was all of them.

21 Q But PTL reinspectors, too?

22 A Yes, sir. Yes, sir.

1 Q All right. When you looked at the -- when you
2 reviewed the original inspection records at Hatfield, were
3 there any documentation problems that you noted with respect
4 to those records that hampered your review?

5 A Not in looking, you know, for the visual welds,
6 no.

7 Q How about for the reinspection records at Hatfield?

8 A No.

9 Q Did you have any documentation problems there?

10 A No, not in looking at welds.

11 Q For the welds that you looked at, the ones that
12 you visually examined, you said you looked at weld travelers
13 with respect to those welds?

14 A That's right.

15 Q Did you encounter any documentation problems in
16 looking at those weld travelers?

17 A No. In most cases they had already been reviewed
18 by Hatfield, and if there had been any problems, they had
19 been taken care of.

20 MR. GALLO: Can we take a five-minute recess, so
21 I can give this thing a run-through? I want to make sure I
22 don't miss anything.

(Recess.)

BY MR. GALLO:

Q Mr. Ward, I am going to give you some numbers and just ask you to accept them subject to check. What that means is that by using the numbers you are not guaranteeing at this time that they are accurate. They are numbers that I have taken out of the Edison reinspection reports, subject to check. It looks to me like approximately 26,660 welds were reinspected with respect to Hatfield, and out of that, they determined that there were 2117 discrepancies.

Do you have an opinion with respect to that ratio? Does that sound to you like a lot of discrepancies? Is that a great many, or what would be your characterization of that ratio?

A I have no problem with that. If this same inspection was done at any other place, you would come up with the same results, and mainly, like I said before, because the findings were borderline, one day you would say -- depending on how you would feel, you might say that weld was acceptable. The next day it might be unacceptable, like the overlap we were talking about.

Q Are you bothered by the sheer number of

1 discrepancies in relation to 26,660?

2 A Not at all, after looking at what I looked at
3 on hundreds of welds, I have no problem with that, because I
4 know what those really are.

5 Q If I were to ask you similar questions with
6 respect to Hunter and PTL, would your answers be the same?

7 A The same.

8 MR. GALLO: That's all the questions I have.

9 MR. PATON: Off the record.

10 (Discussion off the record.)

11 BY MR. GALLO:

12 Q With respect to the Hunter Corporation, approxi-
13 mately 109 discrepancies were identified out of a total of
14 approximately 3725 welds that were reinspected for Hunter
15 Corporation. Is that ratio, that number of discrepancies,
16 given the total number of reinspected welds, does that bother
17 you, Mr. Ward?

18 A No, sir. No.

19 Q When I ask you whether or not that bothers you,
20 what does that mean to you?

21 A It doesn't bother me because I know what
22 those discrepancies are. They are borderline type

1 discrepancies, and a lot of them are overconservative, and
2 as far as I'm concerned are not really discrepancies.

3 Q I don't have the number at hand for PTL, so I'm
4 not going to ask that question.

5 MR. GALLO: I'm finished.

6 MS. WHICHER: Let's go off the record.

7 (Discussion off the record.)

8 E X A M I N A T I O N

9 BY MS. WHICHER:

10 Q Mr. Ward, it's my turn to ask you some questions.
11 Now if my questions seem a little silly to you, I want you to
12 know I don't have a background in welding and I don't have a
13 technical person to consult with me here today. So if you
14 don't understand my question, and the question has some
15 incorrect assumption in it, I hope you will point that out to
16 me so I can correct my question and ask you a proper question.

17 Can we agree that you will do that?

18 A Yes.

19 Q Mr. Ward, did you have any role in approving
20 the reinspection program?

21 A No, I did not.

22 Q Did you have any role in approving the

1 definitions of accessible and inaccessible?

2 A No.

3 Q Did you have any role in approving the definitions
4 of recreatable and nonrecreatable?

5 A No.

6 Q Did you ever see any documents that were denominated
7 or noted as interpretations of the reinspection program?

8 A As interpretations? No, I have not. No.

9 Q You have never seen anything that says
10 reinspection interpretation on it?

11 A I don't believe I have, no.

12 Q Mr. Ward, it's my understanding that some of the
13 inspectors whose work was reinspected, inspected a number of
14 different attributes; is that right?

15 A That's what I understand.

16 Q And it's also my understanding that if an
17 inspector, our hypothetical inspector who inspected several
18 different types of attributes, only failed in the first
19 three months one attribute, his work was only expanded in
20 that one attribute for the second three months; is that right,
21 the reinspection of his work?

22 A I believe so.

1 Now to go back to the other one where a visual
2 weld inspector was qualified to look at other attributes,
3 you know, he could have been, you know, and he could not
4 have been -- I really don't know if they were or not --
5 you know, I didn't check into that.

6 Q You were concerned solely with visual welding
7 inspections; is that right?

8 A Yes.

9 Q Do you know how many people there were
10 encompassed within the reinspection program whose work was
11 reinspected, who inspected more than one type of attribute?

12 A No, I don't.

13 Q Mr. Ward, is my understanding correct that all of
14 the reinspections of welding during the reinspection program
15 were visual inspections?

16 A Yes.

17 Q There are other types of inspections that one
18 can do on a weld; is that correct?

19 A Yes, there is.

20 Q And those are called nondestructive, or some of
21 those are called nondestructive tests; right?

22 A Yes.

1 Q Can you list those for me, please?

2 A Now by -- are you speaking about hanger welds or
3 pipe welds or any kind of welds in general?

4 Q Any kind of weld that would be covered under
5 the reinspection program.

6 A Under the reinspection program was visual weld
7 inspection.

8 Q Is it not the case, Mr. Ward, that there are
9 other types of nondestructive examinations that could be
10 conducted on welds that were not conducted during the
11 reinspection program?

12 A You could perform different types of nondestructive
13 examinations, yes.

14 Q Okay. What are those types?

15 A Are you speaking about hangers or pipe welds or
16 any type of weld in general?

17 Q Any type of weld in general.

18 A Well, if you wanted a volumetric examination, like
19 of a pipe weld, you'd perform radiography or ultrasonics.
20 If you wanted surface examinations of pipe hangers, it
21 could be liquid penetrant, magnetic particle, or visual.

22 They also have, like checking tanks, they have

1 bubble testing, checking tank welds, and those are -- and then
2 they have eddy current, which is checking tubing in steam
3 generators which is a nondestructive examination.

4 That's about all the nondestructive examinations
5 that I'm familiar with.

6 Q Okay, Mr. Ward, do you know why no type of
7 nondestructive examination except visual weld examinations
8 was performed during the reinspection program?

9 A I understand that was the requirement. Now
10 some engineer had made that decision that these -- all these
11 welds needed was a visual examination. You know, I guess
12 Commonwealth Edison had Sargent & Lundy, you know, to make
13 this decision.

14 Q Do you know whether that was an NRC decision or
15 a Commonwealth Edison decision?

16 A That wouldn't have been an NRC decision. I mean,
17 you know, when they -- there are certain requirements that are
18 in the code for building whatever you may be building, hangers
19 or pipes, and this is pretty well spelled out on what NDE
20 and welding methods are required.

21 We are just a regulator to make -- you know, to
22 see that people follow procedures and are doing the work

1 that they say they're going to do.

2 Q Mr. Ward, it's possible, is it not, that there
3 can be a flaw in a weld, and that flaw is not detectable
4 through visual examination?

5 A If it is in the inside of the weld, you would
6 not know, because you're only looking at the outside, like
7 you say.

8 Q What types of flaws might those be?

9 A There could be a little bit of -- by flaws, are
10 you meaning unacceptable to some other code or -- like, for
11 instance, there's slag, but until it's a quarter of an inch
12 long, it isn't, you know, unacceptable.

13 Q Let's just talk about unacceptable. Let's limit
14 my term "flaws" to unacceptable conditions.

15 A Well, being these were visual examinations, it
16 really didn't make any difference what was underneath. No
17 matter how big of a defect that may be there, because somebody,
18 some engineer had made that decision, it only requires a
19 visual examination, and so what you could not see, you know,
20 it wouldn't have -- you know, it doesn't really make any
21 difference what's underneath. But underneath there could be
22 slag, there could be porosity, depending on the location,

1 there could be lack of fusion, lack of penetration, you know.

2 Q Does that complete your answer?

3 A Well, unless I had the whole list of items of
4 what could be underneath. You know, there could be any
5 number of things underneath there.

6 Q Okay. So is my understanding correct, Mr. Ward,
7 that visual examination cannot tell you whether there is a flaw
8 underneath the surface of the weld?

9 A Right. Uh-huh.

10 Q Now, Mr. Ward, you did a number of visual
11 examinations yourself; right?

12 A Yes.

13 Q And you did only visual examinations?

14 A Only visual examinations.

15 Q Why did you not use some other types of examinations,
16 such as radiography or magnetic particle testing or any of
17 the others that you mentioned?

18 A Because that wasn't a code requirement. It
19 wasn't required that all this be done.

20 Q What code are you referring to?

21 A AWS.

22 Q Your last answer referred to the AWS code?

1 A Yes.

2 Q Were any of the welds in the reinspection program
3 covered by any code other than the AWS code?

4 A I believe that probably -- I'm not sure, but I
5 believe Hunter could have had some ASME, being that they are
6 a piping contractor.

7 Q And would the ASME code require anything other
8 than visual inspection?

9 A They could, but this wasn't required, any other
10 than the visual in these hangers.

11 Q The reinspection program didn't require anything
12 other than visual inspection? Is that the --

13 A Yes.

14 Q Did I correctly paraphrase your last answer?

15 A Say it again.

16 Q Is my last understanding correct that in your
17 last answer you meant that the reinspection program only
18 required visual examinations and, therefore, you limited
19 yourself to visual examinations?

20 A Yes, right.

21 Q Mr. Ward, are you aware that there have been a
22 number of allegations against Hatfield Electric Company

1 regarding welding?

2 A Yes.

3 Q Are you involved in, or have you been involved in,
4 the resolution of those allegations?

5 A Some of them.

6 Q Do you consider any of those allegations to have
7 been resolved by the reinspection program?

8 A Yes.

9 Q Are those documented in your reports?

10 A Yes, they are.

11 Q Which reports are those documented in?

12 MS. WHICHER: Let's go off the record.

13 (Discussion off the record.)

14 BY MS. WHICHER:

15 Q So the allegations that are resolved in Report
16 83-39, which is Ward Deposition Exhibit 1, that portion --
17 that allegations were closed out by you on the basis of
18 the reinspection program; is that right?

19 MR. GALLO: I'm going to object at this point
20 unless we identify the allegations. The question is vague.
21 I assume he's not responsible for all of them.

22 MS. WHICHER: I don't know. That's my question.

1 BY MS. WHICHER:

2 Q Were you responsible for all of the allegations
3 that are dealt with, all the welding allegations that are
4 dealt with in Report 83-39, Ward Exhibit 1?

5 MR. PATON: Wait a minute. You're cutting each
6 other off. Wait until she finishes the question.

7 Would you mind repeating it again?

8 BY MS. WHICHER:

9 Q Were you responsible for all the welding
10 allegations that are dealt with in Ward Exhibit 1?

11 A I'm not sure unless I look through. I think
12 there is one or two in here that other people were involved
13 in. Like there's some places where Muffett looked at their
14 calculations down at Sargent & Lundy.

15 Q Okay, Mr. Ward, let's start with page 4 of
16 Ward Exhibit 1, and there is a heading "Allegations" at the
17 bottom of that page. Do you see that?

18 A Yes.

19 Q Okay. Now that portion of the report, item 7,
20 "Allegations," continues to page 53 of the report. Do you
21 agree with that?

22 A Yes.

1 Q Okay. And there are a number of allegations, they
2 are designated by letter A through M within pages 41 to 53;
3 is that right?

4 A Yes.

5 Q Can you tell me, just identify by letter, the
6 allegations for which you were responsible?

7 A Well, I'm somewhat responsible for all of them. A,
8 I was responsible, completely responsible for that one.

9 And I'll take on B, C, D, E, F, G, H, I -- boy, maybe I --

10 (Laughter.)

11 -- J, K, L.

12 Q You've only got one left.

13 A I guess I did. Maybe I'm thinking of another.
14 I go on so many trips and everything. I guess all of them.
15 Yes. Yes. Yes.

16 Q Mr. Ward, have you made any type of evaluation
17 of the acceptability of inspections that were nonrecreatable
18 or inaccessible that were done by inspectors whose work was
19 included in the reinspection program?

20 A No.

21 Q Who would have made an evaluation of that type, if --
22 well, let me back up. Do you know whether anyone has made

1 that type of evaluation?

2 A I don't know.

3 Q Have you made an evaluation of -- let me strike
4 that.

5 Mr. Ward, whose decision was it to accept the
6 90, 95 percent agreement rate for subjective and objective
7 attributes?

8 A I really don't know.

9 Q Can you tell me what things are included in the
10 list of what would be classified as subjective attributes
11 within the reinspection program?

12 A This is Commonwealth Edison's terms, objective,
13 subjective, and my part of it, you know, I guess you'd say
14 subjective is my visual examination, looking for various
15 defects, but at the same time I guess you would say objective
16 would be looking at a profile. But when I was looking at
17 these welds, you know, if they were subjective or objective,
18 I really didn't care. I was just looking at the welds, you
19 know.

20 Q Is it fair to say you were neither involved with
21 nor concerned with the concept of subjective vs. objective?

22 A Exactly.

1 Q Mr. Ward, you don't have any background in
2 sampling or statistics, do you?

3 A No.

4 Q Mr. Ward, I'd like you to turn to Love Exhibit 3,
5 which is Report 84-13, and turn to page 36. Is this a portion
6 of the report for which you were responsible, or is that
7 Mr. Muffett's part of the report?

8 A I'm looking to see what part is his and what
9 part is mine.

10 MR. GALLO: Page 27.

11 THE WITNESS: This is -- on page 27, anything
12 after that is Jim Muffett.

13 BY MS. WHICHER:

14 Q Mr. Ward, do you recall being involved in a
15 series of meetings beginning in 1982, after the 82-05 CAT
16 program inspection report came out, where the use of a
17 Commonwealth Edison Level III inspector was discussed?

18 A I believe I attended one meeting where he was
19 discussed. I'm trying to remember if it's a meeting or --
20 when you speak about the meeting, do you mean the NRC people
21 meeting, or meeting with Commonwealth and us?

22 Q Both. Either one. Any meeting.

1 A There was some type of meeting where that was
2 discussed.

3 Q Okay. And do you recall what role that Commonwealth
4 Edison Level III inspector was having in the program, or was
5 supposed to have in the program?

6 A He was -- now this is the way I think I remember
7 it. He was to go out and look at -- to reinspect the third
8 party's reinspection, S&L, and then he came up, I guess, with
9 some findings, and then the way I understand it, our people
10 -- that was kind of defeating the purpose, you know. There
11 was already a third party, and then for Commonwealth to
12 overrule the third party, the NRC did not buy that.

13 Q Mr. Ward, why is that Sargent & Lundy is referred
14 to as a third party in the context of this reinspection
15 program?

16 A The only reason I can think of is there was an
17 original inspection, which is No. 1. Then there was people
18 that went out that did the reinspection program, was the number
19 third -- was the second party. And then S&L went out to look
20 at theirs, which is -- that's looking at it three times.
21 That's the only reason I can think of.

22 Q Mr. Ward, is my understanding correct that the

1 Sargent & Lundy Level III inspector only looked at subjective
2 attributes that were rejected by the inspectors?

3 A I don't know about the subjective, you know. I
4 don't know. They looked at welds that the contractors
5 stated that they felt were unacceptable.

6 Q Is my understanding correct, the Sargent & Lundy
7 Level III inspector did not look at any welds that the
8 reinspectors thought were acceptable?

9 A They could have. I didn't see where it was
10 documented if they did.

11 Q Do you know, Mr. Ward, whether the plan to use
12 Level III Sargent & Lundy inspector is documented in any parts
13 of the -- any documents that set up the reinspection program?

14 A I don't know.

15 Q Do you know, Mr. Ward, whether anyone has
16 analyzed the results of the reinspection program to see what
17 the results would be if Sargent & Lundy Level III inspector
18 results were disregarded?

19 A I don't know. Maybe Muffett has.

20 Q I understand from one of your reports, Mr. Ward,
21 that Commonwealth Edison had some discrepancies repaired before
22 an engineering evaluation was done; is that correct?

1 A Yes.

2 Q And subsequently an engineering evaluation was
3 done?

4 A Yes.

5 Q Mr. Ward, can you explain to me how an engineering
6 evaluation can be done after the repair is done to that weld?

7 A No, I cannot.

8 Q Mr. Ward, I'd like you to turn, please, to Love
9 Exhibit 3, to page 10, the last paragraph on that page, the
10 first sentence, and I will leave out the parenthetical
11 expression. It reads:

12 "Based on the inspection of welds by the
13 NRC inspector for Hunter and PTL activities and
14 the amount of welds that the additional
15 inspectors had examined, it was decided that
16 the NRC inspector should visually examine only
17 the HECO welds."

18 Do you see that sentence?

19 A Uh-huh.

20 Q Can you explain to me who the NRC inspector is
21 that is referred to in the first line of that sentence?

22 A Me.

1 Q And are you the NRC inspector referred to in the
2 last portion of that sentence as well?

3 A Yes, it's me, uh-huh.

4 Q Mr. Ward, is my understanding correct that you --
5 when you did your visual examination of welds that had been
6 covered in the reinspection program, you looked only at
7 welds done by Hatfield Electric Company?

8 A No. As you can see in this one here, I looked
9 at several other.

10 MR. PATON: Just a minute. She can't say "this
11 one here." You've got to say what it is.

12 MS. WHICHER: Ward Exhibit 1.

13 THE WITNESS: I guess.

14 BY MS. WHICHER:

15 Q Okay. Can you explain to me, then, Mr. Ward --

16 MR. GALLO: Wait a minute. I don't think he had
17 a fair opportunity to complete his answer.

18 BY MS. WHICHER:

19 Q I'm sorry. If you had not completed your answer,
20 please do so.

21 MR. GALLO: Do you remember the question?

22 THE WITNESS: I looked at several companies'

1 welds, and it is documented in Report 83-39, besides Hatfield.

2 BY MS. WHICHER:

3 Q Given that fact, Mr. Ward, can you explain to me
4 what is meant by the sentence that I read from page 10 of
5 Love Exhibit 3?

6 A Well, like it says, because based on an inspection
7 of welds that I had looked at for Hunter and PTL, that's --
8 and there's a lot of them in there, that's why I only looked
9 at the Hatfield welds in this particular document.

10 Q I see.

11 So is my understanding correct that for Love
12 Exhibit 3, which is Report 84-13, for that report you only
13 visually examined Hatfield Welds, whereas for your Report
14 83-39, you examined reports -- or welds of several different
15 contractors?

16 A Yes.

17 Q Can you tell me why it was decided that for
18 Report 84-13 you would only visually examine Hatfield welds?

19 A Because they seemed to be the one that had the
20 most trouble, and they had looked at more welds than anybody
21 else, and I already had a good feeling about the other
22 companies, and I felt there was no need to look at them. So

1 just to satisfy myself, I looked at 250 more.

2 Q Now continuing on in that paragraph where we
3 started, Mr. Ward, it talks about an added HECO weld
4 inspector. Why was that weld inspector added?

5 A Boy, this goes back, you know. It seems to me
6 like -- I'm not sure why he was added. I'm not going to guess.

7 Q The last line of that paragraph, Mr. Ward, refers
8 to your review of some inspection records; correct?

9 A Uh-huh.

10 Q Now what inspection records are you talking about
11 in that sentence?

12 A I say that the NRC inspector reviewed inspection
13 records and visually examined the following 240 welds, and
14 basically found the same results as the third party, and
15 that's just like -- I don't know how to make it any more clear.

bu5 16 Q Here's my question, Mr. Ward, in that paragraph
17 we have a group of 570 welds inspected by a particular
18 Hatfield inspector, we had a group of 656 welds inspected
19 by the third-party Level III inspector, and a group of 501
20 welds that did not meet specifications. And I'm wondering
21 whether in that last sentence when you talk about the
22 inspection records, you're referring to the 570 welds, those

1 the 656, or the 501?

2 A No. You've got to read just like it says. The
3 NRC inspector reviewed the inspection records and visually
4 examined the following 240 welds.

5 Q I see.

6 So you only looked at the inspection records for
7 the 240 welds that you visually examined?

8 A Right.

9 Q Okay. I'm sorry it was so difficult. I just
10 didn't understand the sentence.

11 A No, that's okay.

12 Q I just didn't know what you meant there.

13 A Okay.

14 Q Why did you happen to select those 240 welds?

15 A I looked at enough until I had a warm feeling
16 that there was no problem, and that turned out to be 240.
17 You know, no special -- that's the way with all these numbers.
18 Numbers really didn't mean anything. I looked at welds of
19 various companies until I had a good feeling that the
20 reinspection program was going the way it was supposed to be
21 going.

22 Q Okay. And the records that you looked at, that

1 you -- you began with a set of records out of which you
2 ended up reviewing 240; right?

3 A Right.

4 Q And that set of records that you began with
5 contained records of how many welds?

6 A 240.

7 Q No. I don't think you understood my question,
8 and it probably was not phrased very well.

9 You ended up reviewing inspection records for 240
10 welds; right?

11 A Yes.

12 Q And then you stopped because you had this warm
13 feeling about Hatfield; right?

14 A Exactly.

15 Q How many inspection records were there that you
16 could have looked through beyond the 240?

17 A 5000 or how many?

18 Q I don't know. That's my question.

19 A I don't know. I didn't count them to see how
20 many I could have looked at. You know, I -- I just didn't,
21 you know.

22 Q Were these 240 records and welds only records from

1 this particular added Hatfield inspector?

2 A Yes.

3 Q Okay. They were not -- it was not a sampling of --

4 A No, it was only from this one guy. I could
5 have made it 100, you know. Probably another reason why I
6 made it two, I had a lot of time and I just -- I thought
7 probably this would be the last time, and I just wanted to
8 make sure. It ended up being 240.

9 Q Mr. Ward, would you turn, please, to page 14 of
10 the report and about two-thirds of the way down the page there
11 is the number one, and as I understand this portion of the
12 report -- and tell me if I'm mischaracterizing it -- in this
13 portion of your report you are discussing certain aspects of
14 Commonwealth Edison's final report of the reinspection program;
15 is that right?

16 A Yes.

17 Q And your -- the first item that you discuss, there
18 is a sentence near the bottom of the page that reads:

19 "For hangers that have weld traveler
20 cards with incomplete data, new inspections
21 are being performed. These new inspections
22 are in addition to, and outside the scope of,

1 the reinspection program."

2 Do you see those two sentences?

3 A Uh-huh.

4 Q Can you explain to me what type of program these
5 hangers are under, why these hangers are not covered by the
6 reinspection program?

7 A Well, I say on my findings that NRC -- let's
8 see. I reviewed the completed program that was outside the
9 scope of the reinspection for hangers that had -- that had
10 weld traveler cards with incomplete data, and then -- let's
11 see. The inspector found the program -- well, the program
12 was just like it says, they were reviewing to make sure that,
13 you know, they had weld travelers. They had hired extra
14 people and had all kinds of people in there working on these
15 weld traveler cards, and just to make sure that all the
16 information was there.

17 I looked at so much paper, I don't know, really,
18 the details except what I have right here in my report.

19 Q Okay. Let me ask you a few specific questions,
20 Mr. Ward, and maybe I can pin this down a little more directly.

21 It's a fact, is it not, that some of the weld
22 traveler cards for Hatfield's hangers were not complete?

1 A Yes.

2 Q And it's a fact, is it not, that those weld
3 traveler cards were excluded from the reinspection program?

4 A That -- I don't know if that had anything to do
5 with the reinspection program.

6 Q It's a fact, is it not, Mr. Ward, that if Hatfield
7 came across a weld and it could not determine who the inspector
8 was, that weld did not get picked up in the reinspection program?

9 A It seemed like that's the way it was. I'm not
10 sure, you know. This has been so long ago, and you kind of
11 forget different things.

12 Q That's all right. You can only answer to what you
13 know. That's all I'm asking.

14 MR. GALLO: I think you should realize, of course,
15 that this man has said that he's testified solely to welding,
16 and you asked him a bunch of questions outside of that area.

17 BY MS. WHICHER:

18 Q Mr. Ward, do you know how many hangers in fact
19 there were with incomplete data?

20 A No, I don't.

21 Q You did write this section of the report?

22 A Yes, I did, unless I spell it out in my report, I

1 really -- you know, I don't really know.

2 Q Mr. Ward, looking at the next page of the report,
3 page 15.

4 A Uh-huh.

5 Q Under Category Y, do you see where it says
6 Category Y?

7 A Uh-huh. Yes.

8 Q There is a sentence under the heading "NRC
9 Findings" that reads:

10 "Portions of the weld with these
11 discrepancies were considered ineffective
12 and weld length capacity was based on a
13 reduced weld length."

14 Do you see that?

15 A Yes.

16 Q Were you involved in making that determination?

17 A I believe this part is out of the reinspection
18 program there that -- or the reinspection program from
19 Commonwealth that describes what Category Y really is, and
20 that's where that came from.

21 Q Okay. So this is just something you took
22 verbatim or paraphrased, perhaps, from the reinspection report;

MILLERS FALLS
ERASE
COTTON CONTENT

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1 is that right?

2 A Yes.

3 Q Now turning to page 16 of your report, and at the
4 bottom, you recall Mr. Gallo asked you a series of questions
5 concerning Pittsburgh Testing Laboratory welds with overlap.
6 Do you recall that?

7 A Yes.

8 Q How many welds were there that failed, how many
9 PTL welds were there that failed because of overlap?

10 A I don't know.

11 Q How many were selected to be ground down?

12 A It seemed like in that other report that I read
13 that there was 50. I don't know, I don't remember if more
14 than that were ground or if it was just 50 or --

15 Q Whose decision was it to select 50 of the welds
16 to grind down?

17 A I don't know.

18 Q Do you know who selected which 50 welds to be
19 ground?

20 A No.

21 Q Who would know the answers to those questions?

22 A Probably Tuetken would probably know, from --

1 Q I'm sorry, had you finished?

2 A He's from Commonwealth Edison.

3 Q I take it from your answer, Mr. Ward, that this
4 was not a decision that was made by the NRC, but rather one
5 that was made by Commonwealth Edison; is that right?

6 A Yes. As far as I know, nobody from our organiza-
7 tion told them to do that, no. As far as I know, they didn't
8 make that decision to tell them that.

9 MS. WHICHER: Can we go off the record for a just
10 a minute?

11 (Discussion off the record.)

12 BY MS. WHICHER:

13 Q Mr. Ward, do you know whether anyone at the NRC
14 looked to see whether there were any patterns among welders
15 for a particularly high rejection rate?

16 A No.

17 Q You don't know whether anyone looked for that?

18 A I don't know.

19 Q Turning to page 22 of Report 84-13, under the
20 heading "Licensee Action on 10 CFR 50.55(e) Item," do you
21 see that?

22 A Page 20 -- oh, yeah.

1 Q Page 22. What contractor is this -- is involved
2 in this item?

3 A (Witness reading document.)

4 I don't remember.

5 Q This is your section of the report, isn't it, Mr.
6 Ward?

7 A Yes.

8 Q And turning to the next page, 23, Mr. Ward, and
9 continuing on to page 24, concerning an allegation with
10 respect to a PTL inspector detailed to Hatfield Electric
11 Company. This allegation, I take it, concerns equipment
12 fabricated by Systems Control Corporation; is that right?

13 A Yes.

14 Q Were you involved in the investigation of this
15 allegation?

16 A This part, what you see, is what I did.

17 Q Beyond this -- the material contained under
18 Heading 4, "Allegation," have you been involved in any other
19 matters concerning Systems Control Corporation?

20 A No.

21 Q As I understand it, Mr. Ward, you selected 100
22 welds on -- 100 Systems Control Corporation welds to review;

1 is that correct?

2 A Yes, I did.

3 Q How did you go about selecting those 100 welds?

4 A Well, like I say here, approximately 95
5 connections out of 100 were visually examined, so I asked --
6 you know, I just said, "I want to see 100, or" -- how many
7 did I say? Yes, 100. And I just sampled 100 of them, you
8 know. There are various places, you know, tried to get a
9 sample as much as I could of different items. They will all
10 be welds, but different places.

11 Q What is a B weld?

12 A If I could run up above, I've got a picture of
13 one to show you, but what it is, it's a plate welded onto a
14 stanchion like, and it's support between -- it just holds
15 this plate on, if I remember right, and then this plate is
16 welded onto some other supports that go straight up and down.

17 Q I'd like to turn your attention back for a minute
18 to the 82-05-19 reinspection program. As I understand it,
19 Mr. Ward, one of the basic premises of that program was that
20 an inspector would do his worst work during his initial time
21 on the job; is that right?

22 A I don't know if he would do his worst work then,

1 you know. I don't know.

2 Q Okay. So you don't have any opinion about that?

3 A (Witness shaking head no.)

4 To say that he does his worst work -- you know,
5 maybe if he's been out all night the night before, he does
6 his worst work the next day. I don't know.

7 Q Do you have any opinion, Mr. Ward, as to whether
8 an inspector's work improves over time or gets worse over time?

9 A Well, it kind of stands to reason the more
10 experience and time you get, the better you are. But, of
11 course, a visual inspection, like there are procedures on
12 how much experience you need and -- I could teach you in a
13 couple of days in looking at welds and by the end of a week
14 you'd just about be an expert. I mean, you know, to look at a
15 weld, if you have AWS and acceptance criteria which even has
16 pictures, it doesn't -- you know, it's -- and then you have
17 your training and -- I don't know what else to say. You know,
18 yes, as time goes on, if he's been looking at welds for --
19 for a year, he should be pretty good, and probably five or 10
20 years from then -- maybe when he gets older, you know, his
21 eyes will get bad, is the only reason 50 years later. But
22 I don't see, you know, how a guy can be any different, really,

1 from one year to the next year at visual, at looking. Like
2 maybe other methods, ultrasonic, radiography, but not visual.

3 Q Mr. Ward, I may have already asked you this, and
4 if I did, I apologize. Let me ask you once more:

5 Were you aware that there were certain Hatfield
6 welds where the initial inspector could not be identified?

7 A Say that again?

8 Q Were you aware that there were certain Hatfield
9 welds as to which the initial inspector, the original
10 inspector, could not be identified?

11 A I'd heard that there probably were, you know. I
12 don't know.

13 Q So you don't know what happened to those welds?

14 A No, I don't. No.

15 Q Mr. Ward, are you familiar with the recertification
16 aspect of the 82-05-19 program where inspectors who were still
17 on site were recertified?

18 A Yes, they were recertified, right. I'm familiar
19 with it.

20 Q I'm sorry?

21 A I heard that they were recertified, yes.

22 Q Were you involved in that process?

1 A No, I was not. On that recertification, I -- I
2 had spelled out on my report where I went back and looked at
3 personnel certifications to make sure that there is a high
4 school diploma in their package. That was the original
5 problem. To make sure that the certifications were acceptable
6 now.

7 I went through every item because of the non-
8 compliance originally from the NRC to make sure that they
9 were all taken care of, and that is documented in Report 83-39.
10 It starts on page 18, and at the beginning of every company,
11 like No. 1 is Hatfield, it states the problem that was the
12 noncompliance, and then what was documented in the non-
13 compliance, and then my review on what I found in reviewing
14 that.

15 Q So is it correct to say that you went back and
16 reviewed the certification packages for each contractor at
17 some point in time?

18 A Yes, I did.

19 Q When did you do that review?

20 A I don't remember, a period from August to November
21 22nd, 1983, some period in time -- that time.

22 Q But you don't know when within that time frame you

1 did that?

2 A No, I don't.

3 Q Mr. Ward, turning your attention to Ward Exhibit 1,
4 Report 83-39, page 36, it is my understanding that this page
5 -- at the top of the page there are -- it is mentioned that
6 there was an engineering evaluation of weld discrepancies
7 on 100 welds, and then it says in parentheses "worst cases."

8 Do you see that?

9 A No.

10 Q Who picked the 100 worst case welds?

11 A Commonwealth.

12 Q Do you know what basis they used to choose those
13 100 worst case welds?

14 A No, I don't.

15 Q Do you know who at Commonwealth made the determina-
16 tion?

17 A No, I don't.

18 Q And of the 100 welds you looked at -- I think
19 Mr. Gallo added up about 53 of those.

20 A Yes.

21 Q How did you pick which 53 to look at?

22 A Based on -- let's see. I really don't know.

1 Probably what was more accessible than the others, probably.
2 That was why I had already looked at hundreds, and I wasn't
3 going to pick these far off some place and, you know -- so
4 that was the only reason.

5 MS. WHICHER: Mr. Ward, that's all the questions
6 I have for you. Thank you.

7 MR. GALLO: I've got a few. I get a second crack.

8 R E - E X A M I N A T I O N

9 BY MR. GALLO:

10 Q Let's just stay on that last page, page 36 of
11 Ward Exhibit No. 1. When you examined these welds shown on
12 page 36, did you form any opinion as to whether or not they
13 were in fact the worst welds that you had looked at?

14 A Yes, I did.

15 Q And what was that opinion?

16 A These welds were definitely unacceptable. Where
17 they were not -- you could look at them and see that they
18 were unacceptable, but they were not gross. That is about
19 my only decision I made. I -- just that they were not
20 borderline. They were unacceptable, you know, like I say.

21 Q I see that some of them suffer from a number of
22 defects; is that correct?

1 A Yes, sir.

2 Q Does that have anything to do with putting them
3 in a "worst" category, the fact that there are a number of
4 defects?

5 MS. WHICHER: Well, I object to that. He already
6 said he doesn't know how the worst case welds were determined.

7 BY MR. GALLO:

8 Q All right, let me restate the question.

9 In your judgment and in your consideration as
10 to whether these were worst case welds, does the number of
11 defects work into that judgment?

12 A Yes, that would -- if you would see undercut,
13 overlap, nonfusion, all of that in one weld, it would be a bad
14 weld.

15 Q I take it -- let's look at the weld in beam 202
16 to box girder 624. I guess "US" means undersize; right?

17 A Yes, sir.

18 Q Was this a -- what was the nature of the und .size,
19 if you remember? Was it --

20 A I can't --

21 Q You can't remember?

22 A I can't remember.

1 Q Can you remember whether it was large or small?

2 A If it says undersize, it was undersize. You know,
3 I don't know.

4 Q Okay. I think I'll work backwards. Let's go to
5 Love Exhibit 3, that's the other inspection report, page 24,
6 where we're talking about the Systems Control welds.

7 I wonder if you could clarify something for me
8 in the second paragraph. It says 95 connections out of 100
9 were visually examined to date. Now, was that a visual
10 examination that you performed, or are you reporting that
11 this was done by someone else?

12 A It was done by somebody else.

13 Q And the 50 percent welds that were found acceptable,
14 was that the finding of someone else?

15 A Yes, sir.

16 Q So you just reviewed the Level III inspectors'
17 visual inspection and concurred with those results, is that it?

18 A I --

19 Q Did I say Level III? I mean third-party
20 inspectors.

21 A I looked at his, plus if you look at the next
22 page you will see where I looked at acceptable welds also.

1 I looked at where they agreed, I looked at where they disagreed.
2 I looked at all aspects to make sure when they said something
3 was acceptable, being the third party did not look at any
4 acceptable welds, I wanted to feel in my mind that they
5 were really acceptable.

6 Q All right. Page 10, same exhibit. Ms. Whicher
7 asked you a number of questions about these Hatfield welds
8 at the bottom of the page.

9 A Uh-huh.

10 Q Now by my arithmetic, the reinspector noted 656
11 defects, and the third-party inspector noted only 501, so he
12 apparently determined that 155 were acceptable?

13 A Yes, sir.

14 Q Now of the 240 that you looked at, were any of
15 those welds in the 155 that the third-party inspector said
16 were acceptable? Can you tell?

17 A Yes. If you look on the next page, you will
18 see where it says reinspection results, where it says acceptable
19 in that column. That is where I looked at acceptable welds.

20 MS. WHICHER: Are you talking about two pages over,
21 Mr. Ward?

22 THE WITNESS: It's after page 11. I guess it's

1 page 12, but it is not numbered.

2 BY MR. GALLO:

3 Q If I -- go ahead.

4 A On page 12, underneath reinspection results,
5 every place where it says acceptable, that's where the
6 third party did not have anything to do, as you can see, on
7 looking at that particular weld. So I looked at --

8 Q Did you look at any that he looked at --

9 MS. WHICHER: Would you let him finish his
10 answer, please.

11 BY MR. GALLO:

12 Q I'm sorry, I thought you had finished. Go ahead,
13 please.

14 A I'm sorry, too. I shouldn't have butted in.

15 I looked at the reinspection results of all of
16 them, naturally. I looked at the third party, where they
17 agreed. Again I looked at the third party where they
18 disagreed.

19 Q I see.

20 A I looked at all aspects, and I did this every time
21 I went out and looked at welds to make sure that -- because
22 that bothered me also. Some where S&L did not look at

1 acceptable welds, they only looked at unacceptable welds, so I
2 looked at a lot of acceptable welds to give me a good feeling.

3 Q I see. Thank you.

4 Looking -- Ms. Whicher asked you a number of
5 questions about nondestructive examination and wanted to know
6 if any of the welds that were the subject of the reinspection
7 program had been subject of nondestructive examination. I
8 think you previously testified in response to one of my
9 questions that the purpose of the reinspection program was to
10 determine inspector qualification; is that correct?

11 A That's the purpose.

12 Q What kind of weld inspections did the original
13 QC inspectors conduct?

14 A They did a good inspection, in my opinion.

15 Q No, what kind of inspection?

16 A They did a visual weld inspection.

17 Q So if you wanted to check up on the qualification
18 of a QC inspector who did a visual weld inspection to determine
19 whether or not he was qualified, would you conduct a non-
20 destructive examination, or would you do other visual
21 examination?

22 A First of all, visual is a nondestructive method

1 also.

2 Q All right. You learn something every day.

3 (Laughter.)

4 A So this would be another nondestructive examination.
5 That's why I did not go and look any further, because that
6 was the only thing that was required, and it was not necessary.

7 Q All right. Well, would you conduct dye penetrant
8 testing to qualify these weld inspectors?

9 A No, that would be unfair to the inspector. He
10 was not -- he is not qualified to be a liquid penetrant
11 inspector or any other method of NDE, and that would be unfair
12 to the weld -- to the inspector to give it any type of other
13 NDE.

14 Q In your opinion, would it only be fair to repeat
15 the original inspection?

16 A Yes, sir.

17 Q Was the purpose of the reinspection program --
18 strike that.

19 Ms. Whicher asked you about some reinspection
20 interpretations. Are you aware that during the course of the
21 implementation of the reinspection program by Edison that it
22 was necessary from time to time to interpret or establish

1 ground rules for how the reinspections would be conducted?

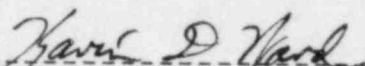
2 Are you aware of those?

3 A Not really. I would hear things about
4 meetings that may be going on, but I wasn't really involved
5 in any -- you know, too many of the meetings.

6 MR. GALLO: All right, that's all I have.
7 I guess the witness is excused.

8 MR. PATON: The Staff has no questions of its
9 own witness.

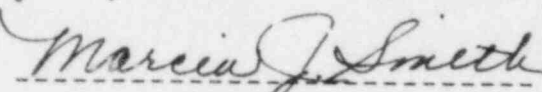
10 (Whereupon, at 12:50 p.m., the deposition
11 was adjourned.)

12 
13 KAVIN D. WARD

14 STATE OF ILLINOIS :

15 COUNTY OF *DUPAGE* :

16 Subscribed and sworn to before me by KAVIN D. WARD
17 on this the *19* day of *July*, 1984.

18 
19 Notary Public

20 My Commission Expires: *February 8, 1986*

21

22

1 STATE OF MARYLAND :

2 COUNTY OF MONTGOMERY :

3 I, ANN RILEY, a Notary Public in and for the
4 State of Maryland, County of Montgomery, do hereby certify
5 that I reported the deposition of KAVIN D. WARD.
6

7 I further certify that the foregoing 127 pages
8 contain a true and accurate transcription of the testimony
9 given by the said witness.

10 I further certify that the transcription was done
11 either by me or under my personal supervision.
12

13 I further certify that I have no interest,
14 financial or otherwise, in the outcome of this litigation.

15 Given under my hand and seal of office this the
16 27th day of June, 1984.

17
18 

19 Ann Riley

20 My Commission Expires:

21 July 1, 1986
22

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/83-39(DE); 50-455/83-29(DE)

Docket No. 50-454; 50-455

Licenses No. CPPR-130; CPPR-131

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Site, Byron, IL

Inspection Conducted: August 8-12, 15-19, 22-23, 29, September 2, 8-9,
12-15, 22, 26-28, November 16-17, and 22, 1983

Inspectors: *R. L. Cilimberg for*
K. D. Ward

12/28/83
Date

R. L. Cilimberg
R. L. Cilimberg

12/28/83
Date

D. E. Keating
D. E. Keating

12/28/83
Date

Approved By: *D. H. Danielson for*
D. H. Danielson, Chief
Materials and Processes Section

12/28/83
Date

Inspection Summary

Inspection on August 8-12, 15-19, 22-23, 29, September 2, 8-9, 12-15, 22,
26-28, November 16-17 and 22, 1983 (Reports No. 50-454/83-39(DE); 50-455/
83-29(DE))

Areas Inspected: Previous inspection findings; IE Bulletins; allegations;
safety related component, structural, and piping activities. The inspection
involved a total of 359 inspector-hours onsite by three NRC inspectors.

Results: No items of noncompliance or deviations were identified.

Ward Repo. #1

6-21-84

DETAILS

1. Personnel Present At Reinspection Meeting September 22, 1983

G. Sorensen, Construction Superintendent (CECo)
M. Stanish, QA Superintendent (CECo)
G. Marcus, QA Director (CECo)
R. Tuetken, Asst. Construction Superintendent
B. Shelton, Project Engineer Manager (CECo)
V. Schlosser, Project Manager (CECo)
R. Klingler, QC Supervisor (CECo)
L. DelGeorge, Staff (CECo)
T. Tramm, Nuclear Licensing (CECo)
W. Witt, Level III NDE (CECo)
R. Netzel, Sr. Structural Project Engineer (S&L)
R. Spessard, Director, Engineering Division (NRC)
W. Little, Branch Chief (NRC)
R. Knop, Branch Chief (NRC)
D. Danielson, Section Chief (NRC)
D. Hayes, Section Chief (NRC)
J. Hinds, Jr., Sr. Resident Reactor Inspector (NRC)
K. Ward, Reactor Inspector (NRC)

Personnel Contacted Other than Above

Commonwealth Edison Company (CECo)

*K. Hansing, QA Superintendent
*R. Klingler, QC Supervisor
*J. Woldridge, QA Superintendent
G. Sorenson, Construction Superintendent
M. Stanish, QA Superintendent
R. Tuetken, Assistant Superintendent
J. Rappeport, QA Engineer
E. Martin, QA Supervisor
P. Myrda, QA Supervisor
J. Binder, Project Electrical Supervisor
M. Lohmann, Project Mechanical Supervisor
J. Mihovilovich, Lead Structural Engineer
R. Byers, Project Construction Engineer
W. Dijstelbergen, Project Engineer
J. Derosa, Field Engineer
J. Klink, QA Engineer

Hatfield Electric Company (HECo)

J. Spangler, Lead Welding Inspector (PTL)

Sargent & Lundy (S&L)

R. Netzl, Senior Structural Project Engineer
J. Vannier, 3rd Party Inspector

Pittsburgh Testing Laboratory (PTL)

M. Tallent, Jr., Site Manager
R. Toops, Acting Supervisor

Blount Brothers Corporation (BBC)

D. Wilson, QA Manager (Corporate)
R. Bay, QA/QC Manager

Powers Azco Pope (PAP)

L. Larkin, QA Manager
J. Brotcke, QC Welding Inspector
D. Nelson, QC Supervisor

Hunter Corporation (HC)

R. Lindsay, Construction Superintendent
M. Somsag, QA Supervisor
L. Hadick, QC Supervisor
A. Simon, QA Supervisor
K. Kranz, Welding Supervisor
M. Tabbert, Welding Inspector

Midway Industrial Contractor, Inc.

M. Windsor, QC Inspector

Reliable Sheet Metal Works, Inc.

R. Irish, QA/QC Supervisor

Nuclear Installation Services Company (NISCo)

D. Engolia, QA/QC Engineer
K. Jackson, Inspector

Johnson Controls, Inc.

B. Shah, QA Manager
S. Pearson, Lead QA Level II

Daniels Engineers

J. Gilman, 3rd Party Inspector

The inspectors also contacted and interviewed other licensee and contractor employees.

*Denotes those attending the final exit interview November 22, 1983.

2. Licensee Action on IE Bulletins

(CLOSED) IE Bulletin 79-13, Revision 1 and Revision 2 (454/79-13-1B, 454/79-13-2B; 455/79-13-1B, 455/79-13-2B): Cracking in feedwater system piping. No written response was required. The inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability. This Bulletin is considered closed.

(CLOSED) IE Bulletin 82-02 (454/82-02-BB; 455/82-02-BB): Degradation of threaded fasteners in the reactor coolant pressure boundary of PWR plants. For information only. The inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability. The Bulletin is considered closed.

(CLOSED) IE Bulletin 82-03 (454/82-03-BB; 455/82-03-BB): Stress corrosion cracking in large diameter stainless steel recirculation system piping at PWR plants. For information only. The inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability. This Bulletin is considered closed.

(CLOSED) IE Bulletin 82-01, Revision 1 and Revision 2. (454/82-01-BB, 454/82-01-1B, 454/82-01-2B; 455/82-01-BB, 455/82-01-1B, 455/82-01-2B): Alteration of radiographs of welds in piping subassemblies. For information only. The inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability. This Bulletin is considered closed.

(CLOSED) IE Bulletin 83-02 (454/83-02-BB, 455/83-02-BB): Check valve failures in raw water cooling systems of diesel generators. For information only. The inspector verified that the licensee management received the IE Bulletin and that it was reviewed for applicability. This Bulletin is considered closed.

3. Licensee Action on 10 CFR 50.55(e) Items

(CLOSED) 50.55(e) (454/82-08-EE): Structural Steel Bolting Inspection.

During a licensee review of inspection records of structural steel bolting activities for the Auxiliary Building, Fuel Handling Building, and the River Screenhouse, it was determined that these records were not available for some of the high strength bolted connections. The specification requirements call for testing a minimum of 10%, but not less than two (?) bolts per each connection.

The licensee's review indicated that records for 55.9% of the high strength bolted connections in the Auxiliary Building and Fuel Handling Building, and 49% of the records for this type of connection in the River Screenhouse were not available. This review indicated that the lack of records was caused by a failure to establish an adequate accountability system to indicate the status of completed inspections on the part of one contractor. However, adequate inspection records do exist for the containment building.

A statistical sampling plan was established to reinspect the high strength bolted connections. This reinspection was performed by the third party independent testing contractor located onsite in accordance with an approved reinspection procedure.

The inspector reviewed the sampling plan as outlined and implemented. The inspector also reviewed the following American Bridge Erection Dwg. and Peabody Testing Corp. reports:

- . Chicago Bridge and Iron Contract No. K6777, American Bridge Erection Dwg. E-204, Peabody Testing Corp. Report No. BSI-41, 192 total connections, 159 connections with reports, and 33 missing reports.
- . Chicago Bridge and Iron Contract No. K6777, American Bridge Erection Dwg. E-203, Peabody Testing Corp. Report No. BSI-40, 287 total connections, 233 connections with reports, and 54 missing reports.
- . Chicago Bridge and Iron Contract No. K6777, American Bridge Erection Dwg. E-414, Peabody Testing Corp. Report No. BSI-38, 169 total connections, 106 connections with reports, and 63 missing reports.
- . Chicago Bridge and Iron Contract No. K6777, American Bridge Erection Dwg. E-418, Peabody Testing Corp. Report No. BSI-36, 271 total connections, 70 connections with reports, and 201 missing reports.
- . Chicago Bridge and Iron Contract No. K6777, American Bridge Erection Dwg. E-409, Peabody Testing Corp Report No. BSI-35, 122 total connections, 87 connections with reports, 35 missing reports.
- . Chicago Bridge and Iron Contract No. K6777, American Bridge Erection Dwg. E-705, Pittsburgh Testing Lab. Report No. SB-145 and 146, 259 total connections, 144 connections with reports, 115 missing reports.

These records were, to the extent that they identified discrepancies, indicative of the conditions the licensee identified.

The approved reinspection procedure, No. IS-BY-46-SBI, Rev. 1, "Instruction Sheet For High Strength Bolted Connections," was reviewed for conformance to the requirements of the American Institute of Steel Construction Manual, 7th Edition and to Sargent and Lundy Specifications F-2735, "Fabrication, Handling, Storage, and Erection of Structural Steel" and F-2824, "Gallery Work".

The licensee supplied Sargent and Lundy with the accumulated data in order to establish a statistical sampling program. This program called for a Cumulative Sample Size of 125 connections, a Cumulative Acceptance of one connection, and a Cumulative Rejection of 8 connections.

The program states that an initial population of 125 randomly selected connections which do not have inspection reports will be selected for reinspection. If only one (1) sample does not satisfy the inspection criteria, no additional sampling is required. If 8 or more samples do not satisfy the inspection criteria, all the high strength bolted connections without inspection records would have to be reinspected. If between two

(2) and six (6) samples fail the inspection criteria, another 125 randomly selected samples (cum. 250) are selected. If a total of six (6) samples fail, no additional sampling is required. If twelve (12) or more samples fail, all the high strength bolted connections without inspection records would have to be reinspected. The results of this reinspection indicated that only one (1) of the initial 125 reinspected connections failed to meet the inspection criteria. Therefore, no additional inspections were required.

The one (1) connection which did not meet the inspection criteria was a ten (10) bolt connection. One (1) bolt was satisfactory, seven (7) bolts were torqued to 96% of required torque and two (2) bolts were not torqued, but were in place. The licensee reviewed the connection in the "as found" condition against the original design loads and determined that the connection was adequate to support the design loads.

Based upon the review of the above listed procedures, specifications, inspection reports, and sampling program, it was deemed that the licensee's corrective actions were adequate.

(OPEN) 50.55(e) (454/83-04-EE): Structural Steel Connection Rework

Original design requirements called for the burring of bolt threads after installation of nuts on the slotted structural steel connections referred to as expansion connections. These design requirements, however, failed to provide adequate guidance to ensure a uniform and acceptable burring method. This necessitated the installation of a second nut referred to as a jam nut.

The American Bridge Division Erection drawings stated the requirement of burring the bolt threads to ensure that the nut would not loosen over time.

The revision of the installation requirements was authorized by the licensee as an added precaution to prevent the occurrence of the first nut becoming loose and disengaging from the connection.

Jam nuts are being installed on structural steel connections in the Containment Buildings where an expansion connection is provided. This includes structural steel used as floor framing and miscellaneous steel used for component supports. The jam nut installation requirements are specified on the following design drawings which have been reviewed by the inspector:

- . Sargent & Lundy drawing S-1097, Rev. W, dated October 15, 1982
- . Sargent & Lundy drawing S-960, Rev. N, dated March 18, 1983
- . Drawing ENC-3270, dated January 4, 1983

The jam nut installation for Containment 1 was completed August 1, 1983. It is expected that the jam nut installation for Containment 2 will be completed by January 1, 1984.

The design drawing requirements for the provision of jam nuts on structural steel is being implemented in the same manner as any other Sargent & Lundy drawing revision. Proper installation is being performed by the installation contractor in conformance with his approved QA/QC procedure which has been reviewed by the inspector.

Based upon this review the licensee's corrective actions appear to be adequate. This item, however, will remain open until Unit 2 Containment has been completed. (455/83-29-02(DE))

4. Licensee Action on Unresolved Items

(OPEN) Unresolved Item (454/83-15-01; 455/83-13-01): Spent fuel pool liner indications. Gate hinges were liquid penetrant examined and found to be acceptable. The licensee sent copies of the revised FSAR pages describing the spent fuel pool liner for review to NRC on June 20, 1983, and to date a response has not been received.

5. Licensee Action on Violations

(OPEN) Noncompliance (454/80-04-01; 455/80-04-01): Failure of licensee to take effective and timely actions to assure that deficiencies in the Systems Control Corp. quality assurance program and equipment fabrication activities were corrected.

During the period in question, May 1977 to February 1980, Systems Control Corp. supplied various components under the scope of the following procurement specifications:

Main Control Boards	-	Specification F/L-2788
Local Instrument Panels	-	Specification F/L-2809
Cable Pans and Hanger Assemblies	-	Specification F/L-2815

Systems Control Corp., in the course of fabricating components/assemblies under the scope of each specification, has deviated from certain specified technical requirements. In each case of deviation, the items of nonconformance have been identified and documented on Nonconformance Reports.

Corrective action has been completed for the Local Instrument Panels. Nonconformance Reports F-474 and F-484 covering this work were closed on October 21, 1980.

For the Main Control Boards, engineering analysis to determine disposition was initiated under NCR F-544 dated August 8, 1980. The engineering analysis was completed and the final response will be submitted in the near future.

For cable pan stiffener problems, NCR F-529 was issued on July 9, 1980. Sargent & Lundy determined the stiffeners satisfied specification requirements.

The inspection points waived without QA concurrence were done so in error as a result of failing to recognize that a mandatory QA approval of waiver existed for instrument panels shipped in 1979. Also, the site receipt

inspection performed by the Project Construction Dept. was primarily a commercial inspection for shipping damage and was not done in sufficient depth to identify welding deficiencies. Subsequently, as identified in the NRC inspection report, detailed inspections were performed by CECO which identified deviations on components supplied by Systems Control. The deficiencies identified have been controlled via NCR's. In addition, the CECO Site Quality Assurance Dept. has established requirements for performing significantly more detailed inspections for all equipment received on site. These inspections are in addition to those performed by the Project Construction Dept.

For Systems Control Corp., source inspection has been conducted for all safety-related equipment shipped since February 1980 and source inspection was conducted on all future shipments involving Systems Control. These inspections have been conducted by the Pittsburgh Testing Laboratory under the direction of the Byron Quality Assurance Dept. The inspections cover welding, equipment identification, sealing of instrumentation lines, and other specification requirements. Furthermore, since January 1978, CECO has not made any purchases from Systems Control Corp. As a result of the NRC verification of allegations against Systems Control, as reported to CECO on December 30, 1980, Systems Control has been barred from future procurement activity involving safety-related purchases.

(OPEN) Noncompliance (454/82-01-01): Penetrimeters placed on weld. Region III is waiting for a response from NRC Headquarters for their evaluation to determine if the code inquiry from ASME qualifies for inclusion in the approved list of ASME Code Cases.

(OPEN) Noncompliance (454/82-05-19; 455/82-04-19): The reinspection program conducted as a result of concerns defined in IE Inspection Report Nos. 50-454/82-05 and 50-455/82-04 associated with the qualification and certification inspection personnel is nearly completed. The results demonstrated the past and present capability of the quality control/quality assurance inspection personnel to perform the measurements, interpretations, comparisons, and judgements associated with evaluation of the quality of installation of structures, components, and assemblies at the Byron Generating Station.

An extensive program of reinspections was agreed upon and documented in a CECO letter to NRC Region III dated February 23, 1983. A program of reinspections was initiated which would verify on a contractor-by-contractor basis, the adequacy of past QC inspector training and certification practices at Byron Station.

A brief summary of the reinspection program follows:

- For 6 contractors, every 5th inspector was selected (NRC Senior Resident Inspector added from 2 to 4 inspectors per contractor) and for 2 contractors, every inspector was selected.
- For each selected inspector, each individual inspection performed during the inspectors first three months was reinspected, where accessible.

- Reinspection was conducted utilizing inspection criteria applicable to initial inspections.
- Inspection attributes classified as objective required 95% acceptability as determined by reinspection.
- Inspections classified as subjective required 90% acceptability as determined by reinspection.
- Subjective inspections would be subject to an independent third party review to establish true rejectability.
- If a selected inspector failed to achieve 95% agreement rate on objective inspections, or 90% agreement rate on subjective inspections; then an additional three months of inspection work was reinspected for the type of inspection which failed to achieve the required level of acceptability.

If a selected inspector failed to achieve 95% agreement rate or 90% agreement rate, as appropriate, in the second three month period, then all inspections performed by the inspector of the type which failed were reinspected and the original sample size of inspectors (not including those selected by the NRC SRI) was increased by 50%.

A. General

The reinspection program began February 22, 1983 by meeting with contractors to identify purpose and content of the activities to be performed. The individual inspectors selected to be reinspected were established, and the process of record search to identify individual inspections to be reinspected was initiated.

The quantity of inspectors quantity of items reinspected, the depth of reinspection, and the inspection results are presented below.

1. QUANTITY OF INSPECTORS REINSPECTED

<u>Contractor</u>	<u>Total Population of Inspectors</u>	<u>Number of Inspectors Reinspected</u>	<u>Percent of Inspectors Reinspected</u>
Blount	28	8	29%
Johnson Controls	7	5 (1)	71%
Hunter	84	21	25%
NISCO	8	4	50%
Hatfield Elec.	86	22	26%
Powers-Azco-Pope	21	19 (1)	90%
Pittsburgh Testing	85	19	22%
Peabody Testing	37	6	16%
TOTAL:	356	104	29%

NOTE (1): 100% of the inspector population was reviewed for performance of the reinspection. Those inspectors not included had no reinspection items.

2. QUANTITY OF ITEMS REINSPECTED

<u>Contractor</u>	<u>Number Of Objective Inspections</u>	<u>Number Of Subjective Inspections</u>	<u>Reinspected Inspection Months</u>
Blount	2,390	0	89
Johnson Controls	7,812	1,459	18
Hunter	69,598	3,662	62
NISCo	2,792	229	12
Hatfield Elec.	58,718	21,905	65
Powers-Azco-Pope	9,104	7,646	149
Pittsburgh Testing	7,269	4,973	100
Peabody Testing	0	163	20
TOTAL:	157,683	40,037	515

3. DEPTH OF REINSPECTION

The method established for selection of inspectors to be reinspected was formulated to be representative of inspectors over the duration of the project from the beginning to the point where methods employed to qualify and certify inspectors were revised to address the NRC Inspector's concerns identified in noncompliance 454/82-05-19; 455/82-04-19.

In order to evaluate the selected population of inspectors, relative to the areas of qualification of the total population of inspectors, a comparison was performed. Results of the comparison are presented by contractor in the tables below. In addition, the contractors' reinspection efforts were reviewed and found acceptable.

Blount

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Concrete	12	2	17%
Masonry	6	2	33%
Concrete Expansion Anchors	5	2	40%
Weld Inspection/ Structural	11	4	36%
Post-Tensioning*	10	0	0%
Cadwelding*	4	0	0%
Calibration*	5	0	0%
Fire-Proofing*	3	0	0%
Receiving*	6	0	0%

* Indicates areas of inspection which cannot be recreated for a reinspection.

Johnson Controls

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Visual Inspection	7	5	71%

Hunter

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Piping/Hangers	57	15	26%
Piping	6	1	17%
Piping As-Built	21	5	24%

NISCO

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Visual Welding	6	4	67%
Mechanical	6	4	67%

Hatfield

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Visual Welding	20	7	35%
Conduit Installation	21	6	29%
Cable Termination	21	5	24%
Equipment Installation	14	2	14%
Equipment Modification	12	2	17%
Cable Pan Installation	21	1	5%
Cable Pan Hanger	22	2	9%
Conduit As-Built's	28	8	29%
A-325 Bolting Insp.	11	1	9%

Powers Azco Pope

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Welding Inspector	20	19	95%
Receiving Inspector*	2	0	0%

* Indicates areas of inspection which cannot be recreated for a reinspection

Pittsburgh Testing

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Concrete Expansion			
Anchors/Structural	43	9	21%
Visual Welding	21	10	48%
Concrete-Field/Lab/Plant*	93	0	0%
Soils - Field/Lab*	29	0	0%
Cadweld*	10	0	0%
Post-Tensioning*	3	0	0%
Fireproofing*	4	0	0%
Coatings*	2	0	0%
Calibration*	17	0	0%
Electrical*	12	0	0%

* Indicates areas of inspection which cannot be recreated for reinspection. For example, inspection of fireproofing and coatings are performed on the surfaces to be coated and during the coating process rather than after the application is complete. Electrical inspections were of cable tray cleanliness and cable pulling tension.

Peabody Testing

<u>Area Of Qualification</u>	<u>Number Of Inspectors Qualified In Area</u>	<u>Number Of Inspectors In Area Reinspected</u>	<u>Percent Included In Reinspection</u>
Visual Welding/ Structural Steel	6	6	100%
Concrete*	28	0	0%
Soils*	20	0	0%
Cadweld*	8	0	0%
Coatings*	1	0	0%
Calibration*	1	0	0%

* Indicates areas of inspection which cannot be recreated for a reinspection

In order to evaluate the selected population of inspectors a comparison of reinspection time and total inspection time was performed. Results of the comparison are presented below:

	<u>Total Accumulated Inspection Months</u>	<u>Reinspected Inspection Months</u>	<u>Percent of Inspection Months Reinspected</u>
Blount	424	89	21%
Johnson Controls	60	18	30%
Hunter	1,107	62	6%
NISCo	51	12	24%
Hatfield Elec.	628	65	10%
Powers-Azco-Pope	152	149	98%

	<u>Total Accumulated Inspection Months</u>	<u>Reinspected Inspection Months</u>	<u>Inspection Months Reinspected</u>
Pittsburgh Testing	1,015	100	10%
Peabody Testing	<u>181</u>	<u>20</u>	<u>11%</u>
TOTAL:	3,618	515	14%

4. REINSPECTION RESULTS

The results of the reinspection program are presented on a by contractor basis in the following:

Note 1. As a result of Region III's review and comments on a CECO preliminary report dated October 28, 1983, and the licensee's subsequent rereview of the program commitments, it was agreed that an increase in sample size of visual weld inspections would be necessary for Pittsburgh Testing, Hatfield, and Hunter inspectors.

Blount

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	All 8 inspectors who performed objective inspections, acceptable at end of first 3 month period.
Subjective	Not Applicable	All inspections included in reinspection population classified as objective.

Hatfield Electric

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	All 16 inspectors who performed objective inspections, acceptable at end of first 3 month period.
Subjective	Complete (See Note 1)	All 7 inspectors who performed subjective inspections, acceptable at end of first 3 month period.

Powers-Azco-Pope

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	12 inspectors who performed objective inspections, acceptable at end of period*. 2 inspectors who performed objective inspections did not have minimum quantity in period*, all of their work was reinspected. 5 inspectors who performed objective inspections unacceptable at end of period*, all of their work was reinspected.
Subjective	Complete	7 inspectors who performed subjective inspections, acceptable at end of period*. 2 inspectors who performed subjective inspections did not have minimum quantity in period, all of their work was reinspected*. 10 inspectors who performed subjective inspections unacceptable at end of period, all of their work was reinspected*.

* For this contractor, the period consisted of the first six month's work; that is, first and second three months results combined. The data generated during the reinspection program is not readily separable into first and second three month periods.

NISCO

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	All 4 inspectors who performed objective inspections, acceptable at end of first 3 month period.
Subjective	Complete	All 4 inspectors who performed subjective inspections, acceptable at end of first 3 month period.

Hunter

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	19 inspectors who performed objective inspections, acceptable at end of first 3 month period. 1 inspector who performed objective inspections did not have minimum quantity in first 3 month period, nor in second 3 month period, nor in total of inspections, all of his work was reinspected.
Subjective	Complete (See Note 1)	15 inspectors who performed subjective inspections, acceptable at end of first 3 month period. 1 inspector who performed subjective inspections did not have minimum quantity in second 3 month period, all of his work was reinspected.

Johnson Controls

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	4 inspectors who performed objective inspections, acceptable at end of first 3 month period. 1 inspector who performed objective inspections did not have minimum quantity in first 3 month period, nor in second 3 month period, nor in total of inspections, all of his work was reinspected.
Subjective	Complete	All 4 inspectors who performed subjective inspections, acceptable at end of first 3 month period.

V
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Pittsburg Testing

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Complete	8 inspectors who performed objective inspections, acceptable at end of first 3 month period. 1 inspector who performed objective inspections, acceptable at end of second 3 month period.
Subjective	Complete (See Note 1)	10 inspectors who performed subjective inspections, acceptable at end of first 3 month period.

Peabody Testing

<u>Inspection Type</u>	<u>Status Of Reinspection</u>	<u>Condition</u>
Objective	Not applicable	All inspection included in reinspection population classified as subjective.
Subjective	Complete	3 inspectors who performed subjective inspections, acceptable at the end of first 3 month reinspection period. 3 inspectors who performed subjective inspections did not have minimum quantity in first 3 month period, nor in second 3 month period, nor in total of inspections, all of their work was reinspected.

B. MIDWAY INDUSTRIAL CONTRACTOR, INC.

The following is a specific example of noncompliance identified in Inspection Report No. 50-454/82-05; 50-455/82-04.

- The certification record for the QC inspector qualifications reviewed did not indicate the activities QC inspectors were certified to perform.

To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-19, 455/82-04-19, the inspector reviewed Midway's inspection certification packages. This review included the following documents for the inspection activities of coating work, equipment calibration and receiving inspection level. All were found to be acceptable.

- . Diplomas
- . Verification of prior work experience
- . Written test, no oral test given
- . Eye test
- . Certification of qualification

C. Audits

The CECO Quality Assurance Department has been actively involved in the re-certification of current on-site Q.C. inspectors and the monitoring of the re-inspection of work performed by Q.C. inspectors who were on-site during the early stages of construction. In early 1982, CECO committed to re-certify all site Q.C. inspectors to ANSI N45.2.6-1978, in accordance with guidelines and interpretations established by Edison CECO. The Site Quality Assurance Department and Project Construction Department each assigned personnel to work full time with the site contractors to implement the re-certification program. The results of the re-certification program were, in turn, audited by the CECO General Office Q.A. Department to assure compliance to the CECO guidelines. As a result, it has established that the site contractors have properly re-certified their Q.C. inspectors.

When the re-inspection program was established in February, 1983, and re-inspections began in late March, the Site Q.A. Department performed audits and surveillances to monitor the re-inspection activity. The first audit was performed June 21 through July 6, 1983, which was about the expected mid-point of the re-inspection program. The audit (Report #6-83-66) was conducted by a six man team and covered the activities of the following seven site contractors: Hunter, Hatfield, Johnson Controls, Pittsburgh Testing, Powers Azco Pope, NISCO, and Blount Brothers. The purpose of the audit was to verify that the re-inspection program was being implemented in accordance with the commitments made in the CECO letter dated February 23, 1983, from Mr. Stiede to Mr. Keppler. The audit examined:

- . Re-inspection sample size
- . Application of inaccessibility
- . Third party review
- . Disposition of discrepancies
- . Documentation of inspection results
- . Qualifications of re-inspection personnel

As the re-inspection program progressed beyond the early stages, CECO Quality Assurance and Project Construction personnel became aware of problems at Hatfield in determining which welds were to be included in the re-inspection. These problems were primarily due to the manner in which Hatfield generated and maintained inspection records during the early years of construction. Also, the NRC advised CECO of concerns with the Hatfield inspection records. As a result, CECO Site Q.A. performed an audit to specifically address these concerns. The audit (report #6-83-124) was conducted by a three man team during the period 8/24/83 through 9/1/83.

The scope of the audit included the following:

- . Review documentation practices
- . Correlation of weld record cards to welders and inspectors
- . Identifying the latest weld record
- . Re-numbering hangers
- . Re-inspection - incorrect assumptions
- . Procedures not being followed

In reviewing the above audits the inspector determined that the contractors were actively implementing the re-inspection program.

D. Welding

The following addresses welds that the inspector visually examined and documents the inspector reviewed of various contractors involved in the reinspection program. The welds visually examined were welds located in Unit 1 and Unit 2.

1. Hatfield Electric Company

Hatfield reinspected approximately 22,900 welds. The third party is in the process of reinspecting all of their unacceptable welds. This reinspection will be completed in the near future.

(a) The following are specific examples of noncompliances identified in Inspection Report No. 50-454/82-05; 50-455/82-05.

- . The certification records for three (3) of the nine (9) inspector qualifications reviewed did not contain a Certification Evaluation Sheet.
- . The certification record for one (1) of the nine (9) QC inspector qualifications reviewed did not have records of examinations or work samples.
- . The certification records for two (2) of the nine (9) QC inspector qualifications reviewed did not provide complete evaluation and justification for certification to perform the level of inspection identified.

To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-19; 455/82-04-19, the inspector reviewed Hatfield Class I Visual Weld Examination Procedure No. 13AE, Revision 2, Hatfield Qualification and Training of Inspection and Audit Personnel Procedure No. 17, Revision 10; and nine (9) weld inspection personnel certifications which included the following documents. All were found to be acceptable in the following areas.

- . Training
- . Eye Tests
- . Written tests; no oral tests are given
- . Verification of prior work (letter or telephone conversations documented resumes)
- . Diplomas or verification of education
- . Certification of qualification
- . Experience profile report
- . Personnel evaluation letters
- . Surveillance

(b) The following welds were visually examined by the inspector:

Weld Inspection Abbreviations

A/S	Arc Strike
U/S	Undersize (leg or throat)
N/F	Non Fusion
U/C	Under Cut
O/L	Overlap
PROF	Profile
P or POR	Porosity
S	Slag
SP	Spatter
CR	Crater
E/L	Excessive leg
E/C	Excessive convexity
O/W	Overweld
N/P	Non Penetration

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
9887	1		x U/C	x		Plate to Tube Steel
5396	2	x	U/C			"
	1		x U/C		U/C	Junction Box to Column
9866	2		x U/C		U/C	"
	1		x U/C		U/C	"
25875	1		x U/S	x		Plate to Tube Steel
	2		x U/S	x		"
	3		x U/S	x		"
	4		x U/S	x		"
	5		x S, N/F	x		"
38,324	1		x U/C		U/C	Plate to Tube Steel
	2	x				"
	3					"
	4	x				"
	5	x				"
	6	x				"
	7	x				"
	8	x				"
25777	1		x N/F	x		Plate to Tube Steel
25778	1		x U/S	x		Plate to Tube Steel
	2		x O/L	x		"
25750	3		x S	x		"
	1		x O/L	x		"
20315	1		x S		S	"
	2		x S		S	"
	3		x Prof		Prof	"
9048	1		x P,CR,N/F	P, NF	CR	Unistrut to Channel
37218	2		x P, CR	x		"
	1		x CR	x		Plate to Tube Steel
37223	2	x				"
	1		x O/L	x		Clips to Tube Steel
	2	x				"
	3	x				"
	4	x				"
37074	5	x				"
	1		x U/C		U/C	Unistrut to Tube Steel
	2		x			"
	3		x			"

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
37057	1		x U/C		U/C	Unistruct to Tube Steel
	2		x			"
37039	1		x U/C		U/C	"
37067	1		x U/C		U/C	"
25958	1	x				Pan to Unistrut
6871	1	x				Tube to Plate
20370	1		x U/C, O/L		U/C, O/L	Pan to Unistrut
	2		x			Tube to Plate
	3		x			Pan to unistrut
	4		x			Tube to Plate
	5		x			Pan to unistrut
2196	1	x				Plate to Plate
4217	1	x				Plate to Plate
25777	2	x				Plate to Tube Steel
	3	x				"
	4	x				"
	5	x				"
	6	x				"
	7	x				"
	8	x				"
25778	2	x				"
	3	x				"
	4	x				"
	5	x				"
	6	x				"
	7	x				"
25919	1	x				Tube to Plate
25945	1	x				Pan to unistruct
25916	1	x				"
25923	1		x U/C,O/L S, POR	x		Tube Steel to Tube Steel
	2					"
	3					"
	4					"
	5					"
	6					"
	7					"
	8					"
	9					"
	10					"
	11					"
	12					"
	13					"
	14					"
	15					"
	16					"

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
25960	1		x U/S	x		Pan to Tube
	2					Tube to Tube
	3					Pan to Tube
	4					Tube to Tube
37069	1		x U/C		U/C	Unistrut to Tube
25918	1		x U/C		U/C	Pan to unistrut
	2		x U/C	x		"
29507	1		x O/L	x		Tube to Plate
	2		x O/L	x		"
37037			x U/C		U/C	Unistrut to Tube Steel
33018	1		x A/S, U/C, O/L	A/S, O/L	U/C	Plate to Embed
	2		x A/S, O/L, U/C	x		"
33015	1		x A/S, O/L, U/C	A/S, O/L	U/C	"
	2		x A/S, O/L, U/C	A/S, O/L	U/C	"
33046	1		x A/S, U/C	A/S	x U/C	"
	2		x A/S, U/C	A/S	x U/C	"
33043	1	x				"
33036	1		x U/C	x		"
	2		x U/C	x		"
	3	x				"
	4	x				"
33042	1		x O/L	x		"
	2		x A/S, U/C	A/S	U/C	"
	3		x U/C, O/L		U/C, O/L	"
20791	1		x U/C	x		Brace to Tube Steel
	2		x S	x		"
	3		x U/C, A/S	x		"
	4		x U/C	x		"
	5		x U/C, O/L	O/L	U/C	"
	6		x O/L, S	x		"
	7		x U/C, O/L		U/C, O/L	"
	8		x U/C, A/S	A/S	U/C	"
	9		x S, U/C	S	U/C	"
	10		x U/C	x		"
	11		x U/C, O/L, S	U/C, S	O/L	"
	12		x O/L, S	x		"
	13		x U/C, S, O/L	S, O/L	U/C	"
	14		x S, O/L, U/C,	x		"
	15		x O/L		O/L	"
	16		x A/S, U/C	x		"
26048	3	x				Brace to Tube Steel
	4	x				"
	5	x				"
33044	1		x U/C	x		Plate to Embed
	2		x A/S	x		"

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
25878	3		x U/C	x		Plate to Embed
	4	x				"
	1		x O/L	x		Brace to Aux Steel
25839	2		x N/F, S	x		"
	1		x U/C	x		"
20316	1		x S		S	Pan to Unistrut
26105	2		x S		S	"
	1		x O/L, N/F	x		Tube Steel to Tube Steel
	2		x O/L	x		"
25826	3	x				"
	4	x				"
	1		x U/C		U/C	Tube Steel to Aux Steel
25772	2		x U/C, O/L	O/L	U/C	"
	1		x U/C		U/C	"
	2		x U/C		U/C	"
	3		U/C	x		"
	4	x				"
	5	x				"
	6	x				"
20790	7					"
20784	1		x U/C		U/C	Plate to Tube Steel
	2		x A/S	x		"
	3		x U/C	x		"
	4		x U/C		U/C	"
	5		x U/C		U/C	"
	6		x U/C		U/C	"
	7		x O/L, S, U/C	U/C	O/L, S	"
	8		x O/L, U/C	U/C	O/L, U/C	"
	1		x U/C, O/L	U/C	O/L	"
	2		x U/C, O/L	U/C	O/L	"
20786	3		x U/C	x		"
20786	4		x O/L, U/C	O/L	U/C	"
	1		x U/C	O/L	U/C	"
	2		x U/C	x		"
	3		x O/L		O/L	"
	4		x O/L		O/L	"
20309	5		x O/L, U/C	U/C	O/L	"
	6	x				"
	7	x				"
	1		x Prof, S	S	Prof	Pan to Tube Steel
	2		x CR, U/C	CR	U/C	"
	3		x Prof, U/C		Prof, U/C	"
	4	x				"

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
25832	1		x U/C		U/C	Pan to Tube Steel
499	1		x U/C		U/C	Plate to Tube Steel
26049	2	x				"
	1		x CR	x	U/C	Pan to Unistrut
	2		x CR, U/C	CR	U/C	"
	3		x Poro		Poro	"
	4		x CR	x		"
	5		x CR, A/S	x		"
	6		x CR	x		"
	7		x CR	x		"
	8		x U/C	x		"
26048	9		x CR	x		"
	1		x CR	x		"
	2	x				"
33039	1		x U/C	x		"
33042	4		x A/S	x		"
33041	1		x A/S, O/L, U/C	A/S, O/L	U/C	"
	2		x A/S, O/L U/C	A/S O/L	U/C	"
33034	3		x A/S, O/L	x		"
	4		x A/S, O/L	x		"
	1		x A/S, O/L U/C	A/S, O/L	U/C	"
33019	2		x A/S, O/L U/C	A/S O/L	U/C	"
	1		x O/L	x		"
33033	2		x O/L, SP	x		"
	1		x A/S, O/L U/C	x		"
33033	2		x O/L, U/C SP	O/L, SP	U/C	"
	1					"
5832	2	x				"
	3	x				"
	4	x				"
	5	x				"
	6	x				"
	7	x				"

2. Hunter Corporation

Hunter reinspected approximately 3,662 welds, found approximately 724 unacceptable welds and are in the process of repairing.

(a) The following is a specific example of noncompliance identified in Inspection Report No. 454/82-05; 455/82-04.

. The certification records for two (2) of the seven (7) QC inspector qualifications reviewed did not provide determination of equivalent inspection experience to support the level of certification.

. To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-19; 455/82-04-19 the inspector reviewed Hunter Acceptance Criteria for Visual Examination, Application and Reports Procedure No. 6001, Revision 3, Hunter Qualification and Inspection Examination, Testing, Auditing Personnel No. 1,702, Revisions 10; and 12 visual weld inspection personnel certifications which included the following documents. All were found to be acceptable:

- . Certification of qualifications
- . Personnel evaluation sheets
- . Training
- . Written tests (no oral tests are given)
- . Eye tests
- . Resumes
- . Diplomas or verification of education
- . Verification of prior work (letters or telephone conversations documented).

(b) The following welds were visually examined by the inspector:

WELD INSPECTION ABBREVIATIONS

See paragraph D.1.(b) above.

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
S-CC-001-20	798		x U/C	x		Pipe weld
S-SI-001-48	1660		x U/S	x		Pipe weld
S-SI-001-48	1662		x U/S	x		Pipe weld
S-CC-100-52	1884		x POR	x		Pipe weld
S-SX-100-14	96		x U/S	x		Pipe weld
S-SX-100-14	1919		x U/S	x		Pipe weld
S-SX-100-24	569		x U/S	x		Pipe weld
S-SX-100-24	570		x U/S	x		Pipe weld
S-SX-100-24	1275		x U/S	x		Pipe weld
S-SX-100-24	1276		x U/S	x		Pipe weld
1RY3	2		x U/S	x		Pipe weld
1RY3	9		x U/S	x		Pipe weld
1RY3	10		x U/S	x		Pipe weld
S-CC-100-33	1265		x POR	x		Pipe weld
AF25	224		x POR	x		Pipe weld
S-CC-001-20	785	x				Pipe weld
S-CC-001-20	786	x				Pipe weld
S-CC-001-20	787	x				Pipe weld
S-CC-001-20	788	x				Pipe weld
S-CC-001-20	794	x				Pipe weld
S-CC-001-20	796	x				Pipe weld
S-CC-001-20	797	x				Pipe weld
S-CC-001-20	804	x				Pipe weld
S-CC-001-20	805	x				Pipe weld
S-CC-001-20	808	x				Pipe weld
S-CC-001-20	809	x				Pipe weld
S-CC-001-20	810	x				Pipe weld

3. Nuclear Installation Service Co. (NISCo)

NISCo reinspected approximately 229 welds and found all the welds acceptable.

(a) The inspector reviewed the following:

- . NISCo, QC Perform Visual Inspection of Weld Procedure, ES 100-5, Revision B.
- . NISCo, Qualification and Certification of Inspection Personnel Procedure No. ES 116-2, Revision E.
- . NISCo, Four Visual Weld Examination Personnel Certifications.

(b) The following are welds visually examined by the inspector.

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
405-22	22	x				Fuel Transfer
405-21	21	x				Tube Supports
405-20	20	x				Fuel Transfer
405-19	19	x				Tube Supports
405-15	15	x				Fuel Transfer
405-13	13	x				Tube Supports
405-12	12	x				Fuel Transfer
405-11	11	x				Tube Supports

4. Pittsburgh Testing Laboratory (PTL)

PTL reinspected approximately 4,973 welds and found approximately 724 welds unacceptable. No repairs have started.

- (a) The following is a specific example of a noncompliance previously identified in Inspection Report No. 50-454/82-05; 50-455/82-04.

- . The certification record for one of the three (3) QC/QA inspector qualification records reviewed did not have a verification of prior work experience.

To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-19; 455/82-04-19, the inspector reviewed PTL Visual Inspection of Welding Procedure No. IS-BY-1, Revision 3; PPL Personnel Qualification/Certification Procedure No. IS-BY-49-PQ, Revisions 4; and 12 visual weld inspector personnel certification packages which included the following documents. All were found to be acceptable:

- . Training
- . Eye tests
- . Written test
- . Verification of prior work
- . Diplomas or verification of education
- . Certification of qualification
- . Resumes

- (b) The following welds were visually examined by the inspector:

Weld Inspection Abbreviations

See paragraph D.1 (b) above.

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
2211	263		x E/L		x	E/L I-Beam to Embed
2211	263		x E/L		x	W/L I-Beam to Embed
2211	247		x N/F	x		Structural
2211	247		x N/F	x		Structural
2211	247		x N/F	x		Structural
2211	247		x O/L	x		Structural
2211	247		x O/L Prof	x		Structural
2211	247		x E/L	x		Structural
2211	247		x O/L	x		Structural
2211	247		x O/L	x		Structural
2211	247		x UC, E/L	x		Structural
2211	247		x Prof, Por	x		Structural
2211	247		x U/S	x		Structural
1895	106		x U/C		x	U/C Structural
2108	106	x				Structural
2112	632	x				Structural
2060	633	x				Structural
2730	641		x O/L, E/L		x	E/L Structural
2730	641		x O/L, E/L		x	E/L Structural
2730	615		x N/F, O/L	x		Structural
2083	570		x N/F		x	Structural
2086	570		x N/F		x	N/F Structural
2081	557		x U/C, N/F		x	Structural
2168	610		x U/C		x	U/C Structural
2168	610	x				Structural
2168	610		x N/F, U/C	x		Structural
2168	610		x N/F, O/L, U/C	x		Structural
2168	610		x O/L	x		Structural
1867	1	x				Structural
1867	1	x				Structural
1899	402	x				Structural
1899	402	x				Structural
1899	403		x U/C	x		Structural
1899	403	x				Structural
1108	4AWC7		x U/C E/L		x	E/L, U/C Clip to embed
1108	4AWC7		x C/L, U/C, O/W	x O/L	x	U/C, O/W Clip to embed
2472	Ho47A		x U/C, U/S	x		Electrical
2472	Ho47A	x				Stiffeners
2472	Ho47A	x				Electrical
2472	Ho47A	x				Stiffeners
2472	Ho47A	x				Electrical
2472	Ho47A		x U/S	x		Stiffeners
2472	Ho47A	x				Electrical
2472	Ho47A	x				Stiffeners
2472	Ho47A		x U/S	x		Electrical
2472	Ho47A	x				Stiffeners
2472	Ho47B	x				Electrical
2472	Ho47B	x				Stiffeners

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
2472	Ho47B	x				Electrical
2472	Ho47B	x				Stiffeners
2472	Ho47B	x				Electrical
2472	Ho47B	x				Stiffeners
2472	Ho47B	x				Electrical
2472	Ho47B	x				Stiffeners
2472	Ho47B	x				Electrical
2472	Ho47B	x				Stiffeners
2472	Ho37	x				Electrical
2472	Ho37	x				Stiffeners
2472	Ho37	x				Electrical
2472	Ho37	x	x U/S	x		Stiffeners
2472	Ho37	x				Electrical
2090	226		x U/C	x		Structural
2090	227	x				Structural
1966	305	x				Structural
1966	305	x				Structural
1966	289	x				Structural
1966	289	x				Structural
2146	562		x O/L,U/C,E/L CR		x O/L,U/C,E/L,CR	Structural
1990	688		x U/C,POR, CR	x		Structural
1980	689		x S,POR	x		Structural
1963	689		x U/C	x		Structural
1892	691		x O/L,U/C	x		Structural
1845	692		x U/C	x		Structural
1988	672		x U/C,U/S	x		Structural
2665	CC10		x O/L		x O/L	Electrical to Structural
2665	CC10		x U/S	x		"
2665	CC10		x N/F		x N/F	"
2665	CC10		x U/S,U/C		x U/S,U/C	"
2665	CC10		x N/F,O/L		x N/F,O/L	"
2665	CC9		x E/C		x E/C	"
2665	CC9		x O/L	x		"
2665	CC9		x N/F	x		"
2665	CC9		x U/S,U/C	x		"
2665	CC9		x O/L,E/C		x E/C	"
2003	MS126	x				Steel to Structural
2003	MS126	x				"
2003	MS126	x				"
2070	366	x				Stiffeners to Structural
2070	366	x				"
2070	366	x				"

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
2070	366	x				"
2070	366	x				"
2070	366	x				"
2070	366	x				"
2044	271	x				Structural
2044	271		x U/C	x		Structural
2044	271	x				Structural
2044	271		x U/C,O/L	x		Structural
2044	271	x				Structural
2044	271	x				Structural
2044	271		x O/L,U/S	x		Structural
2044	271	x				Structural

5. Powers-Azco-Pope (PAP)

PAP reinspected approximately 6,115 welds and found approximately 850 unacceptable. 90% of the rejected welds have been repaired to date.

- (a) The following are specific examples of items of noncompliance identified in Inspection Report No. 50-454/82-05; 50-455/82-04. The QC Supervisor was replaced in July 1982. There were four inspectors still onsite that were onsite during the findings.
- . The certification records for the QC Supervisor did not provide an adequate determination of initial capability.
 - . The certification records for the QC Supervisor did not contain a high school diploma, or verification of previous employment.
 - . The certification records for the QC Supervisor did not contain adequate evaluation and justification for certification to Level I or subsequent certification to Level II Supervisor.
 - . The certification records for three (3) QC inspectors did not contain a high school diploma.
 - . The certification folders for three (3) QC inspectors did not contain verifications of prior employment.
 - . The certification records for the QC Supervisor and three (3) QC inspectors contain open book examinations that do not provide an adequate level of knowledge prior to certification. The records did not contain

results of a capability demonstration to support certification.

The certification records for three (3) QC inspectors did not contain adequate evaluation and justification for certification to Level I and subsequent certification to Level II inspector.

To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-10; 455/82-04-19 the inspector reviewed PAP Visual Weld Inspection Procedure No. QC-3, Revision 11; PAP QA Training and Qualification Procedure No. QC-1, Revision 14; and 14 visual weld inspection personnel certification packages which included the following documents: the QA Manager, QC Supervisor and the four previously mentioned inspectors. (Total of 14 certifications were reviewed.) All were found to be acceptable. The following records were reviewed:

- . Certification of qualification
- . Verification of prior work (letter or telephone conversation)
- . Diplomas
- . Training
- . Evaluation records
- . Resumes
- . Eye tests
- . Written tests

(b) The following welds were visually examined by the inspector:

WELD INSPECTION ABBREVIATIONS

See paragraph D.1 (b) above.

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
1FT-AF015	FW-19	x				Pipe Weld
1FT-AF015	FW-20	x				Pipe Weld
1FT-AF015	FW-21	x				Pipe Weld
1FT-AF015	FW-22	x				Pipe Weld
1FT-AF015	FW-23	x				Pipe Weld
1FT-AF015	FW-24	x				Pipe Weld
1FT-AF015	FW-25	x				Pipe Weld
1FT-AF015	FW-26	x				Pipe Weld
1LT-528	FW-5		x U/C	x		Hanger Weld (H215 type)
1FIS-418A	FW-1		x U/S	x		Pipe Weld
1FIS-418A	FW-5		x U/S	x		Pipe Weld
1FIS-418A	FW-9		x U/S	x		Pipe Weld
1FIS-418A	FW-10		x U/S	x		Pipe Weld to
1FIS-418A	FW-11		x U/S	x		Pipe Weld
1FIS-418A	FW-12		x U/S	x		Pipe Weld
1FIS-418A	FW-13		x U/S	x		Pipe Weld
1FIS-418A	FW-14		x U/S	x		Pipe Weld
1LT-518	FW-1	x				Hanger Weld H7-2
1LT-518	FW-1	x				Hanger Weld H7-3
1LT-518	FW-1	x				Hanger Weld H29-6
1LT-518	FW-16	x				Pipe Weld
1LT-518	FW-17	x				Pipe Weld
1LT-518	FW-18	x				Pipe Weld
1LT-518	FW-19	x				Pipe Weld
1LT-518	FW-20	x				Pipe Weld
1POS-D062	FW-3		x N/F	x		Pipe Weld
1POS-D062	FW-7		x N/F	x		Pipe Weld
1POS-D062	FW-10		x N/F	x		Pipe Weld
1POS-D062	FW-13		x U/S	x		Pipe Weld
1POS-D062	FW-15		x N/F	x		Pipe Weld
1POS-D062	FW-16		x N/F,U/S	x		Pipe Weld
1POS-D062	FW-18		x N/F	x		Pipe Weld
1LS-D034	FW-4		x U/S	x		Pipe Weld
1LS-D034	FW-6		x U/S	x		Pipe Weld
1LS-D034	FW-7		x U/S	x		Pipe Weld
1LS-D034	FW-11		x U/S	x		Pipe Weld
1LS-D034	FW-14		x U/S	x		Pipe Weld
1FT-CS1Z	FW-3		x U/S	x		Hanger Weld H89-4
1FT-CS1Z	FW-4		x U/S	x		Hanger Weld H89-4
1FT-CS1Z	FW-6		x U/S	x		Hanger Weld H89-4
1FT-CS1Z	FW-8		x U/S	x		Hanger Weld H89-4
1FT-CS1Z	FW-9		x U/S	x		Hanger Weld H89-4
1FT-CS1Z	FW-10		x U/S	x		Hanger Weld H89-4
1FT-CS1Z	FW-7	x				Pipe Weld
1FT-CS1Z	FW-8	x				Pipe Weld
1FT-CS1Z	FW-10	x				Pipe Weld
1FT-CS1Z	FW-4	x				Pipe Weld

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
1FT-AF015	FW-13	x				Pipe Weld
1FT-AF015	FW-14	x				Pipe Weld
1FT-AF015	FW-17	x				Pipe Weld
1FT-AF015	FW-18	x				Pipe Weld

6. Johnson Controls Inc.

JCI reinspected approximately 1,459 welds, found 65 unacceptable and all have been repaired.

(a) The following are specific examples of noncompliance identified in Inspection Report No. 50-454/82-05; 50-455/82-04.

- . The certification records reviewed did not contain a determination of initial capability.
- . The certification records reviewed did not contain a copy of the individual's high school diploma and verification of prior work history.
- . The certification records reviewed did not support adequate testing prior to certification.

To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-10; 455/82-04-19 the inspector reviewed JCI Training and Indoctrination Procedure No. QAS-211-BY, Revision 11; JCI Visual Inspection Procedure No. QAS-1111-BY, Revisions 2; and 13 visual weld inspection personnel certifications which included the following documents. All were found to be acceptable. The following were reviewed:

- . Letter of certification
- . Verification of prior work (letter or telephone conversations)
- . Diplomas
- . Training
- . Employee evaluation
- . Resumes
- . Eye tests
- . Written tests (no oral tests are given)

(b) The following were welds visually examined by the inspector:

WELD INSPECTION ABBREVIATIONS

See paragraph D.1.(b) above.

Package or Traveler	Weld ID	Contractor Results		3rd Party Results		Type of Installation
		Acc	Rej-Defects	Agree	Disagree-Defects	
IVX04J	AA5	x				Hanger
IVX04J	AB8	x				Hanger
IVX04J	AB7	x				Hanger
IVX04J	AB6	x				Hanger
IVX04J	AA1	x				Hanger
VA-8EX	1AB91 1,2,11 14 welds		x U/S,N/P,O/L	x		Hanger
VA-13EX	1AB138 12 14 welds		x U/S	x		Hanger
VA-4EX	1AB43 14 welds		x U/S,N/P	x		Hanger
IVX-01J	AC-2 2 welds		x O/L		x none	Hanger
VEUX Retro	AC-12 2 welds		x PROF.		x none	Hanger
VA-10EX	CA-3 16 welds		x PROF.		x none	Hanger
VA-10EX	CA-9 16 welds		x U/S		x none	Stiffner
VA-8EX	CA-16 16 welds		x U/S		x none	Stiffner
IVX04J	AB1	x				Hanger
IVX04J	AB2	x				Hanger
IVX04J	AB5	x				Hanger
IVX04J	AB3	x				Hanger
IVX04J	AA2	x				Hanager
IVX04J	AB9	x				Hanger

7. Blount Brothers Corporation

- (a) The following is a specific example of noncompliance identified in Inspection Report No. 50-454/82-05; 50-455/82-04.

The inspector observed that there are now new "Records of Lead Auditor Qualification Forms" in the three auditors personnel certification packages. There is an area on the form used to document annual evaluation. The individuals were to be evaluated annually by the QC Manager to determine if the individuals are currently performing audits, how effective the audits were, etc. The inspector also reviewed the three audit personnel certifications that were onsite and the Blount Lead Auditor Qualification Procedure

No. 34, Revision 3, Issue 4. All were found to be acceptable.

- . The certification record for one (1) of the two (2) QC inspector qualifications reviewed did not indicate the expiration date of certification as Level I lead auditor.

8. Reliable Sheet Metal Works, Inc.

(a) The following is a specific example of noncompliance identified in Inspection Report No. 50-454/82-05; 50-455/82-04.

- . The contractor Quality Assurance Manual did not require inspection personnel to be trained and certified to ANSI N45.2.6-1978.
- . The certification record for the QA/QC supervisor did not contain a satisfactory basis for certification.
- . The certification record for the QA/QC supervisor did not contain the level of capability.

To verify the licensee's corrective actions taken in response to noncompliance 454/82-05-19; 455/82-04-19 the inspector reviewed the Reliable Metal Works Manual which states that inspection personnel will be trained and certified to ANSI N45.2.6-1978.

The QA/QC Supervisor in question was replaced by today's QA/QC Supervisor. The inspector also reviewed the QA/QC Supervisor's weld inspection personnel certifications which included the following documents:

- . Certification of qualification
- . Training
- . Written tests (no oral test given)
- . Eye test
- . Resumes
- . Diplomas
- . Verification of prior work experience

9. Meeting at the Site

On September 22, 1983, a meeting was held at the site between the NRC and CECO. CECO provided an update on the activities of the reinspection program. The meeting consisted of the following:

- . Background
- . Scope
- . Preliminary Results
- . Analysis of Discrepancies

. Analysis of Inspectors Performance
 . Engineering Evaluation of Weld Discrepancies on
 100 Welds. (Worst Cases)

CECo stated that the FSAR commitment has not been compromised and requested to not continue the reinspection program as was originally committed. The NRC requested that the reinspection program continue and that an interim report be submitted describing program status and preliminary results.

The inspector visually examined the following "worst case" welds and agreed with the reinspector's evaluation. The welds do not meet the AWS Code and therefore are unacceptable.

<u>Unit</u>	<u>Welds</u>	<u>Defects</u>
1	Angle to plate weld No. 23 (1 weld)	U/C, L/F, O/L
1	Beam No. AB71635 to embed (2 welds)	L/F, O/L, U/S
1	Stiffener 426 "0" R17 (6 welds)	U/C,O/L,N/F,CR,U/S
1	Junction box No. 1JB952A (12 welds)	O/L
2	Beam 202 to box girder 624 (2welds)	U/S
2	Beam 558 to embed R2071 (3 welds)	U/S, U/C
2	Beam 668 to box girder 624 (2 welds)	U/C, O/L
2	Beam 665 to box girder 630 (2 welds)	O/L, L/F
2	Beam 667 to box girder 624 (2 welds)	O/L
2	Pan tray hangers (12 welds)	CR, S, N/F, O/L
2	Cable tray hangers (3 welds)	SP, U/C, S, O/L
2	Cable pan & angle/angle & unistrut hangers (6 welds)	U/C, N/F

10. Meeting at the Regional Office

On November 10, 1983, a meeting was held at the Region III NRC office between the NRC site resident inspectors and five NRC staff members to review the CECo preliminary report dated October 28, 1983, regarding actions taken to verify the adequacy of QC inspections raised during a Byron inspection (Inspector Report No. 50-454/82-05; 50-455/82-04).

There was also a telecon on November 10, 1983, between Region III Messrs. DelGeorge and Tramm of CECO regarding the preliminary report.

As discussed during the telecon, the NRC believes the report should address the following items:

The report should be drafted in accordance with the original program. Specifically, the tables and conclusions based on those tables should be based on the findings of the Level II examiner or the independent Level III examiner. Use of a CECO Level III examiner to change the results of the independent Level III findings is not in accordance with the original program.

It was the NRC understanding, that CECO will provide tabulation of the results of inspection attributes (weld overlap, undercut, etc.) in order to determine the need if any, for further inspections. This tabulation may be made available to the NRC inspectors, and need not be in the report, but as a minimum, the conclusions CECO have reached regarding the tabulations should be included in the report.

It was also the NRC understanding that CECO will review different inspection activities and determine if certain areas such as final hanger inspections warrant further review based on reject rates.

11. Disposition of Discrepancies

All discrepancies identified as a part of the reinspection are being corrected either by physical rework to correct the condition or by detailing condition on nonconformance reports to perform engineering analysis to determine acceptability of the condition without correction. The determination, as to the course of action employed to disposition the condition, is a function of the estimate of the more cost effective path to resolution. That is, when it appears that the cost to physically correct the condition is less than the costs associated with detailing data and performing an engineering analysis, then physical correction is chosen, and vice versa.

12. NRC Regional Inspector Observations

The performance and results of visual weld reinspections were reviewed by the inspector. The review consisted of discussions with supervisors/lead weld inspectors, examination of original inspection records and reinspection records, and visual examination of 500 welds which had been reinspected by several companies. In the visual examination, the inspector found that in many cases the reinspections were overly conservative and inspectors were classifying weld attributes as unacceptable which, in fact, were acceptable under the AWS Code. The third party inspection was correcting most of these over calls. The

overly conservative inspection findings resulted from the evaluations of overlaps, undercuts, and craters. For example, there were several instances of undercut that were less than 1/32-inch in depth, which were acceptable under AWS Code requirements but were determined unacceptable by the original reinspections. There were also problems in interpretation where the welder had welded a brace and a plate to tube steel. In most cases these were 90° joints. Often, where the welder started welding there was a slight undercut indication and where the welder stopped at the end of the weld, there was a dish type indication. Some inspectors were rejecting the welds (for a crater) when in fact, most met AWS Code requirements. Other welds were erroneously being rejected (for overlap) because of a slight build-up which occurred if the welder had hesitated a fraction of a second at the end of a weld.

The inspector also found that in the area of the instrumentation piping socket to piping fillet welds, the welds are being rejected due to undersize because the fillet welds are almost polished for liquid penetrant examination. The welds were acceptable prior to grinding.

E. Components

The NRC inspector verified the reinspection program by reviewing the documentation and observing the work activities. The documentation review covered 100% of the reinspection as follows:

1. Hunter

LEVEL II INSPECTOR	NO. OF REINSPECTIONS AND NO. OF REJECTS BY TYPE							
	DOC	REJ	HDW	REJ	WELD	REJ	TORQUE	REJECTS (REJ)
1130	8214	71	935	10	263	14	36	15
1211	1185	4	0	0	34	1	0	0
1284	0	0	0	0	51	4	0	0
1313	331	3	934	2	181	0	52	41
1354	102	1	0	0	33	0	0	0
1515	41	1	265	7	214	6	0	0
1529	19	0	12	0	55	6	16	7
1533	6363	60	5390	22	392	11	4	0
1562	8520	16	81	0	237	5	161	32
1605	283	3	190	4	344	11	116	77
1714	2144	56	64	3	301	18	104	46
1782	3725	74	8060	36	822	25	0	0
1946	366	0	206	2	273	0	68	28
9076	161	0	21	0	129	13	12	10
9208	138	4	0	0	14	0	0	0
9446	47	0	133	4	319	4	44	37
TOTALS	31639	293	16291	90	3662	118	613	293
LEVEL I INSPECTOR	DOC	REJ	HDW	REJ	WELD	REJ	TORQUE	REJECTS
1041	294	5	921	18	NA	-	NA	-
1705	1804	15	6323	72	NA	-	NA	-
1867	130	4	339	8	NA	-	NA	-
1958	442	27	1253	7	NA	-	NA	-
9357	2269	74	7893	57	NA	-	NA	-
TOTALS	4939	125	16729	162	NA	-	NA	-

-- Rework on all of the above rejects will be initiated as of September 14, 1983, and the licensee estimates that the rework will be completed by December 31, 1983.

The NRC inspector observed field installations in verifying the following reinspection work:

- 12 component supports, Unit 1 auxiliary feedwater system, auxiliary feed tunnel-confirmed hardware configuration, dimensions, and location (Inspector 1533).

- 4 mechanical joints, essential service cooling for pumps in Unit 1 and 8 mechanical joints, boron thermal regeneration station; Unit 1 auxiliary building - verified documentation, identification, and full thread engagement (Inspectors 1529, 1130 and 1605).

- 9 piping dimensions, boron thermal regeneration station, Unit 1 auxiliary building - verified dimensions and documentation (Inspectors 1605 and 1946).

2. Johnson Controls

INSPECTOR	NO. OF REINSPECTIONS AND NO. OF REJECTS BY TYPE			
	WELD	REJECTS	DIMENSIONS	REJECTS
Pearson	660	32	2781	20
Beeker	0	0	28	3
Shroff	230	8	3178	8
Kern	84	4	499	0
Lindblom	485	21	1326	16
TOTALS	1459	65	7812	47

All of the above rejects have been reworked except for 18 of the 52 rejects attributed to Inspector Pearson and one of the 37 rejects attributed to Inspector Lindblom.

The NRC inspector observed installations and verified the following reinspection work:

- . Tube track in 1VX02J-3 system located on 426 ft. elevation at P and 6 coordinates - verified the location and checked the dimensions on 42 supports.
- . Panels in systems OVA01JD and OVA01JC located on 463 ft. elevation at Q and 21 coordinates - verified the location and dimensions per Drawing No. M-832 Sheet 23 Revision C.

3. NISCO

INSPECTOR	NO. OF REINSPECTIONS AND NO. OF REJECTS BY TYPE			
	TORQUE	REJECTS	WELDS	REJECTS
Bockey	971	0	0	0
Pruitt	25	0	14	0
Weier	46	0	2	0
Schultz	9	0	11	0
TOTAL	1051	0	27	0

6. Functional or Program Areas Inspected

a. Safety Related Components II - Work Activities

The inspector observed installation, including protection after installation, for an RHR pump, Reactor Coolant Pump, Steam Generator, and Pressurizer. The installation of these components had been completed prior to this inspection.

b. Safety Related Components II - Review of Quality Records

The inspector reviewed the following quality records for a Steam Generator, Reactor Coolant Pump, Pressurizer, and an RHR pump.

. Component Specifications

- . Purchase Orders
- . Component Drawings
- . Material Receiving Reports
- . Quality Release Forms
- . ASME Data Forms
- . Certificates of Conformance
- . QA Checklists
- . Vendor Surveillance Reports
- . Audit Reports
- . QA Evaluation Reports
- . Qualification Records for 10 Welders

c. Safety Related Components - Review of Quality Documents

The inspector reviewed the following documents as they pertain to safety related components and determined that they conform to the QA program as described in Chapter 17 of the facility SAR.

- . 2702 NSSS Specification
- . QA Manuals:
 - Commonwealth Edison
 - Hunter
- . Westinghouse Technical Manuals
- . L2781 Rigging and Lifting Specification
- . Equipment Installation Process Sheets
- . Procedure No. 3.102, Material Procurement
- . Procedure No. 3.602, Material Receiving and Inspection
- . Procedure No. 3.801, Storage of Components and Materials
- . Procedure No. 5.201, Welding Procedure Qualification
- . Procedure No. 50, Welding Procedure
- . Procedure No. 5.502, Grinding Supports
- . Procedure No. 4.001, Bolted Connections
- . Procedure No. 118 and 119, Load Testing Cranes
- . Procedure No. 120, Crane Erection
- . Procedure Nos. 101, 109, 113 and 117, Transport and Setting of Steam Generators and Pressurizer

No items of noncompliance or deviations were identified.

7. Allegations

On November 23, 1982, Level II Quality Control Inspectors employed by Pittsburgh Testing Laboratory detailed to Hatfield Electric Company contacted the Resident Inspector's Office and stated the following allegations:

a. Allegation

Weld undercut is a widespread and serious problem.

NRC Findings

Undercut is a groove melted into the base metal adjacent to the toe or root of the weld and left unfilled by weld metal. The allegor was referring specifically to welding performed by Hatfield Electric Company involving cable trays, hangers and associated structural elements. The applicable American Welding Society (AWS) Codes specify maximum permissible undercut as a function of structural member thickness or 1/32", whichever is less. The allegor characterized weld undercut as a "serious" problem in the context of AWS Code compliance. The reinspection program established in response to the noncompliance item identified as 454/82-05-19; 455/82-04-19, and which is currently underway identified instances of undercut resulting in weld rejection and requiring rework/repair to achieve AWS Code compliance. The inspector visually examined a nonrandom sample consisting of 204 Hatfield welds (see paragraph D.1.(b)) including 138 welds that were determined not to have unacceptable undercut by the contractor, 21 welds that were determined to be unacceptable by both the contractor and the third party and 45 welds that were determined to be unacceptable by the contractor and later determined to be acceptable by the third party. The inspector found the reinspections to be overly critical in the evaluation of undercut with most rejected welds being border-line cases. The inspector was informed that in some cases the original reinspections were performed without the use of gages to measure undercut. If gages were not used, it would have been extremely difficult to determine undercut which was close to, but not in excess of, 1/32" as being acceptable. The third party was reinspecting all of the unacceptable welds found in the reinspection program by the contractor. The third party inspections were identifying most of the overcalls. Weld undercut could not be substantiated as being a widespread and serious problem because of the few, mostly border-line, cases of undercut in excess of AWS code limits being identified.

The weld applications involved in electrical installation at Byron Station are such that in most cases, undercut would have to greatly exceed AWS Code limits to compromise the structural adequacy of the installations. This allegation could not be substantiated and is considered closed.

b. Allegation

Some hangers do not have weld travelers for the auxiliary steel.

NRC Findings

The allegation concerns lack of documentation (either lost or destroyed) of quality control inspections for certain welds. Weld card travelers are issued to welders prior to welding on a given item. The traveler is used to document the welding activity and quality control inspection of the completed welds. When a weld traveler is illegible, lost, or destroyed, a new weld traveler is initiated to re-establish and document the quality of an item. The item (weld) must be reinspected. As a result of nonconformance

Report No. 407, dated February 11, 1982, (cable pan hanger inspections were inadequate) Hatfield is in the process of identifying each hanger (approximately 2500 with auxiliary steel connections) that does not have a complete inspection, or is lacking some type of documentation, by reviewing printouts on hangers with weld travelers and cross referencing with S&L Drawing's to determine which hangers lack documentation of required inspections. If there is no record or documentation for a hanger, it will be inspected. If there is any documentation on a hanger, it will not be inspected at this time. All available documentation will subsequently be evaluated to determine whether or not the hanger must be inspected. There are approximately 400 hangers that have been inspected for completeness for the auxiliary steel inspection and there were approximately 45 hangers without travelers. The allegation has been substantiated; however, the problem was independently identified under the contractor's quality program and corrective action initiated.

This allegation is an open item pending completion of the above program (454/83-39-01; 455/83-29-01).

c. Allegation

A large number of welds performed in 1979 and 1980 that were accepted as satisfactory, in reality do not meet AWS requirements (40%) due to procedural deficiencies (i.e. lack of QC hold points for preheat verification, temperature stick logs, etc.).

NRC Findings

The inspector reviewed procedure, "Flare-Bevel Groove Welding AWS (E7018)" No. 13Q, Revision 1, that was used from May 19, 1978, to April 16, 1979. This procedure was used in performing the shielded metal-arc welding process in accordance with AWS D1.1-75 which was referenced in the procedure. The procedure covered the following:

- . Purpose
- . References
- . Responsibilities
- . Preparation of base metal
- . Electrical characteristics
- . Welding techniques
- . Defects
- . Weld identification
- . Preheat and postheat
- . Documentation

The inspector also reviewed Hatfield Procedure No. 13AB, "Class I Shielded Metal Arc Field Welding" (qualified by test) Revision 0, Issue 1 which was used from April 16, 1978 to January 26, 1981 and Hatfield Procedure No. 13AB, "Class I Shielded Metal Arc Field Welding" (qualified by test) Revision 2, which is currently in use. These two procedures were basically the same but contained more detail than procedure No. 13Q, Revision 1. The procedures used to weld in 1979 and 1980 referenced AWS D1.1-75. Welders and procedures

were all certified. QC hold points for perheat verification and temperature stick logs were not required by AWS. Based upon the inspector's review of the welding procedures, unacceptable welds would not have been attributable to deficient weld procedures. This allegation could not be substantiated and is considered closed.

d. Allegation

For certain hangers covered with fireproofing insulation and for which weld travelers were missing, the insulation was removed and welds reinspected. A reject rate of approximately 90% has been established for these welds.

NRC Findings

The allegation in this area identified welds which were subject to corrective action and reinspection. These welds therefore do not have potential safety significance. Weld card travelers are issued to welders prior to welding on a given item. The traveler is used to document the welding activity and quality control inspection of the completed welds. When a weld traveler is illegible, lost, or destroyed, a new weld traveler is initiated to re-establish and document the quality of an item. The item (weld) must be reinspected. As a result of Nonconformance Report (NR) No. 407, dated February 11, 1982, (cable pan hanger inspection was inadequate corrective action, reinspection of all cable pan hangers) 137 hangers have had the fireproofing insulation removed and inspected. Three hangers have been found to be unacceptable, and one hanger did not have a weld traveler. Hatfield is in the process of identifying each hanger that does not have a complete inspection, or some type of documentation, by reviewing printouts on hangers with weld travelers referencing S&L Drawings to determine which hangers have no documentation as being inspected. The inspector was informed that NR No. 407 will be closed prior to fuel load.

If there is no record or documentation for a hanger it will be inspected. If there is minimum documentation on a hanger, it will not be inspected at this time. All the documentation will be evaluated, depending on the type of documentation, to determine if the hanger is inspected or not at a later date. CECO has an open QA Audit No. 6-83-124 on the above item. Additionally, as part of the reinspection program established in response to noncompliance item identified as 454/82-05-19; 455/82-04-19, welds covered with fireproofing will be reinspected even though weld travelers exist to document the quality of these welds. A reject rate of approximately 90% could not be substantiated.

e. Allegation

A "Unit Surveillance Walkdown" of a system (not specified) performed by Pittsburgh Testing Laboratory and CECO resulted in a 38% weld rejection rate.

NRC Findings

The allegation merely reports the results of an oversight inspection initiated by the Applicant of his own accord. There is a weekly "Unit Concept Inspection" that was started September 1982. There have been approximately 60 "Unit Concept Inspections." CECO's Site Quality Assurance Department at Byron is responsible for the establishment and implementation of the "Unit Concept Inspection Program". The "Unit Concept Inspection" is an independent overinspection of work and inspections performed by the contractors during plant construction, and, to the extent possible, a verification of the quality of manufactured equipment installed in the plant being constructed. The purpose of the "Unit Concept Inspection" is to provide the Quality Assurance Department an additional level of assurance of the construction quality of the facilities and equipment installed at the nuclear plant. This "Unit Concept Inspection" is performed by the Independent Testing Agency under the direction of the Site Quality Assurance Department. These inspections are in addition to the normally assigned inspections and certain special overinspections performed by the testing agency as directed by Site Quality Assurance such as the inspections of welding, welds that have been painted, specific electrical and mechanical facilities and structures, storage, cable pulling and housekeeping. The concept of unit inspection is that all aspects of the selected element in the plant will be visually inspected against applicable basic vendor and Architect Engineer design drawings and approved changes thereto, covering all technical disciplines involved with the element, no matter whether the work was done by manufacturers or site contractors.

The worst weld rejections have been:

- . Report No. 1 on Unit 1, 41 welds out of 115 welds were found to have overlap, welds not long enough, etc., performed by Hatfield. The welds with the most problems were pan welds because of the metal being approximately 18 gage.

The following items were inspected during the course of this unit inspection:

- . Welding - hangers and pans
 - . Dimensions - hangers and pans
 - . Location of pans
 - . Bolted connections on hangers
 - . Condition of cable
 - . Identification of cable
 - . Cable pan segregation code marker identification
- . Report No. 31 on Unit 1, 41 items were found to be unacceptable (painting problems) out of 303.

The following items were inspected:

- . CEA's

- . Structural bolting
- . Pipe hangers
- . Structural concrete
- . Cable installation
- . Conduit hangers
- . Cable pan and routing markers
- . Housekeeping
- . Structural fireproofing
- . Pipe and welds installation
- . Cable pan housekeeping
- . Electrical installation
- . Cable pan hanger welder

There has been 525 Hatfield painted welds inspected and approximately 50 rejected. (A defect that is visible through paint would be an obvious defect.)

The other Unit Concept Inspection has had a less than 10% weld rejection rate. Pittsburgh Testing Lab (PTL) reports their findings to CECo, CECo has the welds repaired, PTL reinspects the welds and when acceptable, the report is resubmitted to CECo. As an example, the following is a list of items involved in the Unit Concept Inspection.

- . Conduit Hangers and Welding
- . Cable Pan Installation
- . Electrical Installation
- . Concrete Expansion Anchors
- . Chiller Installation
- . Containment Spray Pump (Mechanical Installation)
- . Pump Motor Installation
- . HVAC
- . Dimensional Checks (Large Bore Piping)
- . Mechanical Joints (Large Bore Piping)
- . Valves (Large Bore Piping)
- . Pipe Welds (Large Bore Piping)
- . Dimensional Checks (Small Bore Piping)
- . Mechanical Joints (Small Bore Piping)
- . Valves (Small Bore Piping)
- . Pipe Welds (Small Bore Piping)
- . Masonry Block
- . Structural Concrete
- . Housekeeping

Because of the reject rate, the inspector was informed by PTL that the qualified weld inspectors were certified after April 1983, and more training was performed primarily because of over calls. Basically the same inspectors have performed all 60 inspections.

CECo's corrective action system is adequate to resolve these welding deficiencies thereby eliminating any potential safety significance attached to these inspection findings.

This allegation was substantiated, but made after the reinspection program had started. This allegation is considered closed.

f. Allegation

In drawing area 03051 or 13051 (426' level) 64 hangers were to be checked. Of the 36 or 37 hangers with all welds accessible, 14 had bad connections. The inaccessible connections had to be accepted on the strength of the weld cards. Authorization to remove insulation to inspect welds was denied.

NRC Findings

The allegation details a reinspection effort conducted by the allegor. Though it is not clear from the allegation as it is stated, the allegor apparently felt the weld connection detail reject rate was high enough to warrant the removal of fireproofing to reinspect additional welds. The allegor states that 14 of 36 or 37 hangers had bad connections (individual welds). The allegor identified welds found rejectable were subject to corrective action. Whether or not the removal of fireproofing to reinspect additional welds was warranted in the instance referred to by the allegor is not clear. As stated in the discussion of the allegation in this area, weld connection details covered by fireproofing are included in the reinspection program established in response to the noncompliance item identified as 454/82-05-19; 455/82-04-19. The licensee had all the fireproofing removed in drawing areas 03051 and 13051 and approximately 300 connections were inspected (all weld connection details). One was found to be unacceptable.

During the pan hanger program (June 1982 to January 1983), it was the policy of Hatfield QA/QC department to accept cable pan hanger connections that were fireproofed with a traveler card number that had been accepted by a weld inspector. If there was no weld inspection in the file for the specified hanger, the fireproofing was to be removed and the required inspection performed and documented. As of January 1983, the policy was changed. Welds are not accepted on the strength of traveler cards only. This allegation was substantiated in part and is now considered closed.

g. Allegation

Panels in Unit 1 containment supplied by Systems Controls Corporation have welds that are not to code (AWS) in that they are undersized (3/8" vs 5/8").

NRC Findings

The allegation in this area concerns undersize welds on panels supplied by System Controls Corporation (SCC). The problem of various deficiencies with panels supplied by SCC was identified December 1979 and January in 1980 the first local instrument control panels were shipped from SCC to the Byron site. CECO initially waived final inspection of the panels at SCC and conducted a receipt inspection of

the panels when they arrived at the site but did not include a review of workmanship due to the lack of a dimensional drawing accompanying the panels upon arrival on site. This led the receipt inspector to "N/A" that step in the inspection report. RIII received allegations on February 11, 1980, via a telephone call, that local instrument panels from SCC may have nonconforming welds. Site QA personnel inspected and identified nonconforming welds on panels which had passed receipt inspection by site receipt inspectors. CECO administered NCRs F-474 and F-484, February 1980. The NCRs were closed by the licensee on October 21, 1980, based on repairs and inspections of the panels. The seventh and final licensee status report on this subject was sent to Region III on March 25, 1982 and no further response was required. The inspector reviewed the following drawings of panels in Unit 1 containment supplied by Systems Controls Corporation, and found that the only weld sizes involved for Class 1, 4 and 8 foot panels were 3/16" and 1/8" welds.

Drawing No. 6577-W5, Rev. 0, Welding Details (5 details)
Drawing No. 6577-M-1 PL 50J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 52J, Rev. 4, Construction
Drawing No. 6577-M-1 PL 66J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 67J, Rev. 4, Construction
Drawing No. 6577-M-1 PL 71J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 75J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 54J, Rev. 4, Construction
Drawing No. 6577-M-1 PL 55J, Rev. 4, Construction
Drawing No. 6577-M-1 PL 56J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 57J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 60JA, Rev. 3, Construction
Drawing No. 6577-M-1 PL 60JB, Rev. 4, Construction
Drawing No. 6577-M-1 PL 60JC, Rev. 3, Construction
Drawing No. 6577-M-1 PL 60JD, Rev. 3, Construction
Drawing No. 6577-M-1 PL 61JA, Rev. 3, Construction
Drawing No. 6577-M-1 PL 61JB, Rev. 4, Construction
Drawing No. 6577-M-1 PL 61JC, Rev. 3, Construction
Drawing No. 6577-M-1 PL 61JD, Rev. 3, Construction
Drawing No. 6577-M-1 PL 69J, Rev. 3, Construction
Drawing No. 6577-M-1 PL 70J, Rev. 4, Construction
Drawing No. 6577-M-1 PL 72J, Rev. 5, Construction
Drawing No. 6577-M-1 PL 74J, Rev. 4, Construction
Drawing No. 6577-M-1 PL 76J, Rev. 3, Construction

The 3/8" vs 1/8" welds could not be substantiated. The only welding Hatfield performed on the panels was the termination of the electrical connections. This allegation is considered closed.

h. Allegation

Some welds that have been covered with fireproofing are only tack-welded. When found, a traveler is written without a Discrepancy Report being written.

NRC Findings

The allegation concerns incomplete welds being covered by fireproofing insulation. Since welding was not completed, weld travelers indicating weld completion and quality control inspection did not exist. To complete the connection and establish and document the quality of the welds, fireproofing was removed. Detection of such welds was accomplished when assembling the required documentation for the item as is required prior to release to the CECO. Ideally, coordination of fireproofing activities with cable tray hanger installation would have precluded such occurrences. The welds referred to by the allegor were completed and subject to inspection. The allegor felt that Discrepancy Reports should have been written. Had the items been previously accepted, a Discrepancy Report should have been written, but this apparently was not the case. Fireproofing an incomplete and/or uninspected item, while not a good practice, does not result in the item being accepted because, in order to satisfy quality control documentation requirements, the item must be complete, inspected and found acceptable. As part of the reinspection program established in response to the noncompliance item identified as 454/82-05-19; 455/82-04-19, certain welds covered with fireproofing are being reinspected even though weld travelers exist to document the quality of the welds. As a result of the reinspection program, approximately 5,500 welds have had fireproofing removed by Hatfield. Two welds were found to be tack welded. The fireproofing was removed to find welds that seven inspectors had inspected for their first 90 days of inspection in accordance with the reinspection program. These welds were to be fillets and were located in the auxiliary building. The safety significance of this allegation is minimal when considering the mechanism in place, particularly the system of quality documentation, to assure detection of incomplete or uninspected items. This allegation is considered closed.

i. Allegation

An inspection by an allegor revealed a weld not to plan. The welder indicated on the traveler was neither onsite, nor issued weld rod on the date indicated on the traveler. A person asked the allegor to change the date on the traveler. The allegor stated that he would not.

NRC Findings

The allegation concerns an apparent discrepancy between the date on a weld traveler and other documents which indicate that the welder identified on the traveler was not on site on that date. When a weld traveler was lost, a new weld traveler was initiated to re-establish and document the quality of affected items. The item(s) (welds) must be reinspected. Since the original record was lost, it was impossible to determine the date on which the weld was made. The welders identification, however, could be obtained since it was marked or stamped on the item.

The weld traveler in question had the correct welder's identification. The date on the weld traveler was the date the quality of the item was re-established by reinspection. The alleged apparently was unaware of these possible circumstances. Why an individual would have asked the alleged to change the date on the weld traveler is unknown. If the circumstances described above accounted for the discrepancy between the two dates, the item would have received a legitimate quality control inspection and alteration of the weld traveler, had it occurred, would not have impacted on the quality of the item. This allegation could not be substantiated and is considered closed.

j. Allegation

"General surveillance of this project illustrates that approximately 90% of the "B" welds on DV-164's are 1/8" undersize where tube steel has been used. In most cases this represents a 40% decrease in size and 55% in strength".

NRC Findings

The allegation in this area concerns potentially undersized welds. The potential safety significance of this allegation is dependent upon the margins employed in the design of hangers utilizing the "DV 164" connection detail. Welds on various connections such as these are included in the reinspection program established in response to the noncompliance item identified 454/82-05-19; 455/82-04-09. There was a reinspection of 48 5/16" welds on 12 DV 164 connections which were on 6 Unit 1 weld travelers No. 19112, No. 19113, No. 19114, No. 19017, No. 23749 and No. 23751. All were found to be acceptable. In reviewing the DV-164's, the inspector and other site personnel could not locate any "B" welds but below the DV-164's on the drawing, there were "B" welds in DV-162's. The inspector requested to review the reinspection on "B" welds on DV-162's. There were 18 welds reinspected and there were 2 found to be 1/16" undersize. This allegation could not be substantiated and is considered closed.

k. Allegation

The disposition on a DR was false. The report was written for lack of welding pre-heat. The inspector observed the process throughout, but the positioning engineer took the word of the welding foreman, who claimed preheat had been done. The report claimed the weld was removed, but it wasn't.

NRC Findings

The inspector reviewed the applicable Discrepancy Report and weld traveler cards. The discrepancy was that a structural member was not preheated prior to welding an attachment. The disposition was that the old weld was removed and that the column was preheated and attachment rewelded. The disposition was signed by the Welding Superintendent that the preheat and the rewelding was performed. The QA approval was signed by the Hatfield Lead Welding Inspector stating

that preheat was not witnessed (which is not a requirement for AWS). The welder involved is no longer employed by Hatfield. The inspector visually examined the weld in question and requested that the weld be magnetic particle examined. The weld was magnetic particle examined by a PTL certified Level II inspector and found to be acceptable. This is the best NDE that can be performed for that type of weld. The inspector determined that the weld met all Code requirements and that there were no visible signs of damage to the structural member. This allegation could not be substantiated and is considered closed.

1. Allegation

Unistrut members were being welded to plates with wedge anchors installed. Wedge anchors were thereby being subjected to excessive heat and stress.

NRC Findings

Through interviews with contractor personnel and a review of details from electrical drawings which specifically cover concrete expansion anchors (CEAs), it was determined that unistrut members have never been installed on plates using this type of anchor. Unistrut members are welded to installed embedded plates using standard anchor bolts (hooked ends, etc.). The plate proportions, width to length to thickness, in relation to the unistrut member proportions, plus the low heat input required for welding the unistrut to the plate would in no way distort the plate nor over stress the anchor bolt.

Several of these types of installations were selected for visual inspection of the various parts and of the concrete adjacent to the edges. A number of each in the reactor building, both inside and outside of containment, and a number of each in safety related areas of the auxiliary building were selected at random. This visual inspection indicated no loose or missing nuts, no plate warpage, and no spalled or loose concrete around the edges of the plates.

A steel pocket rule was used to check the depth of any apparent separation found. The greatest depth was 1/16" which started at the upper right-hand corner of one (1) embedded plate and progressed for a distance of 1/2" from the corner along the top horizontal edge toward the centerline of the plate.

Additionally, several flush-mounted conduit hanger plates and assemblies were investigated. This type of hanger is either 3"x4"x $\frac{1}{4}$ " structural steel tubing or 4"x4"x $\frac{1}{4}$ " structural steel tubing mounted on $\frac{1}{2}$ " thick plate which is flush-mounted to the concrete wall with wedge type anchors. This type of hanger, when mounted on concrete block walls, is mounted using bolts which are anchored on the opposite side of the wall using a large square plate as a washer and penetrating through the wall to mount the hanger assembly.

The conduit hangers were selected for inspection as a "worst case" installation since the materials involved are heavier and require greater heat input for welding of the parts. The type of weld used

was $\frac{1}{2}$ " flared groove weld. Hangers installed during 1977-1978, 1980-1981, and 1983 were selected for inspection.

This type of hanger assembly is not welded in place. The mounting plate is located on the concrete surface. The location for the wedge anchors is then determined. The wedge anchors are set. The mounting plate is then attached by the nuts of the wedge anchors finger tight. The structural tubing used for the conduit support is then tack welded to the mounting plate. The nuts of the wedge anchors are then removed and the entire assembly is taken down. The welding is completed on a workbench. After the assembly has been completely welded, it is attached to the concrete surface by the wedge anchor nuts finger tightened and final torqued.

To assure that all requirements were being met, S&L Drawings GEO-3393A, Rev. Y, detail WA; GEO-3393V, Rev. G; and GEO-3393D, Rev. Y were reviewed. Also the provisions of S&L Standard Form BY/BR/CEA, Rev. 18, were reviewed and compared to the drawings mentioned above and installed conditions. It was determined that the installed conditions of embedded and flush-mounted plates met the design requirements as outlined in these documents. The allegation, therefore, could not be substantiated.

m. Allegation

A weld rejected by the weld inspector, was accepted by a supervisor without repairs or reinspection. (Weld Traveler Card No. 15640.)

NRC Findings

The NRC Office of Investigation was investigating this allegation (Report No. 03-83-006) and requested technical assistance.

Review of the weld traveler card No. 15640 showed a date 8 or 9-8-81 on which the welder made the weld. The 9 was superimposed over the 8. In reviewing rod issue records, it was found that the rod was issued 9-8-82. 8-8-82 was a Sunday and the welder did not work.

Review of the "Examination" area of the weld traveler card showed that it was acceptable and then crossed out and initialed with the date of 8-9-82. The inspector was informed that the date 8-9-82 should have been 9-8-82, and that the individual made a mistake. Unacceptable is then marked for the "Examination" area. No one knows why the weld was rejected because there is no record of a repair.

There was a DR#084 issued 6-9-82 because an internal brace had not been installed. Weld traveler card No. 15640 was issued because of this DR.

The only record showing a re-examination is the weld traveler card under the area "Re-exam" showing acceptance by a QC supervisor. PTL performs a 100% reinspection of all weld traveler cards, but this was not one of the cards reviewed.

The inspector visually examined all the welds at each end of the brace in accordance with AWS D1.1-75 and found them to be acceptable. This consisted of a 4"x4"x15' brace welded diagonal to a plate 9"x9"x1" at each end of the brace. The plates were then welded to an "I" beam at each end.

The technical part of this allegation could not be substantiated and is considered closed.

5. Exit Interview

The inspector met with site representatives (denoted in Persons Contacted paragraph) at the conclusion of the inspection. The inspector summarized the scope and findings of the inspection noted in this report.