

U.S. NUCLEAR REGULATORY COMMISSION  
Office of Inspector and Auditor

Date of transcription May 3, 1985

REPORT OF INTERVIEW

Thomas F. Westerman, Enforcement Officer, Region IV, NRC, was interviewed concerning actions by Region IV in response to affidavits alleging that the liner plates for the spent fuel tank, refueling cavities, and two transfer canals at Comanche Peak Steam Electric Station (SES) had been improperly installed. During the interview, Westerman provided the following information.

On April 4, 1984, at the completion of an OI investigation, the Region IV Office of Investigations (OI) Field Office provided Westerman with a copy of an August 24, 1983, transcript of an OI interview of Arvill Dillingham, Jr. During the August 24, 1983, OI interview, Dillingham discussed his concerns about alleged falsification of inspection travelers pertaining to the liner plates. In addition to the August 24, 1983, transcript, Westerman had on file two other affidavits by Dillingham dated March 31, 1983, and June 27, 1983, which documented his concerns with the construction at Comanche Peak SES.

Although the issues raised in the first two Dillingham affidavits had previously been investigated by NRC, Westerman provided the three affidavits to Region IV Inspector Robert C. Steward for review and research in April 1984. However, also in April 1984, the NRC Comanche Peak Technical Review Team (TRT) arrived at Region IV to review and attempt to resolve allegations of construction deficiencies at Comanche Peak. Consequently, the TRT assumed responsibility for all allegations at the Comanche Peak SES. The Dillingham affidavits as well as any other allegations concerning the liner plates at Comanche Peak were turned over to the TRT for review and resolution.

8603280160 860320  
PDR ADOCK 05000445  
A PDR

Investigation on April 26, 1985 at Region IV File # 85-10  
by George A. Mulley Jr., Investigator, OIA Date dictated May 3, 1985

THIS DOCUMENT IS PROPERTY OF NRC. IF LOANED TO ANOTHER AGENCY IT AND ITS CONTENTS ARE NOT TO BE DISTRIBUTED OUTSIDE THE RECEIVING AGENCY WITHOUT PERMISSION OF THE OFFICE OF INSPECTOR AND AUDITOR.

1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION  
3 TECHNICAL REVIEW TEAM

4  
5 TECHNICAL INTERVIEW

6  
7 Monday, December 10, 1984  
8 Granbury, Texas

9 This interview was commenced at 2:30 p.m.

10 PRESENT:

11 MR. JOHN J. ZUDANS  
12 Technical Review Team Staff  
13 Nuclear Regulatory Commission  
14 Washington, D. C. 20555

15 MR. VINCE NOONAN  
16 Technical Review Team Staff  
17 Nuclear Regulatory Commission  
18 Washington, D. C. 20555

19 MR. JIM MALONSON  
20 Technical Review Team Staff  
21 Nuclear Regulatory Commission  
22 Washington, D. C. 20555

23 MR. CLIFF HALE  
24 Technical Review Team Staff  
25 Region 4  
Nuclear Regulatory Commission  
Arlington, Texas

MR. T. E. CURRY  
Technical Review Team Staff  
Nuclear Regulatory Commission  
Idaho Falls, Idaho

1       PRESENT: (Continued)

2           MR. VIC WENCZEL  
3           Technical Review Team Staff  
4           Nuclear Regulatory Commission  
5           Idaho Falls, Idaho

6           MR. VEEN WATSON  
7           Technical Review Team Staff  
8           Nuclear Regulatory Commission  
9           Idaho Falls, Idaho

10          MS. MEDDIE GREGORY  
11          Glen Rose, Texas

12          MS. DOBIE HATLEY  
13          Glen Rose, Texas

14          MS. SUE ANN NEUMEYER  
15          Fort Worth, Texas

16          MS. LINDA BARNES  
17          Granbury, Texas

18

19

20

21

22

23

24

25

26

27

28

29

30

1 suffer through the NCR's, I think you're going to find that  
2 in '82 they started doing that to a lot of the inspectors,  
3 retrain the inspector. Of course, you know that when an  
4 inspector is certified he's supposed to be adequately  
5 trained. That's why we're asking about Jim because in  
6 particular we remember about him.

7 MR. NOONAN: This came up in the hearings, didn't it?

8 MS. GREGORY: Yes, it did; and also another gentleman  
9 in the hearings, Robbie Duncan. When they put him on the  
10 witness stand and they asked him how you could tell when  
11 an NCR had been dispositioned which is merely a signature  
12 at the bottom saying it had been dispositioned, he didn't  
13 know. It was so bad that when they were through questioning  
14 him, Mr. Watkins went on record to ask him if he was still  
15 working as a QC Inspector, and he said, no, he was working  
16 as a QES Reviewer. They wanted it off the record that he  
17 was doing any inspecting. You would have to read the  
18 testimony.

19 MS. HATLEY: Since then, he's terminated.

20 MR. HALE: Okay. Jim, do you want to do on-site  
21 fabrication, I believe, right?

22 MR. MALONSON: I have two categories: One is material  
23 traceability and it's related to on-site fabrication because  
24 I did some material traceability in the other large alle-  
25 gation--concern pertaining to traceability.



1 (Short break taken.)

AQ-55

2 MR. NOONAN: The issue on the spent fuel liners,  
3 whether it's safety related, non-safety related; everytime  
4 I turn around I'm hearing a different point of view on this  
5 thing. I finally got tired of it, and I just put out a  
6 memo to the NRC staff telling them to come back and give me  
7 a formal position on this. The reason I'm laughing is  
8 because I think after all these years it seems like each  
9 plant is different. For some reason or another they have  
10 a reason for making it safety related or not safety related.  
11 In this plant here I don't know the answer right now. I've  
12 had two different opinions, one saying it's safety related,  
13 one saying it's not safety related; so I basically took an  
14 action here to put it out to the people that are involved  
15 in reviewing of this particular item and asked them to come  
16 back with a formal position. I'll give you that; you can  
17 have as many copies as you want to.

18 MS. NEUMEYER: It says fuel pool liner. Is this also  
19 including the transfer canals?

20 MR. NOONAN: It includes the transfer canals, yes.

21 MS. GREGORY: My problem with that is that there are  
22 reg guides out right now, 1.13. Of course, you know 1.29  
23 puts it in Seismic Category 1.

24 MR. NOONAN: It can be considered seismic Category  
25 1, but the liner doesn't necessarily have to be safety

1 related. But it's either way.

2 MS. GREGORY: I realize that, but 1.13 definitely in  
3 my opinion, the way your reg guides read, puts it in safety  
4 category because of the possibility of leakage, I think you  
5 call it, .05 <sup>rem?</sup> really, whatever it is. Anyway, I've gone  
6 through several of your reg guides. I've gone through  
7 10CFR50. I don't know if I gave you the copy that I had  
8 done for the stainless steel liners for the ASLE hearings  
9 or not, but it gives you what I thought was pretty con-  
10 clusive evidence that it was safety related.

11 MR. NOONAN: It's not. It's not conclusive because  
12 between two different organizations of the NRC, they both had  
13 different opinions. They're both using the same reg guide  
14 you're talking about. Certain Utilities, based on their  
15 particular circumstances, can come in and make it non-  
16 safety related and we probably will agree with them. What  
17 I did in this case: I went back and I asked them to come  
18 back and tell me.

19 MR. ZUDANS: It was Friday that this memo was signed  
20 out. The reason it doesn't have a date on it is that I  
21 made a copy before it was distributed, and they put the  
22 date on at the time they distributed it.

23 MR. NOONAN: I'll get it back here, and I'll send you  
24 ladies a copy of what they tell me.

25 MS. HATLEY: Who did you ask to tell you this?

1 the: MR. NOONAN: My people. You can see their names on  
2 there. There are particular branches that are responsible  
3 for review of that thing.

4 MS. GREGORY: Now, this will also pertain to the AQ-55  
5 reactor cavity stainless steel liners as well as spent fuel

6 ~~system.~~  
7 MR. NOONAN: No, it's strictly the spent fuel pool.

8 MS. GREGORY: Well, the question that we had at the  
9 ASLB hearings is the reactor cavity itself for refueling  
10 system.

11 MS. NEUMEYER: The documentation they produced in my AQ-55  
12 original allegation was that they had forced me to sign off  
13 on 142 travelers, and what we did get them finally to  
14 produce--they were supposed to produce Unit One and Unit  
15 Two, and they only produced Unit Two. They came back with  
16 some of those plates were installed in the reactor. So now  
17 we have--surely, if it's in the reactor, there's no question  
18 that it's safety related.

19 MR. ZUDANS: I think the fabrication methods and the  
20 design methods for the liners in the Reactor Building are,  
21 in essence, identical to the way they build the ones in the  
22 spent fuel pool.

23 MS. NEUMEYER: What I'm telling you is that I falsi- AQ-55  
24 fied the documents. They made me falsify them, and that's  
25 what's come out in the ASLB hearings. For a long time

1 there, right up to the last, I think they almost had every-  
2 body convinced that, yes, indeed, I did have the documenta-  
3 tion that I needed in order to sign this stuff off, but I  
4 didn't. I said from day one that I did not know what I  
5 was signing off. I did not know what the chit was, that I  
6 believed that the chit only had to do with backing strips,  
7 which came out there at the last to be true. That's all  
8 that it pertained to was that backing strip. It had nothing  
9 to do with the front weld. Therefore, I signed off the  
10 front weld; I signed off everything, without even seeing  
11 it. I was told--I was put in a little room, I was told that  
12 I would sign it off if it took me three days to do it. I  
13 signed it off. I had gone every route that I could, saying  
14 I don't want to sign these off, I don't believe this is what  
15 it's for, you're going to put me in prison for 20 years for  
16 doing this, it's illegal, and all that stuff. And still  
17 my supervisor stood there and said, "You will sign it off.  
18 You will stay here if it takes you three days to get these  
19 142 travelers signed off. You will stay here until they're  
20 done, Ms. Neumeyer." So with that--

21 MR. NOONAN: Who was the supervisor?

22 MS. NEUMEYER: Dwight Woodard, Ted Blixt; and Bob  
23 Sievers was the one that originally told me to do it. That  
24 is and was at the time--I know they've had some fast  
25 corporate shuffles since then, but these were the men in

1 charge. Bob Sievers was the one that told me to go over  
2 there, that Dwight Woodard and Ted Blixt would take me over  
3 to the Millwright Shop and show me what had to be done, and  
4 they did.

5 MR. NOONAN: How many documents did you sign off?

6 that MS. NEUMEYER: They said there were approximately 142  
7 of them, and later came back and said they thought around  
8 112, somewhere between 112 and 142. But for the hearings  
9 and on my deposition, when they deposed me, the Utility  
10 came up--Dwight Woodard said, when they deposed him, that I  
11 had fabricated the whole thing, that it never happened.  
12 Then Sievers came in behind him and Blixt came in behind  
13 him--this is down here in the library; you can read it for  
14 yourself--and they said that, yes, it did happen, that I  
15 had signed off, but that I hadn't raised any fuss. But I  
16 had, and I think if you could, if you could talk to Billie  
17 Catness, Chuck Reaves, Mike Kennedy, and C. C. Randall,  
18 they could tell you that I did raise Cain. I was upset.  
19 I didn't just raise Cain, I raised hell.

20 MR. HALE: This area is one that Tom Curry is going  
21 to speak to. We're going to have him after Jim.

22 MR. NOONAN: We're going to cover this?

23 MR. HALE: Yes.

24 MR. NOONAN: I want to go into it.

25 MR. ZUDANS: I didn't want to make a big discussion

1 of it. I just wanted to provide you with a memo that at  
2 least we're going to get something straight on our end.

3 MS. GREGORY: In other words, this is just a request:  
4 they're to answer these questions and--

5 MR. NOONAN: They have to go back and tell me what  
6 that liner is.

7 MR. ZUDANS: When we say "NRC position", that is how  
8 we review all the plants on that. This is our position.

9 That's the way we're going to review spent fuel pool  
10 liners.

11 MS. GREGORY: Well, the one on spent fuel and <sup>7</sup>light is  
12 a different NUREG number than that. I wonder if I could  
13 get some of those together and send them to you?

14 MR. NOONAN: Sure.

15 MS. GREGORY: I know that you've got them, but I would  
16 feel better myself if I were to present my case as strongly  
17 as I could.

18 MR. NOONAN: Meddie, send them to me so I can send  
19 them to the right people.

20 MS. GREGORY: All right.

21 MR. HALE: All right, Jim, let's get you out of the  
22 way so we can get to Tom.

23 MR. MALONSON: I'm dealing with three allegations in  
24 here in this category of material traceability, and they  
25 concern either one or all three of you. I might also say



1 MR. CURRY: Okay. AQE 41 concerned the gauges used  
2 to calibrate lighting restraint cable installation tools  
3 were worn which resulted in incorrect installation and  
4 issuance of an NCR. Do you remember that one?

5 MR. HALE: That was Susie's.

6 MR. ZUDANS: Actually, we covered this with someone  
7 else. Let's leave it at that.

8 MR. CURRY: Do you want to go on?

9 MR. ZUDANS: I think we just better go on.

10 MS. HATLEY: We know about calibration; you don't have  
11 to tell us.

12 MR. CURRY: BAQ 55 and 78: Fuel transfer canal liner  
13 documentation was falsified. The required weld radiography  
14 was not complete. Hold points on inspection travelers were  
15 signed off improperly. I guess we can just take those one  
16 at a time.

17 First of all, the fuel transfer canal liner documenta-  
18 tion was falsified. I don't think we're prepared to say  
19 that it was flat-out falsified. We will talk some more  
20 about signoff of hold points.

21 MS. NEUMEYER: I can say it was flat-out falsified  
22 because I'm the one that flat-out falsified it.

23 MR. CURRY: But our investigation and how we determined  
24 that it was falsified, I don't think I have enough infor-  
25 mation to say that it was falsified.



1 MS. NEUMEYER: But I did.

2 MR. CURRY: Let's go on and we'll come back to that in  
3 just a minute. Second: The required weld radiography was  
4 not complete. We did find the weld radiography for those  
5 welds, and the canal that required radiography--there was  
6 a limited number of them--we located that.

7 Hold points on inspection travelers were signed off  
8 improperly. Of course, there's a whole series of questions  
9 that relate to signoff of hold points. In essence, what  
10 our conclusion was was that we weren't satisfied with the  
11 way that they were signed off, call it improperly or what  
12 you will. Whatever action we take as a result of that,  
13 we're still investigating.

14 MR. HALE: I think it's fair to say that we're not  
15 through with that.

16 MS. GREGORY: What allegations I have made about the  
17 stainless steel liners has to do with the knowledge that  
18 I have which is with Unit Two cavity only. I didn't know  
19 that there were documents that Sue signed off in Unit One  
20 and in the transfer canal along with Fred Evans, but with  
21 your being satisfied with maybe the documentation that are  
22 backing up hold point one on there, I found 147 cases where  
23 they had used chits with the QC Inspector date and signa-  
24 ture that were actually hold point two and three and did  
25 not include hold point one. Had he intended to include

1 hold point one, he would have signed it off at the time he  
2 signed off two and three. So I feel in those particular  
3 cases that there's not adequate documentation to show that  
4 that hold point one was performed or documented.

5 MS. HATLEY: However, if you would be willing to get us  
6 a copy of Unit One and let us go through it, we would be  
7 happy to document that for you.

8 MR. CURRY: Unit One--

9 MS. HATLEY: Unit One Reactor cavity and refueling  
10 canal. There will be about 1200 to 1500 drawings, and it  
11 would take us about a week, and we can get you a real  
12 accurate synopsis of what happened.

13 MR. CURRY: Again, the subject of falsification of the  
14 signatures or whatever on those travelers is the subject of  
15 a separate investigation by OI. That's one of the reasons  
16 why we're not prepared to say that the documents were  
17 falsified because they are still looking at it.

18 MS. HATLEY: You mentioned that you looked at the  
19 radiography. Did you look at the film or did you look at  
20 the reports? Did you physically see the film?

21 MR. CURRY: We looked at both of them. Some of the  
22 team looked at the reports; some of the team looked at the  
23 film.

24 MS. HATLEY: And reviewed them with the document.

25 MR. CURRY: Yes. The material was there.

MS. HATLEY: Do you know what percentage they used?  
How many?

MR. CURRY: How many radiography--?

MS. HATLEY: Yes, and how they were obtained. Did you  
select the ones you wanted to see or were they preselected  
for you?

MR. CURRY: I don't know how they were selected. There  
was another individual that went to look at the film.

MR. HALE: I think I can say with some assurance that  
the direction that we proceeded under in all of our assess-  
ment was to select things independently, not something--  
with the exception of those concerns identified to us by  
individuals such as yourselves, we would go and select  
something specific; but by and large it was not to be led  
by anyone. Our interface with personnel on site was purely  
because they were on site. Any time we did an assessment  
it was not based upon what someone told us. We looked at  
the documents, we looked at the records, whichever the  
case was, and tried to establish an independent view to  
the extent even that we did not rely on reports generated  
by Region 4 or findings generated by Region 4. We looked  
independently even of that, so I would say that these  
documents were not selected by someone for us to look at,  
but were selected in some fashion randomly perhaps by the  
individual who looked at them.

1 MS. HATLEY: Do you know what percentage they used?  
2 How many?

3 MR. CURRY: How many radiography--?

4 MS. HATLEY: Yes, and how they were obtained. Did you  
5 select the ones you wanted to see or were they preselected  
6 for you?

7 MR. CURRY: I don't know how they were selected. There  
8 was another individual that went to look at the film.

9 MR. HALE: I think I can say with some assurance that  
10 the direction that we proceeded under in all of our assess-  
11 ment was to select things independently, not something--  
12 with the exception of those concerns identified to us by  
13 individuals such as yourselves, we would go and select  
14 something specific; but by and large it was not to be led  
15 by anyone. Our interface with personnel on site was purely  
16 because they were on site. Any time we did an assessment  
17 it was not based upon what someone told us. We looked at  
18 the documents, we looked at the records, whichever the  
19 case was, and tried to establish an independent view to  
20 the extent even that we did not rely on reports generated  
21 by Region 4 or findings generated by Region 4. We looked  
22 independently even of that, so I would say that these  
23 documents were not selected by someone for us to look at,  
24 but were selected in some fashion randomly perhaps by the  
25 individual who looked at them.

1 MS. HATLEY: He would have been someone who was  
2 qualified to know whether or not this particular film was  
3 good or bad?

4 MR. HALE: Do you know what team looked at that, Tom?  
5 Which group looked at it? Was it our group that looked at  
6 those radiographs or was it one of the other groups? The  
7 individual's name would be okay, I think.

8 MR. MALONSON: I looked at radiographs on a concern  
9 that identified specific weld joints on the lift gate  
10 frames, and I physically looked at the radiographic record  
11 and the leader sheets.

12 MR. HALE: Who selected those records for you?

13 MR. MALONSON: They weren't selected. I found the  
14 weld joints being referred to and then went and asked for  
15 the film. You're intimately familiar with the assignment  
16 of field weld joints on the spent fuel pool transfer canals,  
17 and there's no heroics in this, but I spent about seven  
18 hours in my hotel room looking at drawings to find the field  
19 weld joints in question. There's a history of that in one  
20 of the mechanical and piping assessments that will be  
21 presented later. This information was presented by another  
22 person. It was not presented by a particular SSFR pertaining  
23 to the lift gate frames was not presented by either of you  
24 ladies.

25 MS. HATLEY: All of the RT filming that you looked at

6



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INVESTIGATIONS FIELD OFFICE, REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

4-83-A-34

April 4, 1984

MEMORANDUM TO: T. F. Westerman  
Inspection & Enforcement Officer  
FROM: H. Brooks Griffin  
Investigator  
SUBJECT: RELEASE OF PORTIONS OF DILLINGHAM'S TRANSCRIPT

The Region IV OI Field Office has completed its investigation in the Dillingham matter. Region IV is free to make use of the transcript for its reporting needs.

If you require further information, please call me.

*H. Brooks Griffin*

~~8511200289~~ 18.





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

*W. H. ...*

DEC 07 1984

*A. V. ...*

Docket No.: 50-445

MEMORANDUM FOR: Olan Parr, Chief  
Auxiliary Systems Branch, DSI

Robert J. Bosnak, Chief  
Mechanical Engineering Branch, DE

George T. Ankrum, Chief  
Quality Assurance Branch, I&E

FROM: Vincent S. Noonan, Project Director  
for Comanche Peak  
Division of Licensing

SUBJECT: PREPARATION OF A STATEMENT ON THE NRC STAFF'S  
POSITION ON THE SPENT FUEL POOL LINER

The purpose of this memorandum is to request that Auxiliary Systems Branch prepare a statement of the NRC staff's position on the need for the spent fuel pool liner to be designed and constructed as a seismic Category I structure, and/or a safety-related, 10 CFR 50, Appendix B structure. In view of the questions for which we should have answers (see enclosure) ASB will likely need to draw from the expertise of the Mechanical Engineering Branch and the Quality Assurance Branch. The statement must represent the position of all three branches.

We plan to use the requested statement to demonstrate to the allegers that the staff's criteria for accepting the Comanche Peak design are identical to the criteria used for accepting designs at all/some of the other plants of the same vintage. The staff's acceptance of the design, construction and inspection commitments for the Comanche Peak spent fuel pool liner has been raised in the hearings. As a result, the statement will likely need to be offered as an affidavit or testimony in the next several weeks.

We are enclosing a copy of two NRC Inspection Reports, 50-445/77-13 and 50-445/79-15. These provide information on the Regions criteria for inspecting the spent fuel pool liner.

In addition, we are enclosing a copy of recent testimony (November 26, 1984) by the applicant's employee concerning the quality of the spent fuel liner. The prefiled testimony and pertinent cross examination pages (Tr. 20630-20634) are provided.

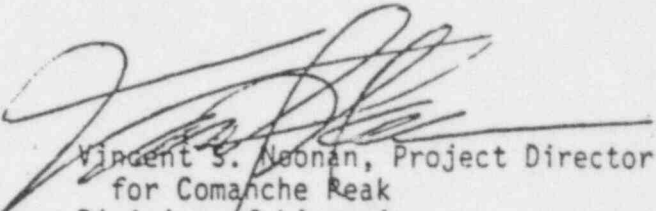
*5412-240155  
388*



DEC 07 1984

Please advise me on the members of your staff which are assigned to this task and a schedule for providing this statement.

Should you have questions concerning this request, please contact S. B. Burwell on extension 27563.



Vincent S. Noonan, Project Director  
for Comanche Peak  
Division of Licensing

Enclosures: As stated

cc: P. Hearn  
E. Sylvester  
R. Kirkwood  
J. Spraul

ENCLOSURE

QUESTIONS FOR WHICH A RESPONSE IS NEEDED

1. What are the NRC's acceptance criteria for the design, construction and inspection of the spent fuel pool liner?

Comment: We are aware of the SRP (NUREG-0800) acceptance of a non-seismic Category 1 pool liner with qualifications. However, we do not find this in the earlier SRP. What is the background and basis for the change in acceptance criteria in NUREG-75/087 and NUREG-0800; i.e., the acceptance of a non-seismic Category 1 pool liner. Was the change in the acceptance criteria reviewed and approved by the Reactor Regulation Review Committee (RRRC)? What request or event triggered the change?

2. Describe the relationship between the guidelines in Regulatory Guides 1.13 and 1.29 and the staff's acceptance criteria as given in SRP NUREG-0800.
3. Describe the need for or rationale for requiring the spent fuel pool liner to be classified as a "safety-related" structure, or an "important to safety" structure. And discuss the need to have a QA/QC program for the liner portion of the spent fuel pool.
4. Describe the manner in which the Comanche Peak spent fuel pool liner meets the requirements of GDC 2 relative to protection against natural phenomena (earthquakes), and GDC 16 relative to preventing a significant reduction in fuel storage coolant inventory under accident conditions.
5. Describe the Comanche Peak FSAR commitments relative to seismic and quality standards for the spent fuel pool liner. In so far as possible, describe the criteria or basis upon which the spent fuel pool was found acceptable in the SER, particularly as it relates to the quality of the spent fuel pool liner.
6. Please identify all documentation used in the review of Comanche Peak spent fuel pool liner; e.g., old FSAR pages, SER references, memorandums and reviewer notes.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

December 20, 1977

In Reply Refer To:

RIV

Docket No. 50-445/Rpt. 77-13

50-446/Rpt. 77-13

Texas Utilities Generating Company  
ATTN: Mr. R. J. Gary  
Executive Vice President  
and General Manager  
2001 Bryan Tower  
Dallas, Texas 75201

Gentlemen:

This refers to the inspection conducted by Mr. R. C. Stewart and other members of our staff during the period November 28 - December 2, 1977, of activities authorized by NRC Construction Permit Nos. CPPR-126 and 127 for the Comanche Peak facility, Units No. 1 and 2, and to the discussion of our findings with Mr. J. B. George and other members of your staff at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspectors.

Within the scope of the inspection, no items of noncompliance were identified.

One new unresolved item is identified in paragraph 7 of the enclosed report.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained

~~8418240130~~  
2pp.

Texas Utilities Generating Company

-2-

December 20, 1977

in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosure:

IE Inspection Report No. 50-445/77-13  
50-446/77-13

cc: w/enclosure

Texas Utilities Generating Company  
ATTN: Mr. H. C. Schmidt, Project Manager  
2001 Bryan Tower  
Dallas, Texas 75201

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. 50-445/77-13; 50-446/77-13

Docket No. 50-445; 50-446

Category A2

Licensee: Texas Utilities Generating Company  
2001 Bryan Tower  
Dallas, Texas 75201

Facility Name: Comanche Peak, Units 1 & 2

Inspection at: Comanche Peak Site, Glen Rose, Texas

Inspection conducted: November 28 - December 2, 1977

Inspectors:

*R. C. Stewart*  
R. C. Stewart, Reactor Inspector, Projects Section  
(Paragraphs 1, 2, 3, 4, 9 & 10)

12/20/77  
Date

*W. G. Hubacek*  
W. G. Hubacek, Reactor Inspector, Projects Section  
(Paragraphs 5 & 6)

12/20/77  
Date

R. A. Hermann, Reactor Inspector, Engineering Support  
Section (Paragraphs 7 & 8)

                      
Date

*L. D. Gilbert*  
L. D. Gilbert, Reactor Inspector, Engineering Support  
Section (Paragraphs 7 & 8)

12/20/77  
Date

Other  
Accompanying  
Personnel:

R. E. Hall, Chief, Engineering Support Section  
(November 30 and December 2, 1977)

Approved:

*W. A. Crossman*  
W. A. Crossman, Chief, Projects Section

12/20/77  
Date

*R. E. Hall*  
R. E. Hall, Chief, Engineering Support Section

12/20/77  
Date

~~8412240158~~  
388

Inspection Summary

Inspection on November 28 - December 2, 1977 (Report No. 50-445/77-13;  
50-446/77-13)

Areas Inspected: Routine, unannounced inspection involving observation of work performance and record review of dome liner and fuel pool liner fabrication; follow-on review of safety related piping shop and field fabrication; observation of work performance and record review of the installation of the reactor coolant system component supports, review of the QA program implementing procedures for electrical and instrument cables and terminations; and independent reviews concerning construction deficiencies for which the licensee has submitted reports in accordance with 50.55(e). The inspection involved one hundred thirty-nine inspector-hours on site by four NRC inspectors.

Results: No items of noncompliance or deviations were identified.

## DETAILS

### 1. Persons Contacted

#### Principal Licensee Employees

- \*J. B. George, TUSI, Nuclear Construction Manager
- \*D. N. Chapman, TUGCO, QA Manager
- \*R. G. Tolson, TUGCO, Site QA Supervisor
- \*J. T. Merritt, TUSI, Resident Manager
- \*C. L. Biggs, TUGCO, QA Lead Engineer
- R. V. Fleck, TUGCO/G&H, Site QA Supervisor
- J. V. Hawkins, TUGCO/G&H, Site QA Representative
- \*D. E. Deviney, TUGCO, QA Technician

#### Other Personnel

- \*H. O. Kirkland, B&R, Project General Manager
- H. C. Dodd, B&R, Project Manager
- \*U. D. Douglas, B&R, Assistant Project Manager
- \*P. L. Bussolini, B&R, Project QA Manager
- J. P. Clarke, B&R, Senior QC Engineer
- \*J. J. Moorhead, G&H, Resident Engineer

The inspectors also interviewed other contractor employees during the course of the inspection. They included B&R field engineers, B&R QC inspectors and B&R construction personnel.

\*denotes those present at the exit interview.

### 2. Licensee Action on Previous Inspection Findings

(Open) Noncompliance (50-445/77-10; 50-446/77-10): Failure to Remove Weld Surface Defect Prior to Final Acceptance. The licensee's written response, dated November 17, 1977, did not reflect audits and/or surveillance activities being implemented to prevent recurrence of this item. This matter remains open pending IE review of supplemental information to be provided by the licensee.

(Open) Noncompliance (50-445/77-10; 50-446/77-10): Failure to Provide Welding Procedures at the Location Where the Prescribed Activity is Performed. The licensee's written response, dated November 17, 1977, did not reflect audits and/or surveillance activities being implemented to prevent recurrence of this item. This matter remains open pending IE review of supplemental information to be provided by the licensee.



(Closed) Unresolved Item (50-445/77-11; 50-446/77-11): Indication of an Uncontrolled Welding Design Change. During this inspection, the IE inspector reviewed B&R inter-office memo (TSV-0087), dated November 30, 1977, which documents the corrective actions initiated to resolve this matter. The inspector had no further questions regarding this item.

3. Potential Construction Deficiency - Vendor Supplied Steel Embeds

On November 23, 1977, the licensee reported by telephone that the site construction staff discovered that "B" series Cadweld sleeves were welded to eight steel plate embedments in reversed orientation.

During this inspection, the IE inspector reviewed the current status of this discrepancy and found that the specific steel embeds had not been embedded in concrete and corrective measures were initiated; however, due to insufficient information at this time, the question of similar conditions of reversed orientation of "B" series Cadwelds on previously installed embeds can not be answered until an on-going review and evaluation is completed. This matter remains unresolved.

4. Allegation of Poor Workmanship

The licensee informed the NRC, Region IV office on November 23, 1977, by telephone, of a call on November 22, 1977, from an unidentified woman who was apparently concerned with the workmanship at the site regarding the use of "rotofoam" as a temporary spacer being utilized in construction in maintaining the required air space between Category I seismic structures. During this inspection, the IE inspector reviewed the subject allegation and found that contrary to the woman's belief, all temporary "rotofoam" blocks have been removed from the subject areas. The B&R QA/QC inspection staff have initiated an inspection and documentation program to assure that the required 1" gap between Category I seismic structures is being maintained in the as-built condition. This matter will remain open pending IE review of the QA/QC inspection results.

5. Review of QA Manual Provisions for Electrical Construction Activities

The inspector reviewed the Brown & Root QA manual to ascertain whether appropriate and adequate procedures were provided to assure that activities related to electrical cables and terminations and electrical components are controlled in accordance with NRC requirements and licensee commitments. The following procedures and specifications were reviewed:

ACP-3, "Material Receiving Storage and Handling"

QCP-1.1, "QC Receiving Inspection"

QCP-1.2, "QC Surveillance of Storage, Warehousing and Control"

QCP-1.6, "QC Surveillance of Mechanical, Electrical and Instrumentation Equipment"

QCI-1.6-11, "Safety Related Mechanical and Electrical Equipment Storage Maintenance"

QCI-1.1-11, "Receiving Inspection for TUSI/G&H Procured Safety Related Equipment"

MCP-10, "Storage and Storage Maintenance of Mechanical and Electrical Equipment"

ECP-10, "Cable Tray and Hangers"

ECP-19, "Exposed Conduit and Hangers"

Specification No. 2323-ES-100, "Electrical Erection Specification"

Specification No. 2323-ES-19, "Cable Tray Specification"

The inspector noted that several work and inspection procedures related to electrical construction activities are being developed and will be issued in the future. These procedures will be reviewed during subsequent inspections.

No items of noncompliance or deviations were identified.

6. Electrical Cable and Equipment Storage

The inspector observed storage of electrical cable which was stored at the site. Reels of electrical cable were stored outdoors on a concrete pad. The inspector noted that several QC tags attached to cable reels were becoming faded from exposure to weather and were difficult to read. A licensee representative stated that new weather-resistant tags were being procured to replace the faded tags.

The inspector also observed storage of several items of electrical equipment which were located in warehouses. These items included: three containment spray pump motors, one component cooling water pump motor, two safety injection pumps, and two motor operated valves.

The inspector reviewed receiving records for electrical cable and equipment maintenance records for one containment spray pump and two motor operated valves.

No items of noncompliance or deviations were identified.

7. Safety Related Structures

a. Review of QA Implementing Procedures

The inspector reviewed the program for the fabrication, erection, welding and inspection of the stainless steel liners for the refueling cavity, transfer canal, spent fuel storage and cask

loading pits to ascertain if the commitments stated in the PSAR and Gibbs & Hill (G&H) specification 2323-SS-18, Rev. 2 were being implemented. The inspector reviewed Brown & Root (B&R) construction procedure 35-1195-CCP-38, "Stainless Steel Liner Erections," and B&R QA procedures CP-QCP-2.11, "Inspection of Stainless Steel Pool Liner Systems," and CP-QCI-2.11-1, "Weld Inspection and Fit-Up of Stainless Steel Liners," to ascertain if the above stated requirements had been implemented. Additional QA and work procedures in the areas of weld expendable material control, welder and weld procedure qualification, NDE and welding surveillance were reviewed to assess control of these activities.

No items of noncompliance or deviations were identified.

b. Observation of Work Activities

(1) Stainless Steel Liners

The welding of fillet joints for the attachment of leak chase channels and of tacks for the attachment of backing bars for the butt weld seams for stainless steel liners was inspected. Weld procedures and welders were found qualified in accordance with the requirements of the ASME B&PV Code, Section IX. The welding was performed in accordance with WPSs 99020 and 88023 and placed as specified by B&R drawing WRB-10559. Work and inspection activities were performed as prescribed by the procedures discussed in the previous section.

No items of noncompliance or deviations were identified.

(2) Reactor Coolant System Component Supports

A limited inspection of the Vertical Columns - C1 as shown and described on Westinghouse drawings 1457F29 and 1457F27 was performed in the site storage yard. The inspector reviewed the PSAR and Westinghouse specification G-952628, Rev. 1, "Fabrication Requirements For the Reactor Coolant System Component Supports," and determined the vertical column fabrication requirements were ASME B&PV Code, Section III, Div. 1, NF, 1974 edition as a minimum. The inspector was unable to find any documentation in the preliminary data package and certificates of conformance or on the components that the articles were fabricated in accordance with ASME III, NF and that volumetric inspection of the full penetration welds had been performed as prescribed by ASME III, NF, paragraph NF-5212. The licensee is obtaining the complete data package for these items to determine if the items were fabricated and inspected as prescribed.

This item is considered unresolved.

8. Safety Related Piping (Welding)

The inspector observed the welding in the pipe shop of weld #2, 4"-pipe to fitting-, SF-1-151R-3 per WPS 88023, Rev. 2. The welders and welding procedure were qualified in accordance with the ASME B&PV Code, Section IX. Weld technique, parameters, gases and expendable materials were as prescribed by the WPS. Inspections were as prescribed by B&R QCP-3.4 as noted on Weld Data Card 00893.

The inspector reviewed the radiographs of welds 2 and 3, 24"-CC-1-AB-12, component cooling line. The radiography was performed in accordance with procedure CP-NDEP-101, "Radiographic Examination (Piping)," which complies with the requirements of ASME B&PV Code, Sections III and V, 1974 edition including Summer 1974 Addenda. The inspector reviewed twelve original radiographs and radiographs of repairs as required.

No items of noncompliance or deviations were identified.

9. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. The following item was disclosed during this inspection regarding fabrication and inspection of reactor coolant system component supports:

<u>Identifier</u>	<u>Title</u>	<u>Reference</u>
77-13-1	Adequacy of the fabrication and inspection of reactor coolant system component supports	Paragraph 7.b.(2)

10. Exit Interview

The inspectors met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 2, 1977. The inspectors summarized the purpose and the scope of the inspection and the findings. The licensee representatives acknowledged the unresolved item (paragraph 7.b.(2)) concerning lack of documentation regarding the fabrication of the reactor coolant system component supports.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76012

*S. Russell*

July 2, 1979

In Reply Refer To:

RIV

Docket No. 50-445/Rpt. 79-15

50-446/Rpt. 79-15

Texas Utilities Generating Company  
ATTN: Mr. R. J. Gary, Executive Vice  
President and General Manager  
2001 Bryan Tower  
Dallas, Texas 75201

Gentlemen:

This refers to the investigation conducted by Messrs. R. G. Taylor and W. A. Crossman of our staff on May 29 through June 4, 1979, of activities authorized by NRC Construction Permits No. CPPR-126 and 127 for the Comanche Peak facility, Units No. 1 and 2, concerning allegations by a former Comanche Peak employee.

The investigation and our findings are discussed in the enclosed investigation report.

No items of noncompliance or deviations were identified.

Even though no items of noncompliance with NRC requirements were identified during this investigation, we did find that the allegations were essentially true. We also noted during this investigation that a thread of continuity existed between this investigation and others recently conducted relative to alleged problems with site management and quality control in certain areas of construction. Although we feel that the major organizational changes you made in January 1978 have strengthened the QA/QC program at Comanche Peak, we cannot ignore the fact that we are continuing to receive allegations concerning construction practices. Taken individually these allegations, some of which have been substantiated, do not appear to have any significant adverse impact on the conformance of your plant to NRC commitments. However, as we discussed in our meeting with you and Mr. Fikar, in our office on June 22, 1979, when these allegations are taken collectively, there appears to be a morale problem which is evidenced by several of the allegers and may be attributable, in part, to communication problems between the workers and supervision. In our June 22 meeting, you indicated that you would look into these apparent communication problems along with the adequacy of QA/QC indoctrination of plant supervision and workers and take appropriate action to correct any weaknesses that you detect in these areas. We intend to follow this matter closely during subsequent inspections.

~~4406276118~~  
2PP

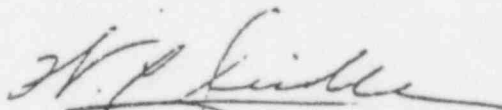


July 2, 1979

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed investigation report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this investigation, we will be pleased to discuss them with you.

Sincerely,



W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosure:

IE Investigation Report No. 50-445/79-15  
50-445/79-15

cc: w/enclosure  
Texas Utilities Generating Company  
ATTN: Mr. H. C. Schmidt, Project Manager  
2001 Bryan Tower  
Dallas, Texas 75201

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. 50-445/79-15; 50-446/79-15

Docket No. 50-445; 50-446

Category A2

Licensee: Texas Utilities Generating Company  
2001 Bryan Tower  
Dallas, Texas 75201.

Facility Name: Comanche Peak, Units 1 & 2

Investigation at: Comanche Peak Steam Electric Station, Glen Rose, Texas

Investigation conducted: May 29 through June 4, 1979

Inspectors:

Walsham  
for R. G. Taylor, Reactor Resident Inspector, Project Sections

6/21/79  
Date

Walsham  
W. A. Crossman, Chief, Projects Section

6/21/79  
Date

Approved:

Walsham  
W. A. Crossman, Chief, Projects Section

6/21/79  
Date

Investigation Summary:

Investigation on May 29 through June 4, 1979 (Report No. 50-445/79-15; 50-466/79-15)

Areas Investigated: Special investigation of allegation received regarding improper and potentially very poor welding of inter-plate seams in the Unit 1 Refueling Pool, spent fuel pools, and transfer canal of the common facility Fuel Handling Building. The investigation involved twenty-eight inspector-hours by the Reactor Resident Inspector (RRI) and the Chief, Projects Section.

Results: The allegations were neither specifically confirmed nor refuted. The allegations, if confirmed, would have no safety significance. No items of noncompliance or deviations were identified.

~~7905220/23~~  
9PP.



## INTRODUCTION

Comanche Peak Steam Electric Station (CPSES), Units 1 and 2 are under construction in Somervell County, Texas, near the town of Glen Rose, Texas. Texas Utilities Generating Company is the Construction Permit holder with Brown and Root, Inc. as the constructor and Gibbs and Hill, Inc. as the Architect/Engineer.

## REASON FOR THE INVESTIGATION

The Region IV Reactor Construction and Engineering Support Branch received a telephone call from a former CPSES employee who reported several allegations indicating a potential breakdown in the CPSES Quality Assurance program and a possible threat to the health and safety of the public. The substance of the allegations also appeared in an edition of the Fort Worth Star-Telegram published on May 30, 1979.

## SUMMARY OF FACTS

The Region IV Reactor Construction and Engineering Support Branch received a telephone call on May 25, 1979, from a party who identified himself as a former CPSES employee who had worked as a Boilermaker welder. The call was taken jointly by the Branch Chief and the Section Chiefs of the Projects Section and the Engineering Support Section who in turn provided the information to the assigned Resident Reactor Inspector at CPSES on May 29, 1979. The allegations were reviewed with the alieger in an interview which took place on May 30, 1979, at his home. Each of the following allegations relate to welding of stainless steel liners in the Unit 1 Reactor Containment Building or in the common Fuel Handling Building:

### 1. Allegation No. 1<sup>1/</sup>

Welding and weld repairs on the liners were difficult because water from concreting activities had run down the leak chase channels and out past the backing strip into the weld area. Welds finally completed were very poor; some welds had been slugged with weld rod and others were so thin that if buffed a second time with 120 grit, they would not have passed PT (Penetrant Test).

### 2. Allegation No. 2

There are problems with the gate guide (refers to a gate in the Reactor Containment separating the refueling pool from a small storage pool and the transfer canal).

---

<sup>1/</sup> The statements above are the allegations as received. Clarifications obtained from the alieger during the interview of May 30, 1979, are indicated by parentheses.

- a. The gate guide between the large and small pool was welded in the shop. When the gate guide was installed in the pit, the end bevel was cut off so it could be fit-up. When the guide was installed, it was not reveveled and where a fillet weld of 3/8" was required, only 3/16" fillet weld was made.
- b. The gate guide had to be welded to both sides of the liner. When welding the back side, the welder had to crawl down between the rebar to get to the weld. The position was so crowded that the welder could not make a good weld. Also, the welder couldn't see what he was welding very well.
- c. Six inches of the chase channels were left off the gate guide and added after the gate guide was installed. The rebar was so thick in the areas where welding was performed that "you could hardly get your finger through, much less the welding torch." Consequently, the welds were not made properly.

3. Allegation No. 3

Welders have no experience. They spend as much as 80 hours trying to make a test weld. They finally learn how to make a weld that will pass the qualifying test and then when they get into the field they don't know what they're doing.

4. Allegation No. 4

There is "lots" of QC coverup. QC is "buying-off" on welds over the phone. One QC inspector bought off a seam before he ever saw the seam and it was not a good weld because water was coming through while the weld was being made. (The buy-off involved was joint preparation and cleanliness preparatory to welding).

5. Allegation No. 5

Brown and Root is not following procedures in welding the liner plate. (The procedures referred to are welding procedures and specifically refer to use of a down-hand welding technique being used versus the procedurally required up-hand technique).

6. Allegation No. 6

Some of the top seams 18" above water level on the fuel pool had backing strips tack welded to the liner plate. There are places where the plate did not cover the backing strip. He would not guarantee the weld. The weld was probably 60% rust, air, concrete, etc.

## CONCLUSIONS

Review of the CPSES Final Safety Analysis Report, Project Specifications and Engineering Drawings, as they pertain to the liner fabrication and installation, have led to the following conclusions relative to each allegation stated in the Summary of Facts above. To better understand these conclusions, the following considerations are necessary:

The liner systems are not installed to prevent or mitigate the consequences of any of the postulated design basis accidents, but rather are installed to prevent an excessive burden on the liquid waste collection and disposal system and to allow the wall and floor area to be more easily decontaminated after pool usage. The liners as a functioning element are, therefore, not considered safety related and are not normally included in the NRC inspection program.

The liners, as passive elements and parts of the building structure, are usually classified into seismic Category I since if one or more of the liner plates were to become detached from the wall, serious damage could be done to stored fuel assemblies. The plates are, therefore, secured to the concrete supporting structure with a system of weld studs attached to the back of the plate and embedded into the concrete. The weld stud system is not a factor in these allegations.

### 1. Allegation No. 1

The RRI, based on the interview with the alleged and with other welders, has become reasonably sure that there were difficulties encountered by the welders with water, moisture and in some instances with concrete on the weld surfaces and that in some instances, the welds may not be completely sound internally. These welds, however, serve no strength purpose and need only to be smooth and leak free, factors which are established by visual inspection, dye penetrant examinations, and by vacuum box tests of the joint after it is complete. The allegation, while probably true, has no safety consequence.

### 2. Allegations No. 2.a, b, & c

These collective allegations, while probably true in a substantial sense, also have no safety consequence. The weld joints in question only need to be smooth and leak free in the case of a. and b. and leak free in the case of c. The welds do not serve to lend strength to the structure.

### 3. Allegation No. 3

The project specifications for all welding, including the pool liners, require that welders be qualified under the requirements of the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section IX or a comparable requirement such as those of the American Welding

Society. Section IX of the ASME requires that a welder must perform a weld process involved and the as-welded coupon must pass specified tests when complete. No time limits are specified or implied as a requirement in Section IX for making the qualification test coupon weld. The RRI has verified previously that the site welder qualification program is in full compliance with Section IX.

4. Allegation No. 4

The RRI examined the circumstances surrounding the specific portion of the allegation and discussed the matter with the QC inspector directly involved. It appears that this man, on occasion, was depending on the inspections performed by a fellow inspector and so recorded on the appropriate weld data card. The joint was covered over with tape after it had been inspected for cleanliness and fit-up and the inspector released it over the phone based on the record card entries. Water in the leak chase channels appears to have been a constant problem. The QC inspector may have made a judgement error in not re-examining the joint, but not withstanding, the joint had been inspected and found satisfactory at that time. The RRI did not investigate the alleged "lots" of QC coverup because of the lack of specifics.

5. Allegation No. 5

As noted in the Summary of Facts, the general allegation of failing to follow procedures was subsequently refined in the interview with the allegor to relate specifically to an occasion where the allegor was directed by his supervision to weld down-hand rather than up-hand as required by the welding procedures. ASME Section IX indicates that such a change is in the category of a non-essential variable and, therefore, is not a prohibited change in the procedure, if recorded. It appears that the change was not recorded. Interviews with other welders on the same activity failed to reveal any similar experiences and supervision has denied directing the allegor to perform out-of-procedure. The RRI, therefore, has no mechanism by which to confirm the allegation. Again, assuming that the allegor did weld down-hand instead of up-hand for whatever reason, the consequences of such an action are essentially meaningless as related to a weld, since such a change has no effect on the finished weld of the type involved.

6. Allegation No. 6

The particular welds in question are even less consequential than the other seam welds in a functional sense. These welds, which are above the water line in the pools, do not need to be leak free, just smooth for the purposes of easy decontamination. The allegation, while perhaps true, has no consequence.

## DETAILS

### 1. Persons Contacted

#### Alleger

The alleger, hereafter identified as Individual "A," is a former employee of Brown and Root, Inc. (the site general contractor). The person identified himself as a former welder assigned to the millwright/boilermaker unit of the construction force.

#### Principal Licensee Employee

Site Quality Assurance Supervisor

Brown and Root, Inc.

Project Construction Manager

Millwright/Boilermaker Superintendent

Individual "B," a welder currently working as a pipefitter but who was a Boilermaker

Individual "C," a welder currently working as a pipefitter but who was a Boilermaker

Individual "D," a quality control inspector who was assigned to inspection of pool liners

### 2. Background of Allegations

Individual "A" contacted the Region IV office at approximately 9:25 a.m. on Friday, May 25, 1979, to express concerns about the welding activities which had taken place on the spent fuel pools, cask loading pool and the transfer canal in the common Fuel Handling Building for both Units as well as that work accomplished in the Unit 1 refueling pool and temporary storage pool installed in the Reactor Containment Building.

The RRI was notified of these allegations on Tuesday, May 29, 1979, (May 28 a holiday) and initiated an immediate investigation. The first point of contact was the licensee's site Quality Assurance supervisor who informed the RRI that he was aware of the allegations, since his company had been apprised of them by a newspaper reporter employed by the Fort Worth Star-Telegram.

The site supervisor also informed the RRI that another welder, Individual "B," had expressed similar concerns to the Project Construction Manager on May 23, 1979, and that concerns had been forwarded to site Quality Assurance for investigation. The RRI was provided an informal memorandum giving the results of the investigation dated May 23, 1979.



Individual "A" also contacted the Project Construction Manager on May 24, 1979, and expressed essentially the same concerns as those expressed by Individual "B" and which in turn he expressed to the Region IV office on May 25, 1979. It appears that Individual "A" and his supervision, up through the Project Construction Manager, had reached a substantial point of disagreement and Individual "A" voluntarily terminated his employment at the site as of May 24, 1979. The voluntary termination is a matter of record in Individual "A's" employment file.

### 3. Investigation

The RRI initiated the site phase of the investigation by extensively reviewing the CPSES Final Safety Analysis Report in order to ascertain the safety classification of the various pools and pool liners involved in the allegation and to review the functional descriptions. Reference to Section 3.2, "Classification of Structures, Components and Systems," in the FSAR does not indicate the liners as being safety related although the buildings in which they exist are shown to be in seismic Category I. Paragraph 3.8.3.7.1 provided a commitment to test the liner seams via a vacuum box for leak tightness and briefly described a leak chase system behind the liner seams. Paragraph 3.8.4.1.3 provided a brief additional description of the function of the liners. Figures 9.3-9 and 11.2-4 revealed that the extensive leak chase system has lead-out piping which leads to a building sump and hence into the liquid radioactive waste collection and disposal system.

The RRI then obtained Project Specification 2323-SS-18, Revision 3, "Stainless Steel Liners," to ascertain what requirements the design engineer had established for the liners. The RRI noted the following significant items from the specification:

- a. The design engineer invoked the general quality assurance requirements of 10 CFR 50, Appendix B on the fabrication and installation work.
- b. The design engineer provided three full pages of detail requirements relative to the system of studs to be welded to the reverse or concrete backed side of the liners.
- c. The design engineer made reference to the inter-plate seam welds only by requiring that the welding procedures and welders be qualified to ASME, Section IX. Criteria for finished welds require that, "Surfaces of all welds shall be smooth and free of any irregularities such as serrations, ridges, crevices, or pinholes which may make it subsequently difficult to achieve an effective washdown of the liner surface." Under testing the design engineer provided the following, "All seam welds shall also be tested by vacuum box for leak tightness for their entire length." No other quality requirements were imposed on the seam welds.



- d. The RRI then obtained the design engineer's drawings S-0831 through S-0834, SI-0560, MI-0581, all of which provide details of liner fabrication and installation. In addition, the RRI obtained vendor design detail drawings for the gate guide installed in the Containment Building between the refueling pool and the temporary storage pool. These drawings, taken collectively, showed that the design engineer had designed a system wherein the liner plates and the gate guide would be supported by and anchored to the surrounding concrete walls by a very extensive system of "T" headed studs welded to the concrete sides of the plates and gate guide frame. The seam welds are entirely from plate-to-plate and provide no attachment into the basic building structure.

The RRI concluded on the basis of the above information that the liner system had been designed such that resistance to seismic effect was vested in the "T" headed stud installation and that the seam welds were necessary only to provide a very low leakage path for the pool water and that what leakage might occur would be drained to an appropriately designed method of disposal.

The RRI interviewed Individual "A" on May 30, 1979, in conjunction with the Region IV Reactor Construction and Engineering Branch, Projects Section Chief, in order to gain additional information relative to each of the allegations received over the telephone on May 25, 1979. The additional information and clarifications were as noted in the Summary of Facts included in this report. In addition, Individual "A" acknowledged that he had only very recently become aware that the stud system existed for holding the plates in place and was, in fact, unaware that the leak chase channels were piped to a collection point for controlled collection and disposal of any leakage which might occur.

The RRI interviewed Individual "B" in the presence of the licensee's site QA supervisor, also on May 30, 1979. (This arrangement was allowed since Individual "B" only came to the attention of the RRI through the assistance of the licensee's representative.) The allegations of Individual "A" were reviewed in detail with Individual "B" who essentially confirmed Allegations 1, 3 and 6, but indicated he had not worked in the Allegation 2 area and further indicated that he had no complaints about lack of effective QC nor had he been instructed not to follow welding procedures.

The RRI interviewed Individual "C" on May 31, 1979, with the same results as those obtained in the interview with Individual "B." Individual "C" indicated that he perhaps was one of the persons referred to by Individual "A" in Allegation 3. He also indicated that he had very limited welding experience before coming to work at CPSES and none in "Helioarc" weld process. He was given some forty hours of very informal training and then used fifty-two hours to make his weld test coupon, a duration that he now considers to be excessive. He now thinks that he is a good welder.

The RRI interviewed Individual "D" on May 30, 1979, and again June 1, 1979, to develop any facts relative to the specific allegation of "buying-off" joints over the phone. Individual "D" categorically denied that he, or to his knowledge any other QC inspector assigned to this work area, had ever "bought-off" a designated inspection point without making the required inspection. On June 1, 1979, Individual "D" indicated that there had been very few occasions when he had given consent to the welders to weld up a seam that, by the inspection reports, had been previously inspected for fit-up and cleanliness. He also indicated that he and others had repeatedly stopped work on welding of seams where it came to their attention that water or moisture was interfering with good welding.

The RRI interviewed the Boilermaker Superintendent on June 4, 1979, relative to his knowledge and/or participation in any of the allegations. He categorically denied ever directing welders to make welds where water or moisture was present, but acknowledged that it was a constant problem. He indicated that he finally received engineering permission to drill holes through the liner at the ends of the leak chase channels so that air could be blown through to dry out the channels and that this action helped a great deal. He indicated that he had continually attempted to impress the welders with the importance of making good seam welds.

4. RRI's Assessment of the Liners

The RRI observed some of the welding work on the refueling pool in the Unit No. 1 containment during the latter part of 1978 and the early part of 1979 incidental to making inspection of other activities in the same work area. The welding appeared to be normal and the dye penetrant examinations appeared to be properly accomplished. The finished surfaces examined have been uniformly smooth and appear sound. The RRI also examined some unfinished areas in the Unit 2 spent fuel pool and can appreciate the difficulties that may be encountered in removing some of the concrete laitance from the vertical weld joint areas.

November 21, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
TEXAS UTILITIES GENERATING	)	
COMPANY, <u>et al.</u>	)	Docket Nos. 50-445-2 and
	)	50-446-2
(Comanche Peak Steam Electric	)	
Station, Units 1 and 2)	)	(Application for
	)	Operating Licenses)

PREFILED TESTIMONY OF C. THOMAS BRANDT REGARDING  
CASE'S FURTHER "EVIDENCE" OF A QUALITY CONTROL  
BREAKDOWN IN THE CONSTRUCTION, INSTALLATION  
AND INSPECTION OF THE STAINLESS STEEL LINER PLATE

- Q1. Mr. Brandt, have you had an opportunity to review the memorandum concerning the stainless steel liner plate filed by the Citizens Association for Sound Energy on November 15, 1984?
- A1. Yes.
- Q2. Mr. Brandt, directing your attention to page two of that memorandum, CASE contends that applicants incorrectly assert that the liner plate is not safety-related. Do you see that passage?
- A2. Yes. It is set out in the first three paragraphs on the page.
- Q3. Is that contention correct?

~~8411270300~~  
47pp.

A3. No. CASE's contention shows a lack of understanding of my testimony and the procedures applicable to the fabrication and installation of the stainless steel liner plate. As I testified before, the fabrication and installation of the stainless steel liner have been designated safety-related activities by the architect engineer. I would like to note my testimony on this point appears at page 45,315 of the transcript of this proceeding. Therefore, CASE is factually incorrect when it asserts that applicants have testified that the liner plate is not safety related. What I testified to, and what CASE appears not to understand, is that the welds in question are non-structural; this point is different from, and unrelated to, the fact that the fabrication and installation of the liner plate are safety-related activities.

The significance of the welds being non-structural is that the architect-engineer did not impose stringent requirements such as those imposed by the ASME code, for the fabrication, installation, inspection and testing of the liner and the welding associated with these activities. The architect-engineer's only concern was that the welds not leak. Accordingly, welding on the liner plate is not now, nor has it even been, under the jurisdiction of the ASME Code.

Only two matters remotely tie the liner plate to ASME activities, but neither of these matters apply ASME fabrication and installation requirements to the liner plate.

First, the specification for the liner plate requires that welders who work on, and welding procedures used in connection with, the liner plate be qualified in accordance with Section IX of the ASME Code. This Section, however, is limited to the qualifications of procedures and welders, and it is not a fabrication code. Accordingly, the Code's fabrication requirements simply do not apply to the liner plate. Second, as an administrative matter, the inspection group originally assigned to perform these inspections was the ASME group. In February 1982, responsibility for these inspections was transferred to the non-ASME inspection group; this transfer was also an administrative matter. Again, I want to emphasize that these assignments were unrelated to the applicability of the ASME Code requirements to the fabrication and installation of the liner plate.

Q4. Mr. Brandt, directing your attention to pages two and three of CASE's memorandum, CASE asserts that the correct traveler form was used for weld no. 988, and that you either were wrong in testifying that all travelers were initiated on the wrong form or that you knew that some travelers were initiated on the correct form and your testimony was deceptive. Do you see these allegations?

A4. Yes, I do.

Q5. Is CASE correct?



- A5. No. First, my testimony was that I could find no evidence that the correct traveler form was used before April 18, 1979. My review of the travelers indicates that the correct form was used after that date. Second, all of my testimony, as I have stated several times, is limited to the travelers for the Unit 2 refueling cavity, which is located inside the Unit 2 reactor building. All thirteen hundred travelers at issue in this proceeding are for that cavity. I would like to point out that I made this point on pages 15,921-923, 15,927 of the transcript of this proceeding. Traveller 988 cited by CASE is not for a weld in this cavity. It is for a weld in the Unit 2 fuel transfer canal, which is located inside the fuel building. This is not only a completely different cavity; it is for a cavity located in a completely different building. Thus, CASE's allegation is premised on a traveler that was not even included in the travelers that were the subject of my testimony.
- Q6. Directing your attention to page 3 of Exhibit I to CASE's memorandum, CASE alleges that certain welds lack QC verification of the fit-up and cleanliness of the outside welds. In support of this allegation, CASE identifies a total of 147 welds which it claims lack QC verification of the fit-up and cleanliness of outside welds. Do you see those allegations?
- A6. Yes I do.
- Q7. Have you reviewed the travelers for these welds?
- A7. Yes.



Q8. What were the results of your review?

A8. In each instance, I found that there was either a chit and/or a traveler documenting QC verification of the fit-up and cleanliness of the outside weld. Accordingly, CASE's allegation is factually wrong.

Q9. CASE asserts on page three of Exhibit 1, "it is evident that the chits [attached to the 147 travelers] were not intended to verify step 1, but was [sic] intended to verify Step 3 and/or 2 only." Is this correct?

A9. No. The chits themselves reflect that they document QC verification of the fit-up and cleanliness of the outside weld.

Q10. CASE also alleges on page 3 that 170 other welds lack QC verification for fit-up and cleanliness of the outside weld. Did you review the documentation for these welds?

A10. Yes.

Q11. What were the results of your review?

A11. With the exception of weld 326, I found that there was a chit and/or traveler substantiating the QC inspection of the fit-up and cleanliness of the concrete side of these welds. Thus, with the exception of weld 326, CASE's allegation is factually wrong.

Q12. Have you determined why there was no documentation verifying the cleanliness and fit-up of the outside weld for traveler 326?

A12. Yes, I have.

Q13. Why was documentation of the QC verification for this weld not found during your review?

A13. The weld has not been made. It is a weld between an angle and the top plate of the cavity, which as of November 20, 1984, had not yet been fit-up.

Q14. CASE next states on page four of Exhibit 1 that five welds lacked QC verification of fit-up and cleanliness for the outside welds prior to welding which allegedly renders their conditions indeterminate, contrary to procedure and 10 C.F.R. Part 50, Appendix B, Criteria V. Do you agree with this characterization?

A14. I cannot agree with CASE's position. I do agree with CASE's contention that, because of the dates of the signatures, the chits attached to these travelers do not definitely establish that the five cleanliness and fit-up inspections were performed prior the time the backing strip was tack-welded to the plates. This is a violation of site procedures, and I have directed that an NCR be written to address this deficiency.

While I agree that there is a paper problem with these five travelers, I cannot agree that the deficiency is technically significant. The fit-up of the plates associated with the travelers identified by CASE was reverified and documented and the cleanliness of the inside joint was verified and documented prior to making the inside welds. Under these circumstances, the verification of the fit-up and cleanliness of the plates prior to tack-welding the

backing strip to the plates is not a technical concern. The only purpose of verifying the cleanliness of the plates prior to tack-welding the backing strip to the plates was to assure that the backing strip could be securely tacked on and would not become dislodged inside the leak chase channel. The sole purpose for the inspection is to ensure that the backing strip remains in place until the time of the inside fit-up. The reason for verifying fit-up prior to tack-welding the backing strip to the plates was to prevent difficult rework which would be required after the attachment of the leak chase channel if the original fit-up between the plates was out of tolerance. In any event, if the backing strip had dislodged or if the fit-up have been improper those deficiencies would have been noted when the cleanliness and fit-up inspections were performed for the inside welds.

- Q15. On page five of Exhibit 1, CASE identifies a number of welds which were done using welding procedure 88023 and claims that the correct procedure for those welds was welding procedure 88025. Do you agree with this assertion?
- A15. No. The welds CASE identified are embed to plate welds. All welds made on the liner plates between embeds and plates are groove welds in which the deposited weld metal thickness (joint thickness) is .1875" (the thickness of the plate). The proper procedure for making this weld in 1978 was WPS 88023, which was qualified for thickness ranges .0625" through .750". Prior to October 15, 1979, WPS 88025

was qualified for welds with thicknesses of 0.75" through 3.5". On October 15, 1979, WPS 88025 was revised and the thickness range was expanded from 0.75" through 3.5" to 0.185" through 3.50". After this date either WPS 88023 or WPS 88025 could have been followed when making the welds to which CASE refers. Therefore, CASE is wrong in contending that the wrong procedure was used in making the referenced welds. To confirm my observations on this point, copies of WPS 88023, WPS 88025 and 1977 ASME IX, QW 202.2 are appended to my testimony as attachments 1, 2 and 3 respectively.

Q16. On page six of Exhibit 1, CASE identified 243 travelers which CASE claims lack QC verification for Step 5, fit-up and cleanliness of the inside welds. Have you reviewed the traveler packages for these welds?

A16. Yes.

Q17. What was the result of your review?

A17. It is difficult to understand CASE's allegations with respect to the various welds included on the lists on page 6 of Exhibit 1 to CASE's memorandum. Initially, it is important to note that CASE's list includes five-line travelers and eight-line travelers. With respect to the five-line travelers, for example weld 6, the fifth line is for the final V.T. inspection, not for a fit-up and cleanliness inspection. Thus, CASE's allegations for the five-line travelers does not make any sense. In any event,

where the fifth line of the five-line traveler is unsigned, it simply means that weld is in process, and it does not reflect any paper or technical deficiency.

The eight-line travelers on the list fall into several categories. First, many of the travelers are for welds that are welded on one side only (welds 875, 896, 901, 908, 909, 910, 912, 682, 713, 714, 779, 783, 784, 785, 797, 798, and 799). For these welds CASE's allegation is wrong because there is welding on only one side of the liner; consequently, there are no fit-up or cleanliness inspections to be performed on the second side of the liner. Second, CASE is correct with respect to a small group of eight-line travelers (welds 12, 51, 59, 65, 66, 72, 73, 90, 93, 107, 147, 203, 709, 851, and 907), and I have directed that an NCR be written identifying the welds for which the inside fit-up and cleanliness inspections have not been documented. Finally, my examination of all of the remaining eight-line travelers on CASE's list reveals that CASE is factually wrong because the inside fit-up and cleanliness inspections were performed and documented.

Q17. On pages 7-8 of Exhibit 1, CASE lists twenty-seven (27) welds which CASE contends are missing the final V.T. of the inside weld. Have you reviewed this allegation?

A17. Yes.

Q18. What conclusions have you drawn as a result of that review?

- A18. This is another example of CASE's lack of understanding of the fabrication and inspection process. CASE is correct in noting that a final visual inspection has not been performed for these welds, but the final visual inspection has not been performed because the welding/inspection process has not been completed.. My review of the travelers indicates that no holdpoints have been bypassed and no violation exists for any of these welds.
- Q19. Mr. Brandt, CASE also lists twenty-two (22) welds on page 8 for which WFMLs are not in the package. Have you had an opportunity to review this allegation?
- A19. Yes. However, the absence of WFMLs in these traveler packages does not constitute a violation of procedure or a deficiency. There is simply no requirement specifying that a copy of the applicable WFML is to be kept in each traveler. I might also add, there is no requirement for filler metal traceability on any of these welds.
- Q20. On pages 9-15 of Exhibit 1, CASE alleges that WFMLs are referenced on travelers indicating that new welding was done, but there is no QC verification or involvement when the welding is done. Assuming this to be true, what significance does this allegation have?
- A20. Although I have not reviewed all the travelers listed by CASE on pages 9-15, I have reviewed enough to lead me to believe that this is another instance where CASE does not understand the requirements and/or the fabrication sequence. In all travelers I reviewed, no inspection hold-



points have been bypassed. If CASE is attempting to infer that QC must perform some type of "verification" each day welding is performed, this simply is not the case. All required inspections are procedurally described, and there is no requirement for "verification" each day welding is performed. From the sample I reviewed, I am unable to detect any violation.

Q21. Mr. Brandt, turning your attention to pages 16-20 of Exhibit 1, CASE lists numerous welds for which welding was done, but no QC verification or involvement is shown, and that WFMLs are attached to, but not references on, the travelers. What significance, if any, is there to this allegation.

A21. None. Once again, as I discussed above, this is apparently another instance where CASE is attempting to assert that verification of welding must be performed on each day that welding occurs. Of the travelers that I reviewed in connection with this allegation, all welds were still in-process, i.e., they had not yet received final inspection. CASE's observation that WFMLs are attached to, but not referenced on, the travelers is correct; however, the allegation is without significance. This information is not required by specification, and serves no quality function. The millwrights are procedurally required to enter this information but they simply have not done so as of this date.

- Q22. Mr. Brandt, CASE identifies 5 NCRs on page 21 of Exhibit 1 which describe welds for which vacuum box testing was improperly noted as not applicable. Is there significance to this observation?
- A22. No. It was an error made by the inspector, but was properly reported and dispositioned on an NCR.
- Q23. On page 22, CASE lists fifty-seven (57) welds which it alleges are deficient because final V.T. has been performed without vacuum box and/or liquid penetrant examination being performed. Have you reviewed this allegation?
- A23. Yes, I have.
- Q24. What was the result of your review?
- A24. CASE apparently misunderstands the inspection testing sequence. The final V.T. precedes the vacuum box testing and the liquid penetrant examination. As these welds are clearly still in process, no holdpoints have been bypassed and no violation exists.
- Q25. On the bottom of page 22, CASE notes "the final V.T. of the inside welds were signed off on the following welds by other inspectors." What is the significance, if any, of this observation?
- A25. I am not quite sure to whom CASE is referring by the use of the phrase "other inspectors." I assume CASE is referring to the fact that the final V.T. has been performed by inspectors other than those who performed the P.T. and/or V.B. test. If this is CASE's allegation, it is without

merit because there is no requirement that the same inspector perform V.T. and P.T. and/or vacuum box testing. No violation exists.

Q26. Mr. Brandt, on page 23 of Exhibit 1, CASE lists 131 welds which it alleges are deficient because the "completion of weld inspection block on attachment 1 signed off as completed prior to the completion on welds prior to [sic] vacuum box testing and/or P.T. inspection being performed." Have you reviewed this allegation?

A26. Yes, I have.

Q27. What did your review indicate?

A27. The welds listed fall into several different categories. For a number of welds which CASE asserts that "completion of weld inspection block on attachment 1 signed off as completed prior to the completion on welds prior to [sic] vacuum box testing and/or P.T. inspection being performed," CASE is incorrect as the travelers clearly indicate that the weld is still in process. Welds 5, 7, and 8 are examples of this category. As the welds are incomplete, no violation exists. For a small group of welds, (weld numbers 1240, 1242, 1245, 1248, 1182, 1209, and 1210), CASE is correct and I have directed that an NCR be written identifying the condition as nonconforming. For all other welds listed on page 23, CASE is incorrect because the referenced tests are not required; therefore, no violation exists.

Q28. CASE alleges on page twenty-four of Exhibit 1 that "[m]any NCR's were written for welds that James Cole had N/A'd the vacuum box test on. The vacuum box test has been reestablished on all but the ones below." Have you had an opportunity to review this allegation and the travelers involved with this allegation?

A28. Yes, I have.

Q29. What was the result of your review?

A29. Apparently CASE alleges that vacuum box was required for these welds. CASE lists eighty-eight (88) welds which it believe are deficient. As a result of my review, I have determined that with one exception (weld 932) that CASE's allegation is incorrect. All other welds are not pressure boundary welds and therefore do not require vacuum box testing, and the step is properly marked not applicable ("N/A") on the traveler. I have directed that an NCR be written for weld 932 noting that the vacuum box test for that weld was improperly marked "N/A."

Q30. Mr. Brandt, CASE alleges on the bottom of page twenty-four of Exhibit 1, that "PT test has been performed on these welds but vacuum box has not". Have you had an opportunity to review this allegation and the related travelers.

A30. Yes I have.

Q31. What were the result of your review of these travelers?

A31. CASE lists an additional forty-eight (48) welds for which vacuum box has not been performed. For four (4) of these welds (welds 1230, 1232, 1235, and 1238), CASE is correct

and I have directed that an NCR be prepared describing this condition. For all other welds listed here, CASE is incorrect; the step has properly been marked not applicable as these welds do not require vacuum box testing.

Q32. Mr. Brandt, directing your attention to page twenty-five of Exhibit 1, in particular to CASE's discussion of NCR M-83-D1847 dated 7/7/83. CASE states that "The NCR was written in 1983 and a hold tag applied. It has not been dispositioned yet, and there is no copy of this NCR in traveler 151. There is no RPS in package for weld 154. 154 was signed off by Don Vogt, S.M. McCoy, for steps 2, 3, and 4. Jim Cole inspected 151 on 4/20/80 and 153 on 4/24/80." What is the significance, if any, of these allegations?

A32. First, CASE is incorrect in stating that "...it has not been dispositioned yet." In fact, CASE describes the disposition of this NCR on page 25 of Exhibit 1. Second, original NCRs are not filed with traveler packages, nor does the lack of a copy of the NCR in package 151 constitute a violation of any code, standard, specification, or procedure. Third, CASE's observation that no RPS is in package 154 is correct, but it is without significance for two reasons: first, the repair is not yet complete, and second, the repair, when completed, will be of weld 151, not weld 154, and accordingly a copy of the RPS will be in package 151, not 154. Fourth, with respect to CASE's observation that "Jim Cole inspected weld 151 on 4/20/80, [actually 4/2/80] and 153 on 4/24/80," CASE is apparently

speculating on Mr. Cole's ability as an inspector. There is no indication that weld 153 was improperly inspected. The NCR clearly states that the backing bar had been ground through. No evidence exists which indicates that the backing bar was not intact when Mr. Cole performed his inspection on 4/24/80, and, as CASE notes, the incident (grinding through the backing bar) was properly reported as nonforming. In the other incident described, i.e., the failure of the backing bar to continue for the full length of the weld at the intersection of welds 166 and 153, CASE again seems to allege that this weld was improperly inspected by Mr. Cole. Although not extremely clear from the face of the document, what Mr. Halcomb, the originator of the NCR, was attempting to indicate by attaching the Chit for first fit-up of weld 154, was that the "deficient" backing strip was from weld 154, not from weld 151. Therefore, Mr. Cole clearly was not involved with this deficiency. The deficient condition becomes clearer after looking at the drawing. Weld 151 is a vertical weld which attaches a plate (A35) to a gate guide. Although the vertical weld continues on down the gate guide, it is numbered differently for each plate it attaches. Welds 151, 155, 157, and 159 all form the vertical weld which attaches a gate guide to plates A35, B35, M35 and M35, respectively. This weld (although 4 weld numbers) was fit up on 5/17/79. The backing strip for this weld (weld numbers 151, 155, 157, and 159) was continuous for the length of the weld. The fact



that the backing strip for weld 154 lacked 3/8" from running the full length of the weld was properly reported on an NCR, and is attributable to inspector error.

Q33. On page 26 of Exhibit 1, CASE refers to a numbering discrepancy which was reported on NCR M-83-00907. What significance, if any, is there for this allegation?

A33. This allegation is correct, however without significance. In this case the construction group which issued the travelers, assigned separate weld numbers for the welds attaching the backing strip and leak chase to the gate guide. Although clearly indicated on the traveler, the millwrights were not timely in assignment of these weld numbers to the marked-up drawing which they were procedurally required to maintain. This condition was properly identified by QC on an NCR and the situation was corrected. In no way was this an inspection deficiency.

Q34. Mr. Brandt, on page 27 of Exhibit 1, CASE identifies two nonconformance reports, NCR M84-01969 and NCR M84-00498. Have you had a chance to review CASE's allegation regarding these NCRs?

A34. Quite frankly, I am unable to find that CASE alleges anything with regard to these two NCRs. Both identified problems, and both were properly dispositioned in accordance with site procedures. CASE's note regarding the absence of a copy of the NCR in all of the packages is not a violation of any requirement. As I stated earlier, the original NCR is filed in a location separate from the

traveler package. All packages do contain the corrected PT report and reference NCR M-84-00948. Other than the deficiency which was reported on these two NCRs, I am not aware of any deficiency in the way they were processed or dispositioned.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )

TEXAS UTILITIES ELECTRIC )  
COMPANY, et al. )

(Comanche Peak Steam Electric )  
Station, Units 1 and 2) )

Docket Nos. 50-445-2 and  
50-446-2

(Application for  
Operating Licenses)

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "Prefiled Testimony of C. Thomas Brandt Regarding CASE's Further 'Evidence' of a Quality Control Breakdown in the Construction, Installation and Inspection of the Stainless Steel Liner Plate" in the above-captioned matter were served upon the following persons by hand-delivery or deposit in the United States mail, \* first class, postage prepaid, this 20th day of November, 1984:

Peter B. Bloch, Esq.  
Chairman, Atomic Safety and  
Licensing Board  
U. S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Dr. Walter H. Jordan  
881 West Outer Drive  
Oak Ridge, Tennessee 37830

Herbert Grossman, Esq.  
U. S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

\*Mr. Robert D. Martin  
Regional Administrator  
Region IV  
U.S. Nuclear Regulatory  
Commission  
611 Ryan Plaza Drive  
Suite 1000  
Arlington, Texas 76011

\*Chairman, Atomic Safety and  
Licensing Appeal Panel  
U. S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Mr. William L. Clements  
Docketing & Services Branch  
U. S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Stuart A. Treby, Esq.  
Office of the Executive  
Legal Director  
U. S. Nuclear Regulatory  
Commission  
Washington, D. C. 20555

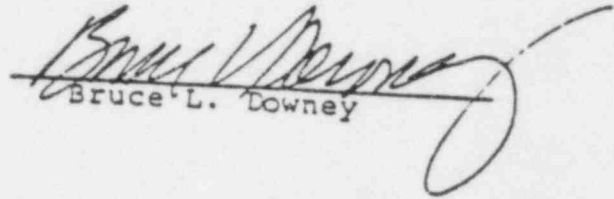
\*Chairman, Atomic Safety and  
Licensing Board Panel  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

\*Renea Hicks, Esq.  
Assistant Attorney General  
Environmental Protection  
Division  
P.O. Box 12548  
Capitol Station  
Austin, Texas 78711

\*Mrs. Juanita Ellis  
President, CASE  
1426 South Polk Street  
Dallas, Texas 75224

Anthony Z. Roisman, Esq.  
Executive Director  
Trial Lawyers for Public Justice  
2000 P. Street, N.W.  
Suite 600  
Washington, D. C. 20036

Ellen Ginsberg, Esq.  
Atomic Safety and Licensing  
Board Panel  
U. S. Nuclear Regulatory  
Commission  
Washington, D. C. 20555

  
Bruce L. Downey

cc: Homer C. Schmidt  
John W. Beck  
Robert Wooldridge, Esq.

**Brown & Root, Inc.**

HOUSTON, TEXAS



WELD PROCEDURE NO.

SR023

REVISION 4

PAGE 1 of 2

APPLICABLE CODE(S)

ASME Sec. IX

ASME Sec. III

ANSI B31.1

WELD PROCEDURE SPECIFICATION  
COMANCHE PEAK STEAM ELECTRIC STATION

SUPPORTING PDR(S)

05081206 Rev. 3

05081306 Rev. 4

05081114 Rev. 1

BASE METAL

P.N.O. 9 GROUP 1 TO P.N.O. 7 GROUP 1

THICKNESS RANGE 0.0625" through 0.750"

DIAMETER RANGE Unlimited

JOINT PREPARATION

Weld ends may be prepared by machining, shears and cutting, and/or grinding.

PROCESS(ES)

Gas Tungsten Arc

CLEANING (INITIAL & INTERPASS)

Welding surfaces shall be wire brushed or ground as required to remove slag, scale, or other contaminants.

POSITION

All Positions

PROGRESSION Upward

GAS

SHIELDING Argon FLOW RATE 15 CFH Min

PURGE Argon (1) FLOW RATE 5 CFH Min.

TRAILING N/A FLOW RATE N/A

FILLER METAL

PROCESS GTAW SFA NO. 5.0 P.N.O. 6 AND 3

PROCESS N/A SFA NO. N/A P.N.O. N/A AND N/A

OTHER N/A

FLUX

CLASSIFICATION N/A

PARTICLE SIZE N/A

TRADE NAME N/A

PREHEAT

PREHEAT TEMP., °F 600

INTERPASS RANGE, °F 60°F - 350

POSTWELD HEAT TREATMENT

TYPE None

TEMPERATURE N/A

TIME N/A

ADDITIONAL OR SUPPLEMENTARY REQUIREMENTS

1. Prior to the start of welding, the exiting gas from the purge area shall be checked for its oxygen content. Oxygen content of the exiting gas must be 2% or below before welding can commence. The purge shall be maintained for at least two (2) passes (i.e., Root and one Fill).
2. All weld joints shall be free of moisture, oxide, grease, oil and protective coatings. All slag and/or surface defects shall be removed as prescribed from each weld bead prior to the continuation of welding.

(1) Purge requirement shall be deleted when backing strip is utilized.



PREPARATION APPROVAL

*Walter B. ...*

DATE

9-20-78

ISSUE DATE

N/A

WELDING ENGINEERING

*W.C. ...*

9-20-78

ENGINEER *Joseph G. ...*

MATERIALS ENGINEER

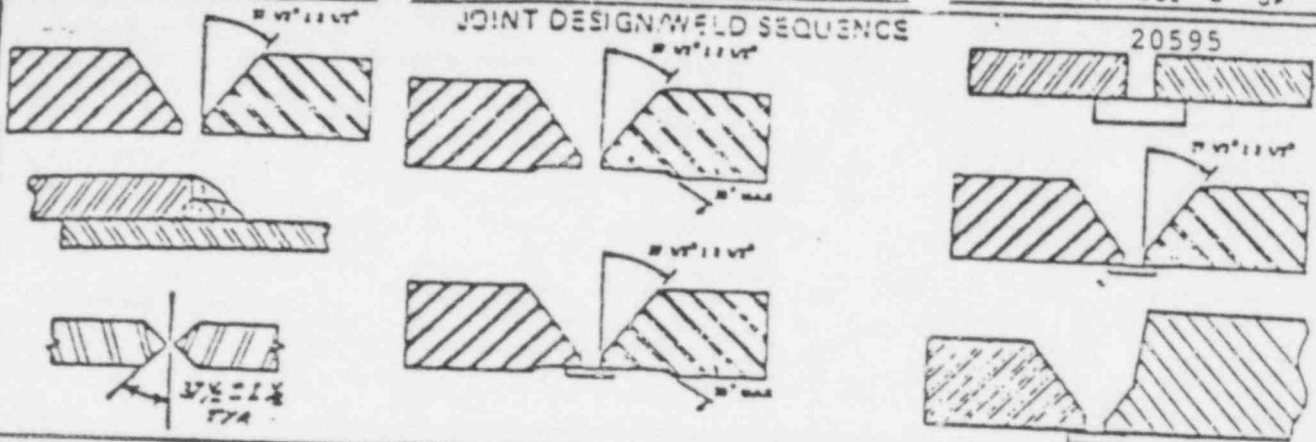
*...*

9-20-78

PROJECT NO. CR-077

ATTACHMENT 1

JOINT DESIGN/WELD SEQUENCE



WELD PARAMETERS

PASS	PROCESS	FILLER METAL		GAS/FLUX		ELECTRICAL DATA		TRAVEL IPM	MAX. BEAD WIDTH
		SIZE	CLASS	TYPE	Min. FLOW	TYPE	AMPERAGE VOLTS		
1	GTA	1/16"	See Note 7	Argon	15 CFH	DCSP	100 Max. 11 Max.	-	3/8"
	GTA	3/32"	See Note 7	Argon	15 CFH	DCSP	100 Max. 11 Max.	-	
2-3	GTA	1/16"	See Note 7	Argon	15 CFH	DCSP	115 Max. 11 Max.	-	3/8"
	GTA	3/32"	See Note 7	Argon	15 CFH	DCSP	115 Max. 11 Max.	-	
4-8 ON	GTA	3/32" or 1/8"	See Note 7	Argon	15 CFH	DCSP	140 Max. 11 Max.	-	3/8"
	GTA	1/8"	See Note 7	Argon	15 CFH	DCSP	140 Max. 11 Max.	-	

PREHEAT	600F	BACK GOUGING METHOD	N/A
INTERPASS TEMP.	600F - 3500F	CONTACT TUBE TO WORK (IN.)	N/A
SINGLE OR MULTIPLE ARC	Single	GRIFICE OR CUP SIZE	3/16" MIN
SINGLE OR MULTIPLE PASS	Multiple	WELD PROGRESSION	Upward

SPECIAL INSTRUCTIONS

1. Preheat shall be established prior to the start of welding.
2. The interpass temperature (above 1500F) shall be checked using temperature indicating crayons or an approved equal.
3. The number of weld beads may vary with section thickness.
4. The starts and stops of all tack welds shall be tapered by grinding so that the initial pass can be properly consume the tack.
5. Tack welds which are used at the root of joints shall be complete penetration.
6. The non-consumable electrode for the Gas Tungsten Arc process shall conform to AWS A5.12 Class EWTh-1 (1% Thoriated Tungsten) or Class EWTh-1 (2% Thoriated Tungsten).
7. The type of bare wire selected for the base metal to be welded shall be as follows:

BASE METAL TYPE	BARE WIRE TO BE USED
304 or 304L to 304 or 304L	ER308 or ER308L
316 or 316L to 316 or 316L	ER316 or ER316L
304 or 304L to 316 or 316L	ER316 or ER316L



Material Spec. SA-312 TP304 to SA-312 TP304 20596  
 P No. 3 Gr. No. 1 to P No. 5 Gr. No. 1  
 Welding Processes 1. Gas Tungsten Arc 2. N/A  
 Manual or Automatic 1. Manual 2. N/A  
 Thickness Range 1. - 2. N/A  
 Total Qualified Thickness Range 0.0525" thru .550"

FILLER METAL

F.No. 1. 6 2. N/A  
 A.No. 1. 8 2. N/A  
 SFA Spec. 1. 5.9 2. N/A  
 AWS Class. 1. ER308 2. N/A  
 Filler Size 1. 3/32" 2. N/A  
 Trade Name 1. ARCOS 2. N/A

Describe Filler Metal if not included in Section IX  
 1/8" x 5/32" Arcos Consumable Insert

FLUX OR ATMOSPHERE

Trade Name 1. - 2. N/A  
 Shielding Gas 1. Argon 2. N/A  
 Flow Rate 1. 16CFH Min. 2. N/A  
 Purge 1. 16CFH Min. 2. N/A

WELDING PARAMETERS

Joint Type Single Vee Groove Weld  
 Position 6G Upward  
 Backing Consumable Insert (Type X)  
 Preheat 600F  
 IPT Range 600F - 350F  
 PWHT None  
 Passes/Side 1. Multiple 2. N/A  
 No. of Arcs 1. Single 2. N/A  
 Current 1. DCSP 2. N/A  
 Amps 1. 70-100 2. N/A  
 Volts 1. 8-10 2. N/A  
 Travel Speed 1. 1"-2" IPM 2. N/A  
 Oscillation 1. 3/8" Max. 2. N/A  
 Bead Type 1. Stringer 2. N/A

TENSILE TEST

Specimen No.	Dimensions		Area	Ultimate Total Load Lb.	Ultimate Unit Stress psi	Character of Failure And Location
	Width	Thickness				
QW-462.1(b)#1	0.724	0.203	.1505	13,100	87,000	Weld
QW-462.1(b)#2	0.712	0.205	.1474	13,300	90,200	Weld

GUIDED BEND TESTS

Type and Figure No.	Result	Type and Figure No.	Result
QW-462.3(a) Face	Satisfactory	QW-462.3(a) Root	Satisfactory
QW-462.3(a) Face	Satisfactory	QW-462.3(a) Root	Satisfactory

Welder's Name Jimmy E. Hite Clock No. 2314 Stamp No. AAC  
 Who by virtue of these tests meets welder performance requirements.  
 Test Conducted by Southwestern Laboratories Laboratory Test No. 29559-60  
 per Mr. Don Sorell Address Houston, Texas  
 Date 2-20-76

We certify that the statements in this record are correct and that the test welds prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed BROWN & ROOT, INC.  
 (Manufacturer)

Date 2-7-76

By *[Signature]*

**SUPPLEMENTAL TESTS**

**TOUGHNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_  
 SIZE \_\_\_\_\_ PER \_\_\_\_\_

20597

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHEAR	DROPPING WEIGHT	
						BREAK	NO BREAK

**HARDNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL	HEAT AFFECTED ZONE	BASE METAL

**FILLET WELD TEST**

FIG \_\_\_\_\_

MACRO TEST RESULTS	FRACTURE TEST RESULTS

**CHEMICAL ANALYSIS %**

METHOD Wet Chemical

PER ASTM E250-74

ELEM.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	Ti	N	Cb	Fe
WELD	LO3S	1.76		.42	19.89	9.45	.29				.059	0.0	

Approximate Delta Ferrite Content: 9% (Schaeffler Diagram per Figure Q432-1 of the ASME Section III Code)

**ADDITIONAL TESTS**

Delta-ferrite tests were conducted on the completed weld at 12:00, 3:00, 6:00, and 9:00 o'clock with a severn ferrite indicator. All positions recorded a 7.5 to 10% delta-ferrite content.

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. Q803AA204 Rev. 3 and the requirements of N/A

Signed BROWN & ROOT, INC.

Date 3-7-78

By [Signature]

## SUPPLEMENTAL TESTS

### TOUGHNESS TEST

TYPE \_\_\_\_\_ PER \_\_\_\_\_  
 SIZE \_\_\_\_\_ PER \_\_\_\_\_

20598

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHEAR	DROPT WEIGHT	
						BREAK	NO BREAK

### HARDNESS TEST

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL	HEAT AFFECTED ZONE	BASE METAL

### FILLET WELD TEST

FIG \_\_\_\_\_

MACRO TEST RESULTS	FRACTURE TEST RESULTS

### CHEMICAL ANALYSIS

METHOD \_\_\_\_\_ PER \_\_\_\_\_

ELEM.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	Ti	Fe
WELD											
BASE											

### ADDITIONAL TESTS

Bend tests were examined at 10X magnification after bending to meet the acceptance criteria of "Interim Regulatory Guide 1.31." No fissures exceeding 1/64" were present.

Radiographic Report of Welder Qualification: Radiographic report WQRT 00009, was run in accordance with Section IX, 1974, Paragraph QW-142. The acceptance criteria of Section VIII, Division 1 was herein met.

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. 0808AA204 Rev. 3 and the requirements of \_\_\_\_\_

Date 3-7-78

Signed BROWN & ROOT, INC.  
 By [Signature]

**SUPPLEMENTAL TESTS**

**TOUGHNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_  
 SIZE \_\_\_\_\_ PER \_\_\_\_\_ 20599

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHIFAR	DROP WEIGHT	
						BREAK	NO BREAK

**HARDNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL		HEAT AFFECTED ZONE		BASE METAL

Two (2) specimens were sensitization tested in accordance with ASME A262-70, Practice E. Specimens were examined at 20X magnification for presence of microcracking. No fissures were present.

The following parameter excerpts have been extracted from the actual parameters utilized within qualification of said procedure and are calculated to asseverate that the maximum energy input range during qualification is within that prescribed by the PSAR.

**ADDITIONAL TESTS**

**ENERGY INPUT RANGE**

<u>GTAW Process</u>		
Amperage	80	90
Voltage	10	8
Travel Speed (in. per/min.)	2.0	1.0
Kilojoules/inch	24,000 min.	43,200 max.

Note: Parameters noted are indicative of the maximum and minimum energy input range and do not necessarily reflect the maximum/minimum amperage/voltage utilized during qualification

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. 0209AA204 Rev. 3 and the requirements of W/A

Date 3.7.78

Signed BROWN & ROOT, INC.  
 By [Signature]



## PROCEDURE QUALIFICATION RECORD

Material Spec. SA-312 TP 304 to SA-312 TP 304 20600  
 P No. B Gr. No. 1 to P No. 2 Gr. No. 1  
 Welding Processes 1. Gas Tungsten Arc Thickness and O.D. 0.250" Wall Thickness x 6  
 Manual or Automatic 1. Manual 2. Shielded Metal Arc  
 Thickness Range 1. - 2. Manual  
 Total Qualified Thickness Range 0.0525" thru 0.550" 2. -

### FILLER METAL

F.No. 1. 6 2. 5  
 A.No. 1. 8 2. 8  
 SFA Spec. 1. 5.9 2. 5.4  
 AWS Class. 1. ER308 2. E308-16  
 Filler Size 1. 3/32" 2. 3/32" 3/8"  
 Trade Name 1. Arcos  
2. Arcos

Describe Filler Metal if not included in Section IX  
N/A

### FLUX OR ATMOSPHERE

Trade Name 1. - 2. N/A  
 Shielding Gas 1. Argon 2. N/A  
 Flow Rate 1. 15 CFH Min. 2. N/A  
 Purge 1. 10 CFH Min. 2. N/A

### WELDING PARAMETERS

Joint Type Single Vee Groove Weld  
 Position 6G Upward  
 Backing None  
 Preheat 60°F  
 IPT Range 60°F-150°F  
 PWHT None  
 Passes/Side 1. Multiple 2. Multiple  
 No. of Arcs 1. Single 2. Single  
 Current 1. DCSP 2. DCRP  
 Amps 1. 89-95 2. 70-95  
 Volts 1. 8-10 2. 16-22  
 Travel Speed 1. 3-4 IPM 2. 2.5-5.0 IPM  
 Oscillation 1. 5/16" Max. 2. 5/16" Max.  
 Bead Type 1. Stringer 2. Stringer

### TENSILE TEST

Specimen No.	Dimensions		Area	Ultimate Total Load Lb.	Ultimate Unit Stress psi	Character of Failure And Location
	Width	Thickness				
OW-462.1(b) #1	.732	.146	1069	9,750	91,200	Weld
OW-462.1(b) #4	.733	.156	1143	10,100	88,100	Weld

### GUIDED BEND TESTS

Type and Figure No.	Result	Type and Figure No.	Result
OW-462.3(a) Face	Satisfactory	OW-462.3(a) Root	Satisfactory
OW-462.3(a) Face	Satisfactory	OW-462.3(a) Root	Satisfactory

Welder's Name Jimmy Hite Clock No. 2314 Stamp No. AIC  
 Who by virtue of these tests meets welder performance requirements. Laboratory Test No. 17923  
 Test Conducted by Southwestern Laboratories Address 222 Cavalcade, Houston, TX  
 per Henry Wabenicht Date May 5, 1978

We certify that the statements in this record are correct and that the test welds prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed Ernest R. Root, Inc.  
 (Manufacturer)

Date 9-20-78

By T. J. Poteraj

**SUPPLEMENTAL TESTS**

**TOUGHNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_ 20601  
 SIZE \_\_\_\_\_ PER \_\_\_\_\_

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHEAR	DROP WEIGHT	
						BREAK	NO BREAK

**HARDNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL	HEAT AFFECTED ZONE	BASE METAL

**FILLET WELD TEST**

FIG \_\_\_\_\_

MACRO TEST RESULTS	FRACTURE TEST RESULTS

**CHEMICAL ANALYSIS %**

METHOD Wet Chemical PER ASTM E350-74

ELEM.	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	Pb	N	Co	Fe
WELD	.079	1.59			70	19.79	0.12	20			0.00	0.0	
BASF	Approximate Delta Ferrite Content: 7% (Schaeffler Diagram per Figure 2433-1 of the ASME Section III Code)												

**ADDITIONAL TESTS**

Bend tests were examined at 10X magnification after bending to meet the acceptance criteria of "Interim Regulatory Guide 1.31." No fissures were present.

Radiographic Report of Welder Qualification: Radiographic report WCRT 00030 was run in accordance with Section IX, 1974, Paragraph QW-142. The acceptance criteria of Section VIII, Division I was herein met.

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. 0308AB106 Rev. 2 and the requirements of ASME

Date 9-20-78

Signed Brown & Root, Inc.

By T. J. Portner



**TOUGHNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_  
SIZE \_\_\_\_\_ PFR \_\_\_\_\_ 20602

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHEAR	DROP WEIGHT	
						BREAK	NO BREAK

**HARDNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL	HEAT AFFECTED ZONE	BASE METAL

**FILLET WELD TEST**

FIG. \_\_\_\_\_

MACRO TEST RESULTS	FRACTURE TEST RESULTS

**CHEMICAL ANALYSIS**

METHOD Wet Chemical PER ASTM E350-74

ELEM.	C	Mn	Si	Ni	Mo	Cr	H	Cb
WELD	.013	1.61	.35	9.38	.07	19.95	.0525	<.01

\*Approximate Delta Ferrite Content: 10% (Schaeffler Diagram per Figure 2-22-1 of the ASME Section III Code)

**ADDITIONAL TESTS**

- Bend tests were examined at 10X magnification after bending to meet the acceptance criteria of "Interim Regulatory Guide 1.31." No fissures were present.
- Delta-Ferrite tests were conducted at twelve (12) points (six per side), along the length of the procedure qualification coupon. Ferrite scope MTE, 725 was used and the following results noted:  

Position	Delta-Ferrite Number
All	All positions ranged between 9.5 and 11.5

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. 0202AA:14 Rev. 1 and the requirements of N/A

Date 9-20-78

Signed Brown & Root, Inc.  
By T.J. Palangian

**SUPPLEMENTAL TESTS**

**TOUGHNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_  
 SIZE \_\_\_\_\_ PER \_\_\_\_\_

20603

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHEAR	DROF WEIGHT	
						BREAK	NO BREAK

**HARDNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL	HEAT AFFECTED ZONE	BASE METAL

**FILLET WELD TEST**

FIG \_\_\_\_\_

MACRO TEST RESULTS	FRACTURE TEST RESULTS

**ADDITIONAL TESTS**

1. Two (2) specimens were sensitization tested in accordance with ASTM A262-70, Practice E. Specimens were examined at 20X magnification for presence of microcracking. No fissures were present. In addition, Westinghouse Document WCAP - 8673 states that energy input of 80 KJ/inch for base metal thickness of 3/4" resulted in no sensitization of the base metal.

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. 0805AA114 Rev. 1 and the requirements of \_\_\_\_\_

Date 9-20-78

Signed Brown & Root, Inc.  
 By T. J. Tolman

**SUPPLEMENTAL TESTS**

**TOUGHNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_  
 SIZE \_\_\_\_\_ PER \_\_\_\_\_

20604

SPECIMEN IDENTIFICATION	TEST TEMP	NOTCH LOCATION	ENERGY FT-LBS	MILS LAT. EXP	% SHEAR	DROP WEIGHT	
						BREAK	NO BREAK

**HARDNESS TEST**

TYPE \_\_\_\_\_ PER \_\_\_\_\_

NO.	WELD METAL	HEAT AFFECTED ZONE	BASE METAL

**FILLET WELD TEST**

FIG. \_\_\_\_\_

MACRO TEST RESULTS	FRACTURE TEST RESULTS

**ADDITIONAL TESTS**

- Delta Ferrite tests were conducted on the completed weld test pad at six equidistant locations at the centerline with a severn ferrite indicator. All positions recorded the following delta-ferrite content:  
 Greater than 7.5, less than 10%.
- Two (2) specimens were sensitization tested in accordance with ASTM A262-70, Practice E. Specimens were examined at 20X magnification for presence of microcracking. No fissures were present. In addition, Westinghouse document WCAP-8678 states that energy input of 80 KJ/inch for base metal thickness of 3/4" resulted in no sensitization of the base metal.

We certify that the statements in this record are correct and that the tests were conducted in accordance with PQR No. 0809A8105 Rev. 4 and the requirements of 11/8

Date 9-20-78

Signed Brown & Root, Inc.  
 By T. T. [Signature]

## PROCEDURE QUALIFICATION RECORD

Material Spec. SA-240 Type 304L to SA-240 Type 304L 20605  
 P No. B Gr. No. 1 to P No. 9 Gr. No. 1  
 Welding Processes 1. Gas Tungsten Arc Thickness and O.D. 1-3/4" plate  
 Manual or Automatic 1. Manual 2. N/A  
 Thickness Range 1. - 2. N/A  
 Total Qualified Thickness Range 0.1875" thru 3.500" 2. N/A

### FILLER METAL

F.No. 1. 6 2. N/A  
 A.No. 1. 8 2. N/A  
 SFA Spec. 1. 5.9 2. N/A  
 AWS Class. 1. ER308 & 308L 2. N/A  
 Filler Size 1. 3/32" & 1/8" 2. N/A  
 Trade Name 1. 3/32" Arcos; 1/8" Sandvik  
2. N/A

Describe Filler Metal if not included in Section IX

### FLUX OR ATMOSPHERE

Trade Name 1. - 2. N/A  
 Shielding Gas 1. Argon 2. N/A  
 Flow Rate 1. 20 CFH Min. 2. N/A  
 Purge 1. 20 CFH Min. 2. N/A

### WELDING PARAMETERS

Joint Type Double Vee Groove Weld  
 Position 2G  
 Backing None  
 Preheat 600F  
 IPT Range 110°F through 3500F  
 PWHT None  
 Passes/Side 1. Multiple 2. N/A  
 No. of Arcs 1. Single 2. N/A  
 Current 1. DCSP 2. N/A  
 Amps 1. 100-130 2. N/A  
 Volts 1. 11 2. N/A  
 Travel Speed 1. 2-4.0 IPM 2. N/A  
 Oscillation 1. 3/8" Max 2. N/A  
 Bead Type 1. Stringer 2. N/A

### TENSILE TEST

Specimen No.	Dimensions		Area	Ultimate Total Load Lb.	Ultimate Unit Stress psi	Character of Failure And Location
	Width	Thickness				
QW-462.1(a) #1	1.002	1.614	1.617	144,700	89,487	Weld Metal
QW-462.1(a) #2	1.005	1.491	1.499	132,000	88,157	Weld Metal

### GUIDED BEND TESTS

Type and Figure No.	Result	Type and Figure No.	Result
QW-462.2(a) Side	Satisfactory	QW-462.2(a) Side	Satisfactory
QW-462.2(a) Side	Satisfactory	QW-462.2(a) Side	Satisfactory

Welder's Name Curtis Marquis S.S.No. 250-64-7775 Stamp No. 440  
 Who by virtue of these tests meets welder performance requirements.  
 Test Conducted by Materials Engineering Lab. Laboratory Test No.                       
 per G. C. Dawson Address 3100 Clinton Dr., Houston, Texas  
 Date March 3, 1978

We certify that the statements in this record are correct and that the test welds prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed Brown & Root, Inc.  
 (Manufacturer)

Date 9-20-78

By T.J. Tolson





WELDING CODE

ASME B & PV  
SECTION IX

## WELDING PROCEDURE SPECIFICATION

SUPPORTING PQR(S)  
20606  
\*0809-A114 Rev.

WELDING PROCESS(ES) 1. Gas Tungsten Arc TYPE Manual  
2. N/A TYPE N/A

BASE METALS (QW-403)  
P No. 8 Gr. No. 1 to P No. 9 Gr. No. 1  
Thickness Range 1.87 thru 1.5 IN.  
Pipe Dia. Range Unlimited IN.  
Range for Fillet, Thk All Dia. Unlimited IN.

POSTWELD HEAT TREATMENT (QW-407)  
Type N/A  
Temperature N/A °F  
Time Range N/A

FILLER METALS (QW-404)  
F No. 1. 5 2. N/A  
A No. 1. 8 2. N/A  
SFA Spec. No. 1. 5.9 2. N/A  
AWS Class. No. 1. E63XX 2. N/A  
Size of Electrode 1. N/A 2. N/A IN.  
Size of Filler 1. 3/32 1/8 2. N/A IN.  
Electrode - Flux Class N/A  
Consumable insert N/A

GAS (QW-408)  
Shielding Gas 1 Argon  
Percent Comp. 100  
Shielding Gas Flow Rate 15 CFH (min.)  
Purge Gas Argon (6) Flow Rate 5 CFH (min.)  
Torch Shielding Gas Composition N/A

POSITION (QW-405)  
Welding Position All  
Welding Progression upward

ELECTRICAL CHARACTERISTICS (QW-409)  
Current 1. DCSP 2. N/A  
Amps Range 1. 50-150 2. N/A  
Volts Range 1. 1-14 2. N/A  
Tension Elec. Size Type 1/16"-1/8"/EXT-1 or 2

PREHEAT (QW-406)  
Preheat Temp 50 °F (Min)  
Interpass Temp Range 50-350 °F  
Preheat Maint 00 °F

TECHNIQUE (QW-410)  
Stringer or Weave Bead 1. Stringer 2. N/A  
Joint Width See Para 2  
Orifice or Gas Cup Size 1/4 - 1/2 IN.  
Interpass cleaning: Welding surfaces shall be wire brushed or ground as required to remove slag, scale or other contaminants.  
Method of back chipping N/A

JOINT DESIGN (QW-402)  
Groove Design Single V or U  
Joint Type CS CI N/A ES NS  
Backing Mat Type Similar to base material

Other 1. N/A 2. N/A IN.  
Contact Tube to work distance N/A  
Multiple or Single Layer 1. Multiple IN.  
2. N/A  
Multiple or single electrodes Single  
Travel Speed (Rounds) 1. N/A 2. N/A IPM  
Purge gas N/A

REMARKS \*This PQR includes Supplemental Test Results.  
Prior to the start of welding, the exiting gas shall be checked for oxygen content. It must be 2% or lower before welding can commence. Maintain purge for at least two layers (i.e., root and the fill). Westinghouse supplied components require purge maintenance for at least three layers (i.e., root and two fills).

PREPARATION/ APPROVAL:  
Welding Engineering [Signature] DATE 10-12-70  
Materials Engineering [Signature] DATE 10-12-70  
Quality Assurance [Signature] DATE 10-10-70

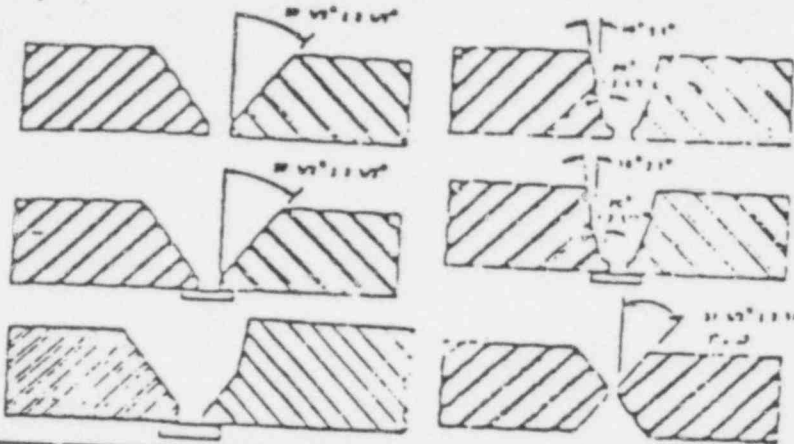
Sub. Class: ASME Section III, ANSI B31.1  
Project: CP345  
Job No. CR-0172

# WELDING TECHNIQUE SHEET

P NO. 5 GROUP 1 TOP NO. 5 GROUP 1  
 THK. RANGE 1/8 thru 3/8 IN

WPS 8E025  
 REVISION 3  
 PAGE 2 OF 2

### TYPICAL JOINT DESIGNS PERMITTED



ROOT OPENING O8 1/16-3/16  
 B5 1/8-1/4 IN

20607

SOCKET OR LAP JOINT  
 FILLET WELD

### WELDING PARAMETERS

LAYER	WELDING PROCESS	FILLER METAL		TYPE	GAS		ELECTRICAL DATA			TRAVEL SPEED (IPM)	MAX BEAD WIDTH (IN)
		SIZE (IN.)	AWS CLASS		FLOW RATE (CFH)	SHIELD	TYPE/POLAR	AMPERAGE RANGE	VOLTS RANGE		
1-3	GTA or	3/32	See Note 5	Argon	15	5	DCSP	50-150	8-14	N/A	3/8
	GTA	1/8	See Note 5	Argon	15	5	DCSP	50-150	8-14	N/A	3/8
Alt.	GTA or	3/32	See Note 5	Argon	15	N/A	DCSP	50-150	8-14	N/A	3/8
3 & on	GTA	1/8	See Note 5	Argon	15	N/A	DCSP	50-150	8-14	N/A	3/8

\*SINGLE VALUES ARE MINIMUM

Maximum thickness of any single deposited layer shall not exceed 1/2".

PREHEAT TEMP. 60 °F (MIN)  
 INTERPASS TEMP. 60-350 °F  
 PREHEAT MAINT. 60 °F  
 TUNGSTEN ELECT SIZE & TYPE 1/16-1/8 IN  
 WITH 1 OF 2

BACK GROUTING METHOD Not allowed  
 CONTACT TUBE TO WORK DIST. N/A IN  
 GRIND OR CLIP SIZE 1/4 - 1/2 IN  
 WELDING PROGRESSION STARTS IN

### INSTRUCTIONS

1. Preheat and interpass temperature (above 150°F) shall be checked using temperature indicating crayons or an approved equal.
2. Tack welds shall employ the parameters for the root pass.
3. Tack welds shall be complete fusion; the starts and stops shall be tapered by grinding so that the initial pass properly continues the tack.
4. All welding shall utilize stringer beads.
5. Base wire selected for the base metal to be welded shall be as follows:

#### BASE METAL TYPE

304 or 304L to 304 or 304L  
 316 or 316L to 316 or 316L  
 304 or 304L to 316 or 316L

#### BE WIRE TO BE USED

ER308 or ER308L  
 ER316 or ER316L  
 ER316 or ER316L

For Westinghouse supplied Reactor Coolant Piping, ER308 will be used for base metal type 304 or 304L to 316 or 316L.

6. Purge requirement may be deleted for socket welds or when specified by the Project Welding Engineer.
7. Preheat maintenance shall be continuous during welding only; cool completed weld in still air.
8. Variation in the joint geometries shown above is permitted provided the joint is single or double welded and the root spacing maintained within the specified tolerances.





WELDING PROCEDURE SPECIFICATION CHANGE NOTICE

20608

CURRENT REVISIONS ARE INDICATED BY CHANGE BARS.

REV.	DATE	ORIGINATOR	APPROVAL*
<u>1</u>	<u>9-22-77</u>	<u>J. Bronicki</u>	<u>R.P. [Signature]</u>
<u>2</u>	<u>3-20-79</u>	<u>J. Bronicki</u>	<u>R.P. [Signature]</u>
<u>3</u>	<u>10-1-79</u>	<u>J. Bronicki</u>	<u>R.P. [Signature]</u>

REVISION NO.	DESCRIBE THE CHANGE
1	Noted PQR revision. Revised thickness range, joint details, maximum values of amps and volts and deleted reference to travel speeds.
2	Retyped on new form. Added the following information: filler weld thickness and diameter, electrode - flux classification, preheat maintenance, joint description, trailing shield gas, gun size and type, bead type, initial and interpass cleaning, back gouging method, oscillation and root spacing. Noted PQR revision. Added number to amp and volt values. Added Westinghouse requirement for RCP welds.
3	Added preheat maintenance, preheat, root spacing, cup size ranges and notes P and R. Noted PQR revision. Revised thickness range. Added layer thickness limitation.

\* REVISIONS MUST BE APPROVED BY THE MANAGER OF MATERIALS ENGINEERING OR HIS DESIGNEE



CHANGE NOTICE  
 PROCEDURE QUALIFICATION RECORD  
 QUALIFYING WELDING PROCEDURE SPECIFICATION

20609

ESSENTIAL VARIABLES CANNOT BE CHANGED

CURRENT REVISIONS ARE INDICATED BY CHANGE BARS.

WPS/PQR NO.	REV.	DATE	ORIGINATOR	APPROVAL*
WPS/PQR	1	1-1-68	J. J. ...	[Signature]
WPS/PQR	2	1-1-68	J. J. ...	[Signature]

WPS/PQR REVISION NO.	DESCRIBE THE CHANGE
PQR 1	Deletion of heat input parameters and addition of Westinghouse WCAP-8678 reference.
PQR 2	Retyped on new form. Added the following information: WPS number, joint sketch & dimensions, O.D. range qualified, thickness range qualified per process, electrode size, electrode-flux class., consumable insert, welding progression, PWHT type & time range, purge flow rate, bead width, orifice or gas cup size. Changed "passes/side" to "multi or single layer", "number of arcs" to "multiple or single electrode". Deleted reference to "Atmosphere trade name", "backing", and "who by virtue of these tests meets welder performance requirements". Changed filler trade name to "N/A". Information previously indicated under "oscillation" is entered under "bead width" and added "N/A" under oscillation. Changed shielding gas & purge flow rate from 20CFH min. to 30.
WPS 3	Deleted reference to supporting PQR and added peening, preheat maintenance and cup size range.
PQR 3	Change "thickness range qualified" to "deposited weld metal thickness". Added joint dimension information, tungsten size and type, peening and backgouging.

\* REVISIONS MUST BE APPROVED BY THE MANAGER OF MATERIALS ENGINEERING OR HIS DESIGNEE



Welding Procedure Specification No. 0808AA114

Date 7-17-79

Revisions 3

20610

WELDING PROCESS(IES) 1 Gas Tungsten Arc  
2 N/A

TYPE Manual  
TYPE N/A

**BASE METALS (QW-403)**

PNo 8 Gr. No. 1 IP No. 6 Gr. No. 1  
Thickness Range .187 thru 3.5 IN  
Pipe Dia. Range Unlimited

**POSTWELD HEAT TREATMENT (QW-407)**

Temp. N/A  
Time N/A  
Cooling Rate N/A

**FILLER METALS (QW-404)**

F No 1 6 2 N/A  
A No 1 6 2 N/A  
SFA Spec No. 1 3.5 2 N/A  
AWS Class. No. 1 ER70S30 2 N/A  
Size of Electrode 1 N/A 2 N/A IN  
Size of Filler 1. 3/32, 1/8 2 N/A IN  
Electrode - Flux Class N/A  
Consumable used N/A

Shielding Gas Argon  
Preheat Temp. 100  
Cooling Rate 20 Min CFH  
Flow Rate 20 Min CFH  
Tungsten Gas Composition N/A

**ELECTRICAL CHARACTERISTICS (QW-409)**

Current 1 DC 2 N/A  
Amp Range 1 100-130 2 N/A  
Volt Range 1 4-1 2 N/A  
Tungsten Electrode Size Type 1/16"-1/8"/EWTh-1or2

**POSITION (QW-405)**

Welding Position 2G  
Welding Progression N/A

**TECHNIQUE (QW-410)**

Number of Groove Beads 1 Stringer 2 N/A  
Bead Width 1. 3/8" 2 N/A IN (Max)  
Oxygen Cut Gun Size 1 1/4"-1/2" 2 N/A IN  
In the final interpass cleaning, welding surfaces shall be wire brushed or ground or required to remove slag, scale or other contaminants.  
Method of back gouging AW, Air and/or Grinding

**PREHEAT (QW-406)**

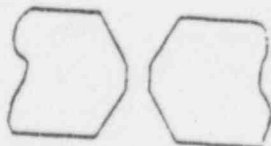
Preheat Temp. 60 °F (Min.)  
Interpass Temp. Range 110-350 °F  
Preheat Maint. A

**JOINT DESIGN (QW-402)**

Groove Design Double V  
Joint Type CB Yes CI N/A BS N/A  
Backing Mat. Type N/A

Discontinuity N/A 2 N/A  
Contact Time to work a groove N/A IN  
Multiple or Single Layer 1 Multiple  
Per Side 2 N/A  
Multiple or Single Passes Single  
Travel Direction Push 2 N/A (P)  
Backside Unfinished

Sketch/Comments



Gap: 1/32"  
Land: 1/16" - 1/32", -0  
Bevel: 37-1/2° = 2-1/2°

Welded by [Signature] 6-18-79  
WELDING ENGINEERING DATE

Approved by [Signature] 6-18-79  
MATERIALS ENGINEERING DATE





SUPPLEMENTAL TEST RESULT CHANGE NOTICE

20612

CURRENT REVISIONS ARE INDICATED BY CHANGE BAR

REV	DATE	ORIGINATOR	APPROVAL*
1	9-21-71	J. H. Brown	[Signature]
2	10-1-71	J. H. Brown	[Signature]
3	10-1-71	J. H. Brown	[Signature]

REVISION NO.	DESCRIBE THE CHANGE
1	Deletion of test input parameters and addition of Westinghouse W-12-5075 reference.
2	Typed on new form.
3	Added testing laboratory, test run and testing date.

\* REVISIONS MUST BE APPROVED BY THE MANAGER OF MATERIALS ENGINEERING OR HIS DESIGNEE



**SUPPLEMENTAL TEST RESULTS**

CPSES

CR-0172

20613

**CHEMICAL ANALYSIS:**

METHOD: Wet Chemical

PER ASTM E450-74

ELEM. -	C	Mn	Si	Ni	Mo	Cr	N	Cu
WELD	.013	1.61	.35	9.3-	.07	19.06	.05-6	<.01

**SENSITIZATION:**

Two (2) specimens were sensitization tested in accordance with ASTM A262-70, Practice E. Specimens were examined at 20X magnification for presence of microcracking. No fissures were present.

**MICRO FISSURE**

End test were examined at 10X magnification after bending to meet the acceptance criteria of "Interim Regulatory Guide 1.31." No fissures were present.

**DELTA-FERRITE**

Delta-Ferrite tests were conducted at twelve (12) points (six per side) along the length of the procedure qualification coupon. Ferritoscope MET 725 was used and the following results noted:

All positions ranged between 9.5 and 11.5 FN.

Approximate Delta Ferrite Content: 10% (by volume) in accordance with Figure 2433-1 of the ASME Section III Code)

Test conducted by B&R Materials Engineering Lab.  
Address: 3100 Clinton Drive, Houston, Texas  
per George Dawson

Lab No. 75-42

Date March 2, 1979

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the above listed PQR and per requirements of the listed code standards.

Signed: Brown & Root, Inc.

Date 6-18-79

By R.P. C. [Signature]



the necessary Procedure Qualification Record(s) (PQR).

QW-202 Type of Tests Required

20614

S77  
S78

**QW-201.2 Procedure Qualification Record (PQR).** The specific facts including the base metal specification Type and Grade (or chemical analysis and mechanical properties), and the essential variables (as listed in QW-252 through QW-282) used in qualifying a WPS shall be recorded in a form called Procedure Qualification Record (PQR). This form shall also record the test results.

It is required that the essential and nonessential variables of a WPS be followed in welding the test coupons. The WPS identification (including date and revision number) shall be listed on the PQR. These documents shall be certified by the manufacturer or contractor and shall be available for examination by the Authorized Inspector. A suggested format is given in QW-483. This PQR format may be changed to fit the needs of each manufacturer or contractor.

A change in any essential variable shall require requalification, to be recorded in another PQR. A change in any nonessential variables does not require requalification. A change from one welding process to another welding process is considered a change in an essential variable.

**QW-201.3 Combination of Welding Processes or Procedures.** More than one process or procedure may be used in a single production joint. Each welding process or procedure shall be qualified either separately or in combination with other processes or procedures (within the thickness limits specified in QW-202.2, QW-403, and QW-451) for the base metal thickness and for the deposited weld metal thickness range for each of the processes or procedures to be used in the production joint. For multiprocess or multiprocedure applications, the qualified thickness of each process or procedure shall not be additive in determining the maximum thickness of the production joint to be welded. One or more processes or procedures may be deleted from a production joint qualified by a combination of processes or procedures provided each remaining process or procedure has been, in the specific combination welding process or procedure qualification, qualified (within the thickness limits specified in QW-202.2, QW-403, and QW-451) for the deposited weld metal thickness range for each of the processes or procedures to be used in the production joint.

**QW-202.1 Mechanical Tests.** The type and number of test specimens that must be tested to qualify a welding procedure are given in QW-451, except that, where qualification is for fillet welds only, the requirements are given in QW-202.2 and, where qualification is for stud welds only, the requirements are given in QW-202.3. All mechanical tests shall meet the requirements prescribed in QW-150, QW-160, QW-170, or QW-180 as applicable.

**QW-202.2 Base Metals—Groove and Fillet Welds.** Except for vessels or parts of vessels constructed of P-11 (excluding P-11A Subgroup 1 and 2) metals, WPS qualification tests for groove and fillet welds may be made on groove welds using reduced-section tension specimens and guided-bend specimens. The groove-weld tests shall qualify the WPS for use with groove welds within the range of essential variables listed. Groove-weld tests shall also qualify for use with fillet welds in all thicknesses of metal, sizes of fillet welds, and diameters of pipe or tube, within the other remaining applicable essential variables. Where a WPS qualification of fillet welds only is required, tests shall be made in accordance with QW-180. The tests shall qualify the fillet WPS for use only with fillet welds in all thicknesses of metal, sizes of fillet welds, and diameters of pipe or tube, for use within the other remaining applicable essential variables.

For vessels, or parts of vessels, constructed of P-11 (excluding P-11A Subgroup 1 and 2) metals, WPS qualification tests for groove welds shall be made on groove welds, using reduced-section tension specimens and guided-bend specimens. The groove-weld tests shall qualify the WPS for use only with groove welds within the range of essential variables listed. WPS qualification tests for fillet welds shall be made in accordance with QW-180. The tests shall qualify the fillet WPS for use only with fillet welds in all thicknesses of metal, sizes of fillet welds, and diameters of pipe or tube, for use within the other remaining applicable essential variables.

Groove weld procedure qualifications shall encompass thickness ranges to be used in production, for both the base metals to be joined or repaired and the deposited weld metal to be used, except as allowed in (1) below for both the base metal and the deposited weld metal.

(1) For welding procedure qualifications made with the SMAW, SAW, GTAW, GMAW, or PAW welding processes, using weld layer(s) of 1/2 in. (13 mm) or less in thickness, there is no limit on the minimum depth of deposited weld metal for repair or

20615

built-up welds, not on the minimum thickness of the thinner of the base metals being joined where there are dissimilar thicknesses and groove weld procedure qualifications made in base metal having a thickness of 3/16 in. (1.5 mm) or more shall be applicable for production use for deposited weld metal thickness up to the maximum given in QW 451 for

(a) Repair or built-up welds in any thickness of base or weld metal with no limit on the minimum depth of deposited weld metal, and

(b) Welds joining dissimilar thicknesses of base metals in which the base metal on one side is equal to or less than the maximum thickness qualified in the

QW 475 Steel Welding Procedure qualification tests for ring welds shall be made in accordance with

QW 472. The procedure qualification tests shall qualify the welding procedure for use in joining of the essential variables of QW 451. If welded to other than P-No. 1 metals, five additional welds shall be made and subjected to a macro examination, except that this is not required for steel used for extended bearing surfaces.

# CROSS EXAMINATION

1 JUDGE BLOCH: What's the difference?

BRANDT

2 THE WITNESS: Section NF you can construct  
3 something to. Section NF of the code gives you design  
4 criteria, procurement criteria, installation criteria, and  
5 inspection criteria. Section 9 does not do that.

6 JUDGE BLOCH: Okay.

7 BY MR. ROISMAN:

8 Q I'm going to show you what appears to be the QA  
9 portion of the FSAR for Comanche Peak, and ask you if you  
10 could identify in it -- show us the chart that you were  
11 referring to that lists the stainless steel liner plates  
12 as "nonsafety." I don't think this is a trick question, I  
13 just want the witness to do that so we will have it pinned  
14 down.

15 MR. WATKINS: I do want to be sure this is the  
16 current FSAR.

17 MR. ROISMAN: Okay. I think that's fair.

18 MR. WATKINS: I would like to ask or ask the  
19 Chairman to ask whether the witness knows this is a  
20 current copy of the FSAR. It's not an exhibit in this  
21 phase of the proceeding.

22 JUDGE BLOCH: Can the witness verify for us  
23 whether or not this is a current copy of the FSAR?

24 THE WITNESS: No, I cannot.

25 MR. ROISMAN: Mr. Chairman, I assume it's



1 possible to tell because there are amendment dates that  
2 are on there. The witness could tell us at least through  
3 what date that's relevant. We are going through a whole  
4 period of time here so there would be some relevance in at  
5 least pinning that much down, even if we don't know that  
6 we have the 1984 version.

7 JUDGE BLOCH: Mr. Watkins, how can we get a  
8 stipulation as to having the current copy?

9 MR. WATKINS: I'm not objecting to questions  
10 based on this document. We would like the opportunity to  
11 review that we know to be the current FSAR, so long as  
12 it's understood that Mr. Brandt's answers are on the basis  
13 of what this document is and I would like the pages of  
14 this document on which he's questioned bound into the  
15 record.

16 JUDGE BLOCH: Any objection, Mr. Roisman?

17 MR. ROISMAN: I don't have any objection to  
18 having it bound in. I don't have an extra copy of it at  
19 this moment.

20 JUDGE BLOCH: We'll arrange to have it bound in  
21 as an exhibit with the understanding that Mr. Watkins will  
22 correct it if he finds it's not the current FSAR.

23 JUDGE GROSSMAN: Is it the current FSAR you want  
24 anyway here?

25 MR. ROISMAN: It is the current. We have been

1 led to believe that this is. I can't independently verify  
2 that.

3 JUDGE BLOCH: Judge Grossman's question was do  
4 you want the current one or the earlier one that might  
5 have been applicable when the liner plates were made?

6 MR. ROISMAN: We are interested in both. We  
7 want to know what it is now and what it was back then.

8 JUDGE BLOCH: The liner plates are still being  
9 made?

10 MR. ROISMAN: There's still some fabrication on  
11 them, is my understanding.

12 JUDGE GROSSMAN: I haven't seen that. Are there  
13 dates on each page there?

14 MR. ROISMAN: Yes. It tells you "amendment as  
15 of" and then it gives a date which presumably are the most  
16 current amendments. I believe the dates Mr. Brandt is  
17 looking at appear to be 1981 -- well, no, there's some '82.  
18 It just depends on when the amendment took place.

19 JUDGE GROSSMAN: My recollection is that the  
20 liner plates we are talking about, a lot of them were in  
21 1981, those travelers.

22 MR. ROISMAN: That's correct. Why don't we do  
23 this. I had thought it was a quicker process. When we  
24 take a break I'll take Mr. Brandt --

25 JUDGE BLOCH: We'll use that as a basis for

1 questions and then Mr. Watkins will correct it if it turns  
2 out to be wrong.

3 MR. ROISMAN: Mr. Brandt seems to be still  
4 looking and rather than have us all sit and look, he can  
5 do that at a break and I'll just move on to something else  
6 and he can do that later.

7 MR. WATKINS: I want to make sure he has enough  
8 time to review.

9 JUDGE BLOCH: How much time do you need to  
10 review that?

11 THE WITNESS: I don't know. The table is 50-something  
12 pages long.

13 MR. ROISMAN: He indicated earlier, I think in  
14 answer to a question about the appropriate table of the FSAR,  
15 that this stainless steel liner was listed as "non-safety,"  
16 and I'm asking him to identify where that is in there.

17 MR. WATKINS: To correct the testimony, that it  
18 was "non-ASME."

19 JUDGE BLOCH: Non-ASME.

20 MR. ROISMAN: I believe it was non-safety. I  
21 don't know what his current testimony is but --

22 THE WITNESS: What I intended was non-ASME. My  
23 prefiled testimony clearly states that it is  
24 safety-related, and it is considered safety-related by the  
25 designer.



1 JUDGE BLOCH: Why don't we accept Mr. Roisman's  
2 suggestion and hold the study of that document for the  
3 next break and we can prolong that break if Mr. Brandt  
4 needs it.

5 MR. ROISMAN: Okay.

6 JUDGE BLOCH: That would seem to be something  
7 that could be handled by stipulation of counsel, frankly.  
8 I mean, that table either says it or it doesn't.

9 MR. ROISMAN: I hope that's correct.

10 JUDGE BLOCH: I think we have shifted the burden  
11 to Mr. Watkins reading it during the break. It seems we  
12 can have a stipulation of counsel as to what that table  
13 says or doesn't say. It doesn't seem to me that we need  
14 testimony as to whether it is or is not ASME in the table.

15 MR. WATKINS: I'll have to consult with my  
16 expert during the break, your Honor.

17 JUDGE BLOCH: Okay.

18 BY MR. ROISMAN:

19 Q I would like to take a look at weld 62, 63, and  
20 64. If you have them there, I'll have them here and then  
21 we can talk about them.

22 JUDGE BLOCH: The witness is looking for the  
23 documents about that weld. This refers to the second set  
24 of testimony and second filing? This is for your further  
25 evidence submittal?