

NUCLEAR REGULATORY COMMISSION

ORIGINAL

ATOMIC SAFETY & LICENSING BOARD

In the Matter of: :

HOUSTON LIGHTING & POWER :
 COMPANY, ET AL. :

South Texas Nuclear Project : DOCKET NOS. 50-498 OL
 Units 1 and 2 : 50-499 OL

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UNITED STATES OF AMERICA

BEFORE THE
NUCLEAR REGULATORY COMMISSION

In the Matter of:)	
)	
HOUSTON LIGHTING & POWER)	Docket Nos. 50-498 OL
COMPANY, ET AL.)	50-499 OL
)	
South Texas Nuclear Project)	
Units 1 and 2)	

Green Auditorium
South Texas College of Law
1303 San Jacinto Street
Houston, Texas

Wednesday
July 22, 1981

PURSUANT TO ADJOURNMENT, the above-entitled
matter came on for further hearing at 9:00 a.m.

APPEARANCES:

Board Members:

CHARLES BECHHOEFER, ESQ., Chairman
Administrative Judge
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

ERNEST E. HILL, Nuclear Engineer
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25WITNESSES:DIRECT CROSS REDIRECT RECROSS BOARD
EXAM.Albert D. Fraley, Jr.
Gordon R. Purdy
Robert A. Carvel
A Panel
(Resuming)

By Mr. Sinkin	7297		
By Mr. Gutierrez	7404		
By Judge Lamb			7458
By Judge Bechhoefer			7468
By Mr. Hudson	7491		
By Mr. Sinkin			7502
By Mr. Gutierrez			7504

Eugene A. Saltarelli
Matthew D. Muscente
Gordon R. Purdy
Rodolfo Molleda
Logan D. Wilson
Michael D. Sullivan
Dr. Daniel Hauser
A Panel

By Mr. Gutterman	7507		
By Mr. Gay		7544	
By Mr. Sinkin		7566	

EXHIBITSNUMBER:FOR IDENTIFICATION IN EVIDENCE

CEU No. 30	7403	----
Applicants No. 7(a)	7537	7540

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P R O C E E D I N G S

1
2 JUDGE BECHHOEFER: Good morning, ladies and
3 gentlemen.

4 Before we resume cross-examination of this
5 panel, the Concrete Restart Panel, are there any preliminary
6 matters which any of the parties wish to raise?

7 MR. SINKIN: Mr. Chairman, I just want to
8 raise one brief matter.

9 We have now the CCANP Exhibits that were
10 stipulated to but had not been reproduced, and the NRC
11 Staff has reproduced them, and we will be distributing
12 those probably at the first break.

13 The parties should note that in those
14 documents what was to be CCANP 15 has already come in
15 as Staff Exhibit 92, so we will not be distributing that
16 one.

17 I am not sure how that works with the court
18 reporter, though.

19 COURT REPORTER: These are ones you haven't
20 given me at all?

21 MR. SINKIN: These are ones you have not
22 received at all.

23 COURT REPORTER: Why don't you give me a
24 copy and I will put it both places in the record.

25 MR. SINKIN: Okay. That's all we had.

-2 1 JUDGE BECHHOEFER: Mr. Newman, Mr. Reis, any
2 preliminary matters?

3 MR. NEWMAN: No, sir.

4 MR. REIS: No, sir.

5 JUDGE BECHHOEFER: Mr. Sinkin, you may
6 continue with cross-examination.

7 Whereupon,

8 ALBERT D. FRALEY, JR.
9 GORDON R. PURDY
10 ROBERT A. CARVEL

11 having been previously duly sworn, resumed the stand
12 and testified further as follows:

13 CROSS-EXAMINATION

14 BY MR. SINKIN:

15 Q Good morning, gentlemen. My name is Lanny
16 Sinkin. I am here representing Citizens Concerned about
17 Nuclear Power.

18 Mr. Fraley, we will start with you. On
19 Page 2 of your testimony you state that you are Assistant
20 Project Manager, Construction, for B&R at a NP.

21 Can you tell me how many Assistant Project
22 Managers there are?

23 BY WITNESS FRALEY:

24 A Yes, sir. There are four Assistant Project
25 Managers. Not in Construction, but there are four
Assistant Project Managers on site.

1 Q How many are in Construction?

2 BY WITNESS FRALEY:

3 A Two.

4 Q How many people do you supervise in your
5 work

6 BY WITNESS FRALEY:

7 A At the present, approximately a thousand.

8 Q Before you held this position as Assistant
9 Project Manager who held the position?

10 BY WITNESS FRALEY:

11 A Jerry --

12 Q Who was your immediate pedecessor?

13 BY WITNESS FRALEY:

14 A Jerry McEntire.

15 Q And are you based at the site?

16 BY WITNESS FRALEY:

17 A Yes, sir.

18 Q Could you tell me, you say there are four
19 Assistant Project Managers, two in Construction. Where
20 are the other two?

21 BY WITNESS FRALEY:

22 A There is an Administrative Assistant Project
23 Manager, and there is a Construction Engineer Assistant
24 Manager.

25 Q And is there any difference between the two

1 that are in Construction as to authorities, areas of
2 authority?

3 BY WITNESS FRALEY:

4 A I'm afraid you are going to have to clarify
5 that for me.

6 Q Okay. You said that there are four
7 Assistant Project Managers total. Two of them are in
8 Construction.

9 The two who are not in Construction are
10 Administration and Construction Engineering.

11 The two who are in Construction, is there a
12 difference between their authorities?

13 BY WITNESS FRALEY:

14 A In respect to what?

15 Q The fields they supervise. The personnel
16 they supervise? In other words, you are one of the two
17 in Construction. Does the other one have the same
18 responsibilities you have?

19 BY WITNESS FRALEY:

20 A I have responsibilities for Unit 1 and the
21 balance of the plant.

22 The other Assistant Manager has the
23 responsibilities for Unit 2, and support work.

24 Q On Page 2 you say that you are responsible
25 for managing the Construction Engineering Group. If there

1 is an Assistant Project Manager for Construction
2 Engineering, why are you also responsible for managing
3 Construction Engineering?

4 BY WITNESS FRALEY:

5 A We are broke down into an area of concept,
6 and in the area of concept each area has an Area Manager,
7 Area Chief Engineer, Area Control Engineer, and Area
8 Craft Superintendent.

9 Those people are staffed by these other
10 Assistant Project Managers sending in people to function
11 in those areas.

12 I am charged with the overall responsibility
13 of coordinating that effort in Unit 1 and BOP, balance of
14 plant.

15 Q Can you give me in some detail what your
16 responsibilities would be in managing the Construction
17 Engineering Group in your area?

18 BY WITNESS FRALEY:

19 A Daily operational activities.

20 Q Can we take it one step further? Just give
21 me an example from your day at the plant, something you
22 would do to interact with Construction Engineering.

23 BY WITNESS FRALEY:

24 A I would monitor to make sure that all things
25 are being -- all of our requirements are being fulfilled,

-6
1 that we do have adequate support from cost, from
2 administrative, from engineering.

3 Q What are your responsibilities in terms of
4 managing the cost of your area, what specifically do you
5 do in managing the cost?

6 BY WITNESS FRALEY:

7 A I monitor the cost. I am aware of unit
8 rates. I am aware of budget. I am aware of under-runs
9 and over-runs. And I am responsible for making, or
10 evaluating the situation, and making decisions on what
11 would make things better.

12 Q And what specifically are your responsibilities
13 in scheduling?

14 BY WITNESS FRALEY:

15 A Hands-on scheduling the way the constructor
16 needs to put the plant together.

17 Q That means you would be -- Let me strike
18 that.

19 If you had a particular construction item
20 that it was about to happen, you would work with that
21 construction crew on scheduling that item?

22 BY WITNESS FRALEY:

23 A I have the ultimate responsibility for that
24 schedule, yes.

25 Q What I was really getting at, you said

1 "Hands on." When I think of hands on, and the way I
2 think it appears in the testimony here is, you are
3 actually out there in the field with your hands on it.

4 Do you go to that extent of going out with
5 the crew to the particular construction item, and say
6 "Here is the schedule on which we are going to build
7 it"?

8 BY WITNESS FRALEY:

9 A Yes, sir, in some cases.

10 Q And what specifically are your responsibilities
11 in the area of planning?

12 BY WITNESS FRALEY:

13 A You will have to give me a definition of
14 "planning."

15 Q Well, I will take whatever definition you
16 had in mind when you put it in your testimony on Page 2.

17 BY WITNESS FRALEY:

18 A Okay. That was referring to scheduling and
19 planning the activities, correlating and meshing properly
20 together the different disciplines that it takes to put
21 a particular part of the plant together.

22 Q Then you have "all other construction
23 activities." What else would there be besides the
24 Construction Engineering Group, the Cost Scheduling,
25

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1 Planning, what are the other?

2 BY WITNESS FRALEY:

3 A. Craftsmen.

4 Q And you say you report to the Brown & Root
5 Construction Manager.

6 BY WITNESS FRALEY:

7 A. Yes, sir.

8 Q Who is that?

9 BY WITNESS FRALEY:

10 A. Gerald Martin.

11 Q Excuse me?

12 BY WITNESS FRALEY:

13 A. Gerald Martin.

14 Q Martin.

15 Is that the position previously held by
16 Mr. Salvetti?

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1 BY WITNESS FRALEY:

2 A No, sir.

3 Q What was the position he held?

4 BY WITNESS FRALEY:

5 A Mr. Salvetti was Assistant Project Manager.

6 Q So that would be comparable to your position
7 now?

8 BY WITNESS FRALEY:

9 A Yes, sir.

10 Q Was it directly comparable in the sense of
11 being one of the two in Construction, or was he in
12 Administration or Construction Engineering?

13 BY WITNESS FRALEY:

14 A You are referring to Mr. Salvetti?

15 Q Yes.

16 BY WITNESS FRALEY:

17 A At the time he was in charge -- At the
18 time that he was Assistant Project Manager he was in
19 charge of Construction.

20 Q Mr. Purdy, when did you join Brown & Root?

21 BY WITNESS PURDY:

22 A I joined Brown & Root in April of 1979.

23 Q On Page 5 of your testimony you state that
24 you spent 18 years. I believe it was corrected on Page
25 36 to say you spent 19 years working in the Nuclear Power

1 Industry, 18 of which were spent in the Navy Nuclear
2 Program.

3 BY WITNESS PURDY:

4 A Yes, sir.

5 Q Is that the correct, 18 in Navy Nuclear, and
6 one other year?

7 BY WITNESS PURDY:

8 A (Nods head.)

9 Q What is the largest nuclear power plant you
10 worked on in the Navy Nuclear Program, in terms of --

11 BY WITNESS PURDY:

12 A The Atomic Power Station.

13 Q Excuse me?

14 BY WITNESS PURDY:

15 A Shipping Port Atomic Power Station.

16 Q How many megawatts was that?

17 BY WITNESS PURDY:

18 A At the time it was 175 megawatts. Obviously,
19 not the size of today's plants, since it was the first
20 one commercially to put out power.

21 I have worked on larger naval plants at the
22 AlW prototype in Idaho, where I had some interface, but
23 commercially Shipping Port.

24 Q You worked at the Idaho prototype?

25

1 BY WITNESS PURDY:

2 A Yes.

3 Q How big a plant is that?

4 BY WITNESS PURDY:

5 A Those were all compared to the commercial
6 power plants relatively small. We were talking about a
7 lesser degree of power which I don't feel that I can tell
8 you what my power plants were at the time.

9 Q In terms of Shipping Port what were your
10 responsibilities?

11 BY WITNESS PURDY:

12 A I was alerted to Washington in the early
13 part of 1967, where I underwent some rather extensive
14 interviews and examinations on naval reactors by
15 Admiral Richoffer.

16 I subsequently received assignment to the
17 Shipping Port Atomic Power Station as a representative
18 of the Shipping Port Branch Office of the US AEC.

19 Primary responsibility at that time was to
20 qualify as an AEC Duty Representative to oversee the
21 operation and maintenance by the public utility that was
22 running the plant.

23 Also held the position of Assistant Manager
24 for Maintenance Refueling and Modification at Shipping
25 Port, responsible through the branch office back to the

1 naval reactors for the technical aspects of plant
2 operation, plant maintenance refueling activities, inter-
3 facing directly with Bettis, a public power laboratory,
4 and the public utility.

5 Q Those 18 years were you a civilian, or were
6 you in service?

7 BY WITNESS PURDY:

8 A I was in the Navy.

9 Q You were in the Navy the whole 18 years?

10 BY WITNESS PURDY:

11 A Yes.

12 Q Can you give me something of your educational
13 background, whether prior to entering the Navy or in the
14 Navy?

15 BY WITNESS PURDY:

16 A Which one, prior to or --

17 Q Let's do both, one at a time.

18 BY WITNESS PURDY:

19 A After leaving high school, I attended college
20 for about one semester. Not having been committed to
21 quality considerations at the time, cost and schedule
22 became a consideration, so I left.

23 I joined the Navy in February of '59, and
24 for approximately two years attended various naval
25 technical schools having to do with submarines, heavy

1 engines, and served in the Pacific fleet on a submarine.

2 In 1960, the latter part of 1960, I was
3 ordered to the basic Nuclear Power School of Mare Island
4 Naval Shipyard, and at the time -- I say "at the time"
5 because I am really not sure what it consists of any
6 longer -- at the time that particular course consisted
7 of an extensive six-month course in advanced mathematics,
8 physics, thermodynamics, metallurgy, reactor principals,
9 electronics, inorganic chemistry.

10 Q Excuse me. All of that in six months?

11 BY WITNESS PURDY:

12 A Yes. It was great.

13 After that particular training program I was
14 assigned to operational training at Naval Reactor
15 Facilities, Idaho Falls, Idaho, where the primary task
16 was the operational and practical aspects of Nuclear
17 Power Plant Operation and Maintenance.

18 That particular period, again, a four-to-six
19 month period consisted of functional theory training and
20 training in the actual operation and maintenance of a
21 Nuclear Power Plant. That, of course, was accompanied
22 by the appropriate examinations, testing and
23 qualifications at the time.

24 On completion of that program I was assigned
25 to the second class of Nuclear Training Engineering

1 Laboratory Technicians that the Navy used to monitor
2 and establish health physics, boiler chemistry, and radio
3 chemistry on board nuclear submarines, shore installations.
4 That consisted of a rather extensive two to three months
5 theoretical course in health physics, again basic inorganic
6 boiler water chemistry and radio chemistry for nuclear
7 power plant applications.

8 Followed by what in essence would be
9 laboratory courses for the qualification of the activity.

10 After that there were various naval courses
11 that were primarily technically oriented. Courses dealing
12 with actual operation or maintenance of reactor plant
13 components, heavy components, support systems, and those
14 were attended throughout the majority of my Navy career
15 on a case-by-case basis.

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1 Q And the one year that you spent with Bechtel,
2 was that in the nuclear field?

3 BY WITNESS PURDY:

4 A Yes. I was mechanical quality control
5 engineer responsible for performing the direct
6 inspection of mechanical and piping systems installations
7 in Unit 1 reactor -- or Unit 2, pardon me, reactor
8 containment building.

9 Q When you use the term "19" in stating the
10 number of years you've been in the nuclear power
11 industry, is that the 18 in the Navy and one year at
12 Bechtel?

13 BY WITNESS PURDY:

14 A Yes, sir.

15 Q Well, if you will help me out, I seem to
16 be missing a couple of years.

17 February of '59 was when you entered the
18 Navy, and April of '79 was when you joined Brown & Root.

19 So there's a 20-year period. I'm missing
20 one year. Can you fill in that blank?

21 Maybe it's just the overlap between the
22 Navy and Bechtel.

23 BY WITNESS PURDY:

24 A October -- I actually entered the nuclear
25 industry in October of 1960.

2-2

1 Q I see.

2 BY WITNESS PURDY:

3 A And from that point on was from when I was
4 doing my calculating.

5 Q You were in the Navy from February '59 to
6 October '60, but not in nuclear?

7 BY WITNESS PURDY:

8 A From February --

9 Q '59.

10 BY WITNESS PURDY:

11 A Yes, that's correct. Yes.

12 Q Thank you.

13 Mr. Carvel, is that the correct
14 pronunciation?

15 BY WITNESS CARVEL:

16 A Right.

17 Q You state that you joined Brown & Root in
18 June of 1980 after seven years with Stone & Webster.

19 BY WITNESS CARVEL:

20 A I joined Houston Lighting & Power.

21 Q I'm sorry. Houston Lighting & Power.

22 I was struck by both the date and the place
23 from which you came.

24 Were you recruited by Jerry Goldberg?

25

//

2-3
1 BY WITNESS CARVEL:

2 A No, I was not. I joined the company prior
3 to Mr. Goldberg joining, but I didn't recruit
4 Mr. Goldberg.

5 Q You recruited Mr. Goldberg?

6 BY WITNESS CARVEL:

7 A No, I said I did not.

8 Q You did not recruit Mr. Goldberg. Okay.

9 In your testimony on page 6 you say that
10 for the last year before joining HL&P you were a
11 supervisor at the River Bend Nuclear Powerplant.

12 What was the status of the River Bend
13 Nuclear Powerplant during that year?

14 BY WITNESS CARVEL:

15 A Essentially, we started the concrete
16 program and completed the reactor containment building
17 mat, progressed with foundations primarily of most of
18 the safety-related structures in the plant, concrete-wise.

19 Extensive structural backfill work, as well.

20 Q What prompted you to move from the River Bend
21 plant over to STNP?

22 BY WITNESS CARVEL:

23 A I saw an opportunity to progress and,
24 quite frankly, the money was considerably better.

25 Q Mr. Fraley, in going through your experience

2-4 1 that's detailed beginning on page 3 of your testimony,
2 I have a series of questions I'd like to ask.

3 You joined Brown & Root in 1962 and you've
4 been with them ever since; is that correct?

5 BY WITNESS FRALEY:

6 A March of '62.

7 Q March of '62.

8 How old were you at that time?

9 BY WITNESS FRALEY:

10 A Nineteen.

11 Q Nineteen?

12 BY WITNESS FRALEY:

13 A Nineteen or eighteen, I'd have to count it
14 back up; eighteen or nineteen.

15 Q Eighteen or nineteen, okay.

16 Going through the various jobs that you've
17 held, how long did you work at the International
18 Paper Company in Evadale, Texas?

19 BY WITNESS FRALEY:

20 A Sir, I will attempt to answer these
21 questions, but that's been a long time.

22 I would say somewhere around six or seven
23 months.

24 Q And the U.S.I. Chemicals plant in Deer
25 Park, Texas?

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1 BY WITNESS FRALEY:

2 A That was a shut-down job, and I think I
3 was there about three-and-a-half or four months.

4 Q By a shut-down job, do you mean the plant
5 was being closed?

6 BY WITNESS FRALEY:

7 A There was an explosion in the plant. We
8 were sent in there to rebuild that area, and that
9 particular part of the plant was shut down.

10 It was a 24-hour-a-day, hook-'em-up until
11 you get it back on line.

12 Q And the McPherson fossil powerplant?

13 BY WITNESS FRALEY:

14 A I beg your pardon?

15 Q The McPherson fossil powerplant in
16 McPherson, Kansas?

17 BY WITNESS FRALEY:

18 A I stayed about 13 months at McPherson.
19 That was about 150-megawatt oil-fired....

20 Q You state that in 1964 -- I wanted to
21 doublecheck with you. You made a correction to the
22 testimony.

23 Did that read, "Starting in 1964, I became
24 a carpenter, reinforcing worker, and foreman"?

25 //

2-6

1 BY WITNESS FRALEY:

2 A Yes.

3 Q "...for four projects"?

4 BY WITNESS FRALEY:

5 A Yes.

6 Q Was any of the work on those four projects
7 being done at the same time, or are these four
8 consecutive projects?

9 BY WITNESS FRALEY:

10 A Those were four consecutive projects.

11 Q Do you remember what month in 1964 you
12 moved to the Giddings Power Station?

13 BY WITNESS FRALEY:

14 A No, sir, I do not.

15 Q Do you know how long you worked at Giddings?

16 BY WITNESS FRALEY:

17 A I would say somewhere around 16 to 17 months.

18 Q And how about at Pan American Petroleum in
19 Edgewood?

20 BY WITNESS FRALEY:

21 A Around eight or nine.

22 Q And Premier Fertilizers in Pasadena?

23 BY WITNESS FRALEY:

24 A Yes, sir.

25 Q How long there?

2-7 1 BY WITNESS FRALEY:

2 A I'd say around 11 to 12, maybe 13 months.

3 Q And Elmendorf in San Antonio?

4 BY WITNESS FRALEY:

5 A Eighteen months.

6 Q Let me just get straight, I note that you
7 say that at Giddings and Elmendorf you were a rodbuster and
8 worked in concrete placement.

9 Rodbuster and reinforcing ironworker, are
10 those the same thing?

11 BY WITNESS FRALEY:

12 A Yes, sir.

13 Q So then among those four projects, on which
14 one were you a carpenter?

15 BY WITNESS FRALEY:

16 A Those projects, the reason why I listed
17 them the way I did, and the corrections that I wanted
18 to make in the statement after I read it, it was a
19 combination of all those things.

20 These were smaller projects and the nature
21 of a small project is that you utilize the talent where
22 needed when needed.

23 At Bastrop, for instance, the Giddings
24 powerplant at Bastrop, I was hired on as a carpenter and
25 worked as a carpenter/rodbuster combination there for

2-8

1 eight months and then was set up to a foreman, and I
2 finished that project, finished the civil work on that
3 project.

4 Q I see. So on that project you were all
5 three?

6 BY WITNESS FRALEY:

7 A Yes, sir. Placing concrete, also.

8 Q Okay. Then you state that you moved in
9 1965 to the Nekgosa-Edwards Paper Company paper mill
10 in Ashdown, Kansas (sic).

11 Do you remember what month in 1965 you
12 made that move?

13 BY WITNESS FRALEY:

14 A That was Nekgosa-Edwards Paper Mill in
15 Arkansas; is that right?

16 Q If that's how you pronounce that, yes.

17 BY WITNESS FRALEY:

18 A In Arkansas?

19 Q Right.

20 BY WITNESS FRALEY:

21 A No, sir, I do not remember the month.

22 Q Do you remember how long you worked at that
23 job in Arkansas?

24 BY WITNESS FRALEY:

25 A I would say somewhere around 14 to 15, maybe

2-9

1 16 months.

2 Q And then you were put in charge of various
3 work at the Gulf States Utilities Company's Willis
4 plant in Willis, Texas?

5 BY WITNESS FRALEY:

6 A Yes, sir.

7 Q And can you tell me how long you worked at
8 that job?

9 BY WITNESS FRALEY:

10 A Yes, sir. I worked there approximately
11 a year, 13 months.

12 Q Then in 1967 you went to the Boise Southern
13 Paper Mill in De Ridder, Louisiana?

14 BY WITNESS FRALEY:

15 A Yes, sir.

16 Q How big was that paper mill?

17 BY WITNESS FRALEY:

18 A In terms of what?

19 Q If you can give me some measurement of
20 the size? I think of De Ridder, Louisiana, as a very
21 small town.

22 I'm trying to think how big a paper mill is
23 sitting in De Ridder, Louisiana.

24 BY WITNESS FRALEY:

25 A It had 190,000 yards of concrete on it.

2-10 1 The duration of the job was about from -- It
2 was a grass roots job, from start to finish; it was
3 about 30 months.

4 Q And how long were you there?

5 BY WITNESS FRALEY:

6 A I was there from '67 to early part of '70,
7 three years, two-and-a-half years.

8 I was there to start it and to finish it.

9 Q I note in talking about the De Ridder plant
10 that you say you were in charge of all civil construction
11 activities, including all architectural work.

12 What were your responsibilities in charge
13 of all architectural work? Did you do drawings?

14 BY WITNESS FRALEY:

15 A I beg your pardon?

16 Q Did you do any of the drawings?

17 BY WITNESS FRALEY:

18 A No, sir. Architectural work is commercial
19 type work, doors, windows, glasses, block work, any
20 kind of commercial type work.

21 Q I see. On page 5 you made a change in the
22 testimony, a correction, and I just wanted to be sure I
23 got it in the right place, because the same term appears
24 within two lines.

25 At line 23, when you are discussing the

2-11

1 South Texas Project, it says, "being directly in charge
2 of all civil construction," in your original testimony.

3 Is that the "civil" you changed to
4 "building"?

5 BY WITNESS FRALEY:

6 A Yes.

7 Q So then at line 19 where you are talking
8 about Brunswick and being "in charge of all civil
9 construction," that stays as "civil"?

10 BY WITNESS FRALEY:

11 A Yes, sir.

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3-1
1 Now, I wanted to go over a little bit of
2 this terminology in this particular section of the
3 Brunswick/STP section.

4 Was the job of building superintendent at
5 Brunswick the same as the job of building superintendent
6 at STP?

7 BY WITNESS FRALEY:

8 A. After we got into the full program at the
9 South Texas Project in '75, the answer to that question
10 would be no.

11 But in starting the plant and getting
12 things moving, the answer to that question would be yes.

13 I can explain that. At Brunswick, as a
14 building superintendent, I was in charge of the civil
15 work, all the civil work in those areas.

16 At the South Texas Project, as the building
17 superintendent, which I was the first superintendent on
18 the project at South Texas, crafts superintendent, the
19 building superintendent was in charge of all construction
20 at the beginning, and that's due to the fact that we
21 started with about one, two, three, four hands and
22 worked on up until we got to a peak of 4,600.

23 But the building superintendent, my
24 responsibility at South Texas Project was total civil
25 until such a time -- which is natural -- until such a

3-2

1 time that the job required additional craft super-
2 intende s, for instance rebar superintendent and
3 carpenter superintendent and concrete superintendent,
4 and et cetera, at which time my job shifted over to
5 simply a building superintendent in charge of all form
6 work on the South Texas Project.

7 Q Let me be sure I understand. In 1974 you
8 were building superintendent at Brunswick and you were
9 in charge of all civil construction on the project.

10 What was the status of the Brunswick Project
11 in 1974?

12 BY WITNESS FRALEY:

13 A We were -- when I -- at this time in '74
14 we were about to load fuel in Unit 1 and well under way,
15 probably 75 percent complete with Unit 2.

16 And my job there was architectural, anything
17 civil, period.

18 Q Any civil, whether it was buildings or yards
19 or roads or --

20 BY WITNESS FRALEY:

21 A Didn't matter.

22 Q -- it didn't matter? Any civil.

23 Moving along in that same paragraph, in
24 1980 you were promoted to project general superintendent
25 at South Texas.

3-3
1 Is project general superintendent the same
2 as the 1974 building superintendent at Brunswick, in
3 the sense of being in charge of all civil?

4 BY WITNESS FRALEY:

5 A No, sir.

6 Q No. Can you explain to me the difference?
7 Because in your testimony you do say that in 1980 you
8 were in charge of all construction on the site as
9 project general superintendent.

10 What is the difference between that and the
11 position at Brunswick?

12 BY WITNESS FRALEY:

13 A The position at Brunswick is a building
14 superintendent in charge of all civil activities, period.

15 The 1980 position that you're referring to
16 as the project general superintendent is in charge of
17 all construction, mechanical, electrical, civil, welding,
18 whatever, whatever it takes to put the plant together.

19 Q I see. Things beyond civil?

20 BY WITNESS FRALEY:

21 A Yes, sir.

22 Q When you were in charge of all civil
23 construction at Brunswick, did that include the same
24 kind of areas as you now are involved with, for example,
25 construction engineering, cost, scheduling, planning?

3-4

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1 BY WITNESS FRALEY:

2 A Yes, sir.

3 Q To the best of your recollection, did
4 Brown & Root experience problems in the quality of
5 construction at Brunswick?

6 BY WITNESS FRALEY:

7 A We experienced problems that are by nature
8 to every plant that I've worked in.

9 Q Nothing unusual or out of the ordinary in
10 terms of quality problems?

11 BY WITNESS FRALEY:

12 A No, sir.

13 Q Do you have any formal training in engineering?

14 BY WITNESS FRALEY:

15 A No, sir.

16 Q Any formal training in accounting?

17 BY WITNESS FRALEY:

18 A No, sir.

19 Q Any formal training in the scheduling and
20 planning of large projects?

21 BY WITNESS FRALEY:

22 A Twenty-three years of experience.

23 Q You have experience. I understand that.
24 I'm talking more of formal educational preparation.

25 / / /

3-5
1 BY WITNESS FRALEY:

2 A. Have I been to school to learn how to
3 schedule projects? No.

4 Q. Moving to your experiences at the South
5 Texas Project, as building superintendent, you assumed
6 that position in September of '75, is that correct?

7 BY WITNESS FRALEY:

8 A. On the South Texas Project?

9 Q. On the South Texas Project.

10 BY WITNESS FRALEY:

11 A. Yes.

12 Q. And you were in charge of the construction
13 of all buildings at that time?

14 BY WITNESS FRALEY:

15 A. I was in charge of civil work on the project,
16 which amounted to all temporary facilities at that time.

17 And when we moved into the construction of
18 the project, we went in and broke out to where we had
19 craft superintendents, and we actually broke my depart-
20 ment into a concrete superintendent, carpenter super-
21 intendent, labor superintendent, paint superintendent,
22 and so on, rebar superintendent.

23 We expanded as the job expanded, which is
24 normal.

25 Q. As building superintendent in 1978, were you

1 in charge of construction of the secondary shield wall
2 in Ractor Containment Building No. 1?

3 BY WITNESS FRALEY:

4 A Yes. 1978, I was the assistant general
5 superintendent at that time. That particular advance-
6 ment is not noted here.

7 Q When did that take place?

8 BY WITNESS FRALEY:

9 A That took place, oh, I'd say the early part
10 of '78, but I'd have to go back and look at that.

11 I can tell you what the responsibilities was.

12 Q Yes; please.

13 BY WITNESS FRALEY:

14 A That's an area here that is not shown.

15 That job was that we keyed in on the
16 containment buildings and that I was assigned to the
17 containment buildings, in charge of all work and rebar.

18 Q Form work and rebar were then your special
19 area of concern as assistant general superintendent?

20 BY WITNESS FRALEY:

21 A Yes, sir. I was assigned a hundred percent
22 to the containment buildings.

23 Q And did you remain in that position then
24 from ealy 1978 until being promoted in 1979 to area
25 manager?

1 BY WITNESS FRALEY:

2 A Yes, sir.

3 Q During the construction of the secondary
4 shield wall in Reactor Containment Building No. 1, was
5 there an occasion when Brown & Root QC ordered the
6 removal of 360 degrees of a form that had already been
7 built for that wall?

8 BY WITNESS FRALEY:

9 A Yes, sir.

10 Q Was an NCR written on that particular event?
11 I guess at that time it may have been an FDDR, I'm not
12 sure.

13 BY WITNESS FRALEY:

14 A It was identified. There was the proper
15 paperwork at that time.

16 Q Do you remember the elevation of that form?

17 BY WITNESS FRALEY:

18 A I'd like to ask one question. Did you give
19 a date on -- did you call out a date in your question
20 there?

21 Q I did not specify a date other than 1978.

22 Let me clarify one thing with you, then.

23 Was there more than one occasion when Brown & Root QC
24 ordered the removal of 360 degrees of a form that was
25 already in place?

B-8
1 BY WITNESS FRALEY:

2 A No.

3 Q Okay. Well, that is the one occasion I'm
4 talking about.

5 BY WITNESS FRALEY:

6 A All right. What was your last question?

7 Q Do you know the elevation that that took
8 place on? Do you know the date?

9 BY WITNESS FRALEY:

10 A No, I do not.

11 Q You do not. Okay. Do you know the
12 elevation?

13 BY WITNESS FRALEY:

14 A Right off the top of my head, no, I don't
15 remember the exact location, but I'm aware of what
16 you're talking about.

17 Q Okay. I happen to have two documents that
18 I'd like to show you to refresh your memory.

19 One is a punchlist from June 22nd of '78
20 on the secondary shield wall, and one is a punchlist
21 from July 6th of '78, and I'd like you to just look at
22 those and tell me if that helps you decide where the
23 elevation was.

24 JUDGE BECHHOEFER: What documents are these?
25 Are you going to introduce them?

B-9

1 MR. SINKIN: I'm giving him the documents
2 to refresh his memory as to the elevation.

3 BY MR. SINKIN:

4 Q Mr. Fraley, did that assist in identifying
5 the elevation?

6 BY WITNESS FRALEY:

7 A It showed me what elevation the punchlist
8 was on, but as far as being able to particularly say
9 that it was that elevation, I can't say that.

10 I can say this. I know that it was above
11 19 elevation. That is the main -- one of the main
12 slabs in the reactor building, and I know that it was
13 above 19. I'm not for sure if it was the first or the
14 second lift above 19, which would be somewhere between
15 19 and 29 or 29 and 39.

16 In the documents you looked at, I noticed
17 that one of the punchlists was June 22nd and one of
18 them was July 6th.

19 Would there have been time between June 22nd
20 and July 6th to have torn out one form and replaced it
21 and gone on to the next level?

22 BY WITNESS FRALEY:

23 A No.

24 MR. HUDSON: Your Honor, we'd like to object
25 to this line of questioning and ask where it's going.

3-10
1 We've chased down a lot of Mr. Fraley's history, and
2 he's here to talk about the concrete restart program,
3 and through 20 or 30 minutes of testimony there has not
4 been a single question about that.

5 We'd like to know how this is relevant to
6 the proceeding.

7 MR. GUTIERREZ: The Staff has similar
8 concerns, but maybe Mr. Sinkin can show us where he's
9 going, tying that to restart or something else, we might
10 find or feel that it's a little material to this panel.

11 MR. SINKIN: I would point out, first of all,
12 Mr. Chairman, that Mr. Gay, in his cross-examination
13 yesterday, did absolutely nothing on the background of
14 this panel and that task has fallen to me, and that the
15 lines of questioning that I'm going to now deal with
16 the qualifications of at least one of the panel members
17 and may deal with the credibility of one of the panel
18 members, and we're talking about, in the instance, a
19 a construction project at the South Texas Nuclear Project
20 which he was in charge of, and I'm getting a little
21 history on what happened in that particular event.

22 MR. HUDSON: I have yet to see any connection
23 between that event and this panel's testimony or any
24 issues in the hearing. I don't see any connection
25 between that event and Mr. Fraley's credibility.

3-11
1 Mr. Fraley acknowledged the incident that
2 he's talking about. I don't see that the details of
3 that incident are going to be relevant to his
4 credibility.

5 MR. SINKIN: Well, it's a little difficult
6 to answer that argument without the questions being
7 asked and the answers being given.

8 JUDGE BECHHOEFER: Is there objection to a
9 particular -- what was the particular question? Would
10 you repeat that?

11 MR. SINKIN: Well, actually, the question
12 was answered.

13 JUDGE BECHHOEFER: Yes. Didn't you ask a
14 further question?

15 MR. SINKIN: I hadn't asked a further
16 question at that point. I think the objection was
17 more to the general line of questioning than to a
18 specific question.

19 (Board conference.)

20 JUDGE BECHHOEFER: Well, so far I think you
21 haven't demonstrated how this is going to relate to the
22 subject of this testimony, which is the concrete
23 restart program.

24 MR. SINKIN: Well, Mr. Fraley is the chairman
25 of the concrete restart committee. I think any of his

1 history, particularly his history at the South Texas
2 Nuclear Project dealing, with his technical competence
3 or his credibility, is relevant to assessing his
4 qualifications and what we can expect as chairman of
5 that committee.

6 MR. NEWMAN: Mr. Chairman, I think if there
7 has been an inquiry of that type thus far, it's gone
8 way beyond what is necessary to establish any matter
9 concerning the witness' credibility.

10 I think we're now in the area of cumulative
11 and repetitive testimony, and I think that this is the
12 time to turn it off and get on to any questions. This
13 cross-examination has been going on for the better part
14 of an hour. It's time to get on to questions that
15 relate to the subject matter of the testimony.

16 MR. SINKIN: Mr. Chairman, if we're not to
17 be allowed to explore --

18 (Board conference.)

19 JUDGE BECHHOEFER: The Board thinks that if
20 you're trying to show the competence of Mr. Fraley, ask
21 questions directly. You're taking much too much time
22 in terms of the background and so forth.

23 MR. SINKIN: Okay.

24 JUDGE BECHHOEFER: Try to get it into the
25 record, but it is running much too long; or otherwise

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1 go on to something else.

2 BY MR. SINKIN:

3 Q Mr. Fraley, who were the Brown & Root
4 inspectors who found the deficiencies in that particular
5 form?

6 MR. NEWMAN: I'm going to object to that
7 question, Mr. Chairman. I believe that that is just
8 typically the kind of question which the Board has
9 expressed a concern about.

10 Detailed matters like that can't possibly
11 have any bearing on the over-all competence of this
12 gentleman to prepare testimony on the subject that he's
13 here to talk about.

14 MR. SINKIN: Mr. Chairman, I want to make
15 a couple of points clear about this line of questioning.

16 First of all, there are six more questions
17 and then I'm through with background completely.

18 Secondly, already in evidence in these
19 proceedings is the testimony of Mr. George Oprea before
20 the Public Utility Commission as to what the major
21 problems were that occurred at the South Texas Nuclear
22 Project and delayed that project. This is one of them,
23 that he testified to.

24 Thirdly, we're dealing with a question of
25 technical competence.

B-14
1 And fourthly, we're dealing with potentially
2 a question of intimidation and harassment.

3 I have six more questions to ask and I'd
4 like to ask them without any further objections.

5 MR. HUDSON: Your Honor, I don't believe
6 that Mr. Oprea testified about this matter at all, and
7 if it's a question of harassment or intimidation, that's
8 the subject matter of a panel two panels from now. It
9 has nothing to do with the concrete restart program.

10 It seems to me that counsel has admitted
11 that his further six questions are not relevant to the
12 concrete restart program at all.

13 MR. SINKIN: I haven't said anything of the
14 sort.

15 MR. GUTIERREZ: If the questions are relevant
16 to Mr. Fraley's competence or credibility, maybe they
17 should be asked, but the Staff is sensitive to what the
18 Applicant is saying. We have sat here an hour and there
19 hasn't been any showing that Mr. Fraley is not a
20 credible witness.

21 I would only echo the Board's suggestion,
22 so if Mr. Sinkin does have issues going to Mr. Fraley's
23 credibility, then they should be addressed to him
24 directly.

25 JUDGE BECHHOEFER: All right. The six

3-15 1 questions relating to the concrete restart program --

2 MR. SINKIN: This line of questioning is
3 related to the qualifications and credibility of
4 Mr. Fraley.

5 At the end of this line of questioning
6 we will go right into the substance of the testimony.

7 JUDGE BECHHOEFER: All right, because the
8 last one, I see no relationship to either credibility --

9 MR. SINKIN: Unfortunately, Mr. Chairman,
10 we're not being permitted to get to the point where the
11 relevancy would be shown as to who these inspectors were,
12 what happened in this event, and what happened
13 subsequently. I'm laying a foundation, if you will,
14 so that it will all be in a context.

15 I could go to the last question and ask it
16 and it wouldn't make a whole lot of sense.

17 JUDGE BECHHOEFER: I think for the particular
18 question, we'll sustain the objection.

19 Will you try to ask the question which you
20 can tie it up with, and then if you have to fill in some
21 details, that perhaps will be all right, but let's see
22 where we're going first.

23 BY MR. SINKIN:

24 Q Mr. Fraley, who in the Brown & Root quality
25 control organization made the decision that the form

B-16
✓
1 should be removed?

2 (No response.)

3 Q Let me just be direct. Was that Mr. Daniel
4 Swayze?

5 BY WITNESS FRALEY:

6 A In all honesty, I can't say that he himself
7 made the decision. He was involved in it.

8 I think Roger Forte was also involved in it,
9 but I can't say that that decision was made, you know,
10 which one of those people made the direct, or gave the
11 directive.

12 Q Was it Mr. Swayze's position that the form
13 should be removed?

14 BY WITNESS FRALEY:

15 A Yes.

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1 Q After the forms were removed, did you
2 discuss with Mr. Jim Salvetti the idea of getting
3 rid of Mr. Daniel Swayze because he caused too many
4 problems?

5 MR. NEWMAN: Mr. Chairman, I'm going to
6 object to that question, again because it has
7 absolutely no relation to the subject matter of this
8 testimony.

9 There will be a time and a place to ask
10 questions about this.

11 Intervenors, if they wanted to pursue
12 matters like this, should have called witnesses.

13 This is an attempt to put on a direct case
14 through the mouth of a witness who is not even here
15 testifying on that subject.

16 It's objectionable, and I might say that
17 whether there are six questions or sixteen questions,
18 the problem is that we are getting a record that is
19 terribly cluttered with irrelevancies, and it will be
20 difficult to follow and write findings and conclusions
21 on.

22 I think that should be a matter of concern
23 to every person here, including especially the Board.

24 (Bench conference.)

25 JUDGE BECHHOEFER: I think we will sustain

4-2 1 the objection on this line. It has nothing to do
2 with the subject of this panel.

3 BY MR. SINKIN:

4 Q Turning to the testimony on the concrete
5 restart program, you have picked it up at a certain point
6 in time, and I want to be sure I understand exactly
7 where it was coming from at that point in time.

8 There was a stop-work order on concrete in
9 mid-1979, was there not?

10 BY WITNESS FRALEY:

11 A Yes.

12 Q Do you remember the date of that order?

13 BY WITNESS FRALEY:

14 A No, sir.

15 Q I'm going to show you a letter just to
16 refresh your memory.

17 (Document handed to witness.)

18 MR. HUDSON: Could we have the document
19 identified for the record that is being used to
20 refresh the witness' memory?

21 MR. SINKIN: Yes. The document is a letter
22 dated June 22nd, 1979, from Mr. Karl Seyfrit of Region IV,
23 Nuclear Regulatory Commission, to Mr. E. A. Turner of
24 Houston Lighting & Power.

25 JUDGE BECHHOEFER: Is that an exhibit?

4-3

1 MR. SINKIN: To the best of my knowledge,
2 Your Honor, this is not an exhibit at this time.

3 I was trying to review that last night and,
4 unfortunately, did not have a complete set of exhibits
5 to compare it to.

6 I did check with the NRC Staff today and
7 they did not think it was an exhibit, from their list.

8 JUDGE BECHHOEFER: Okay.

9 BY MR. SINKIN:

10 Q Having seen that document, Mr. Fraley,
11 does that refresh your memory as to when the stop-work
12 order was issued in 1979?

13 BY WITNESS FRALEY:

14 A It tells me that it was done in '79, June
15 of '79, but as far as being able to relate that that
16 is a fact today, I can't do that.

17 Q Okay. Between that stop-work order on
18 concrete and the December 1979 resumption of non-
19 complex concrete, was there ever a resumption of
20 complex concrete or non-complex concrete in that
21 interim period?

22 BY WITNESS FRALEY:

23 A No, sir.

24 Q After the resumption of the non-complex
25 safety-related pours in December 1979, have there been

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1 problems with those pours similar to problems
2 experienced in the past, such as forms shifting, rock
3 pockets, voids?

4 BY WITNESS FRALEY:

5 A I missed the first part of your question.

6 Q All right. I'm referring now to the
7 non-complex, safety-related concrete pouring that began
8 again in December 1979. There's a resumption in
9 December '79.

10 BY WITNESS FRALEY:

11 A I need to clarify something there. It's
12 not non-complex, safety-related; it's non-complex.

13 That safety-related throws me off, and I
14 think it may be throwing a few more of us off.

15 Q Let me refer you to page 7 of your
16 testimony, at line 36, which states, "With the
17 presentation of this plan..." referring to the Nine-Point
18 Action Plan, "...HL&P asked and obtained authorization
19 from NRC to resume placement of safety-related non-complex
20 concrete at STP. Such work was resumed on December 31,
21 1979."

22 BY WITNESS FRALEY:

23 A Okay.

24 Q I am referring to that safety-related
25 non-complex concrete.

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1 BY WITNESS FRALEY:

2 A All right, sir.

3 Q Beginning in, I guess, January 1, 1980,
4 and forward, in the pouring of that concrete, non-complex,
5 safety-related concrete, have there been problems
6 with those pours, such as form shifting, rock pockets
7 and voids?

8 BY WITNESS FRALEY:

9 A We have encountered problems that you
10 encounter every day on any project that you are placing
11 concrete on.

12 Those problems have been addressed. We've
13 poured concrete to procedures, but we have experienced
14 occasional problems with form shifting and other
15 problems.

16 Q To your knowledge, have you experienced
17 voids in those pours, the non-complex safety-related
18 pours?

19 BY WITNESS FRALEY:

20 A Not that I'm aware of, no, sir.

21 We have experienced some cosmetic repairs.

22 Q Since December of 1979 has the non-complex,
23 safety-related pouring been interrupted by either a
24 Brown & Root stop work, an HL&P stop work, an NRC
25 stop work?

4-6 1 Has there been any reason to deviate from
2 the normal path of pouring for the non-complex safety-
3 related?

4 This would be during 1980 and '81.

5 BY WITNESS FRALEY:

6 A No, sir.

7 Q Do you consider non-complex, safety-related
8 pours as less important than complex safety-related
9 pours?

10 BY WITNESS FRALEY:

11 A I personally consider all placing of
12 concrete on South Texas Project important, equally
13 important; but I recognize the need to zero in in
14 safety-related complex concrete pours.

15 My management also recognizes that need.

16 Q And that need exists because what?

17 BY WITNESS FRALEY:

18 A Degree of difficulty.

19 Q Regarding the complex pours, the Nine-Point
20 Action Plan that was written -- or at least was sent to
21 the NRC in December of 1979, was intended to address
22 complex pours, as well as non-complex pours; is that
23 correct?

24 BY WITNESS FRALEY:

25 A It addressed concrete, if I'm not mistaken,

4-7

1 period.

2 Q Generally?

3 BY WITNESS FRALEY:

4 A Yes, sir.

5 Q Both complex and non-complex?

6 BY WITNESS FRALEY:

7 A Yes, sir. Concrete.

8 Q The Applicants' Exhibit No. 1 is, I
9 believe, the letter that is referred to -- and you do
10 have it there? That's fine.

11 Is that what has been referred to
12 repeatedly as the Nine-Point Action Plan?

13 BY WITNESS CARVEL:

14 A That is the Nine-Point Action Plan.

15 Q That is the Nine-Point Action Plan.

16 Have you had a chance to review that,
17 Mr. Fraley, to your satisfaction?

18 (Witness reviews document.)

19 BY WITNESS FRALEY:

20 A All right.

21 Q Do you agree that that is the Nine-Point
22 Plan?

23 BY WITNESS FRALEY:

24 A Yes.

25 Q Okay. This was written in December of 1979,

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1 but according to your testimony, complex concrete
2 pours could not begin at that time, because Houston
3 Lighting & Power had not given an okay to Brown & Root
4 to do complex concrete? Is that correct?

5 BY WITNESS FRALEY:

6 A Yes. sir.

7 Q Then in February of 1980, according to
8 your testimony, the Nine-Point Plan was fully implemented
9 by that point.

10 Could you have restarted complex concrete
11 then in February of 1980? I see you say the end of
12 February 1980, either then or the beginning of March
13 1980?

14 BY WITNESS FRALEY:

15 A I'd like to pass that. As far as
16 construction is concerned, we're not the only ones that
17 were involved in the Nine-Point Plan, so I couldn't
18 really make a good yes or no.

19 I could say yes for construction, but
20 there were other items that needed to be looked into.

21 Q Mr. Carvel, do you have some comment?

22 BY WITNESS CARVEL:

23 A The answer to that question is no.

24 Q Okay, why?

25

//

4-9 1 BY WITNESS CARVEL:

2 A Because of the management meeting with the --
3 HL&P management meeting with the NRC in December of
4 1979, it was felt that the Nine-Point Action Plan
5 addressed the general concerns with respect to concrete
6 as a whole; but there were special considerations for
7 complex concrete which we had not yet addressed.

8 Therefore, it was felt that the hold
9 should be maintained on the complex concrete placement.

10 Q What I was seeing in the testimony here
11 is that yes in December of '79 the NRC said that you
12 could resume placement of non-complex, but there were
13 additional problems regarding complex.

14 The testimony said that that would remain
15 suspended until authorization to proceed with them was
16 given by HL&P.

17 That's on page 7 at line 44.

18 BY WITNESS CARVEL:

19 A That would be in reference to Brown & Root's
20 understanding of the complex concrete resumption.

21 We received authorization through an
22 immediate action letter from the Nuclear Regulatory
23 Commission to proceed, and in turn, we informed Brown &
24 Root that that approval had been received and that they
25 could -- at such time as we did receive that, that they

5-1 1 could resume on a limited basis the complex placement.

2 Q My impression was that the 9-point action
3 plan with Houston Lighting & Power saying to the NRC,
4 "We are going to do all of these things, and as soon as
5 they are implemented we will restart complex." But,
6 apparently, there is an additional step there somewhere
7 that you are telling me that even though they were fully
8 implemented at the end of February 1980 you still would
9 not have restarted complex, or Brown & Root could not
10 have.

11 BY WITNESS CARVEL:

12 A That is correct. There were additional
13 concerns with respect to complex concrete specifically,
14 which were discussed with the NRC and felt by both the
15 NRC and HL&P that safety related complex concrete should
16 not resume until those considerations were taken care
17 of, primarily the formulation of the new procedures.

18 Q Okay. Then the Order To Show Cause comes
19 out in April 1980, and there is no complex concrete.

20 BY WITNESS CARVEL:

21 A Yes.

22 Q And responding to that Houston Lighting &
23 Power says "We will not only do the 9 points, we will
24 do more than that," as far as complex placements are
25 concerned.

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I'm referring in particular to the testimony beginning on the bottom of page 8, as a response to the Order to Show Cause, 'HL&P committed to taking a number of steps, beyond those already implemented.'

Since the Nine-Point Plan has already been implemented by that point, I assume that this is beyond the Nine-Point Plan.

Then there is a list of 12 commitments, starting on page 9 and going on to page 10.

Is that a correct characterization of Houston Lighting & Power's response?

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5-3 1 BY WITNESS CARVEL:

2 A That's fairly accurate.

3 Q Is there any gross inaccuracy or --

4 BY WITNESS CARVEL:

5 A There are no gross inaccuracies, no.

6 Since I was not on site until June of 1980,
7 that's more or less the way I understand it happened.

8 Q Okay, fine.

9 Mr. Fraley, on page 7, question 9 on page
10 7 and the answer 9 on page 8, you address the question
11 of the difference between complex and non-complex
12 pours and the decision-making process for when a pour
13 is one or the other.

14 Prior to the Order to Show Cause, were the
15 factors considered in making such a decision and the
16 decision-making process itself different from what is
17 described in answer 9; and if so, how?

18 BY WITNESS FRALEY:

19 A The answer to that is no, that these
20 considerations were given to the first concrete that
21 was placed on South Texas Project.

22 The emphasis by the requirement of a
23 preplacement plan spelling out step-by-step what you
24 are going to do to make that placement is where the
25 real value comes into this.

5-4 1 It's not only taking into considerations,
2 but formalizing those considerations on a piece of
3 paper, and then executing that formula that way.

4 Q In the 12 items that are listed starting
5 on page 9, if you could just look at those for a
6 minute, I know that yesterday you testified that
7 Item No. 4, a coordinator from Brown & Root Construction
8 to oversee complex concrete placement is you.

9 BY WITNESS FRALEY:

10 A Yes, sir.

11 Q And that Item 5, the complex pour coordinator
12 for B&R QA is Glen Yeisley.

13 BY WITNESS FRALEY:

14 A He replaced John Rudd.

15 Q Who replaced John Rudd in that capacity; did
16 he also replace him as your co-chairman?

17 BY WITNESS FRALEY:

18 A Yes, sir.

19 Q So John Rudd is not involved with the
20 complex restart?

21 BY WITNESS FRALEY:

22 A Yes, sir.

23 Q All right. Just very briefly walking
24 through these various points, I'd like to know if you
25 have particular responsibilities in each of these areas,

5-5 1 in revision and reissuance of concrete placement
2 procedures; do you have any specific responsibilities?

3 BY WITNESS FRALEY:

4 A Did I have any specific responsibilities?

5 Yes, sir. I reviewed all the procedures,
6 not only at the final stage, but during the process of
7 putting the procedures together.

8 Q And in the training of personnel?

9 BY WITNESS FRALEY:

10 A Yes, sir.

11 Q You did training?

12 BY WITNESS FRALEY:

13 A I did not physically train. I monitored the
14 training.

15 I made suggestions and recommendations on
16 some of the training, but no, I did not physically do
17 the training.

18 Q And the review of the results of the Concrete
19 Special Task Force investigation; did you review those
20 results?

21 BY WITNESS FRALEY:

22 A Yes, sir.

23 Q And did you involve yourself in modifying
24 procedures and methods, as necessary, based on those
25 results?

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BY WITNESS FRALEY:

A Would you repeat that?

Q I'm really going through -- point 3 is a second clause, performance of modifications in the procedures and methods, as necessary.

Did you involve yourself in the performance of those modifications?

BY WITNESS FRALEY:

A Yes, sir. I reviewed those and made several comments there.

Q Moving to point 6, were you involved in the verification of the availability of PTL personnel?

BY WITNESS FRALEY:

A No, sir, I was not.

Q Point 7, the reconfirmation of the qualifications and certifications of QC?

BY WITNESS FRALEY:

A No, sir.

Q Point 8, the review of the concrete supplier's quality program?

BY WITNESS FRALEY:

A No, sir.

Q Point 9, reverification of the availability of adequate concrete placement equipment and personnel?

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5-7

1 BY WITNESS FRALEY:

2 A Yes, sir.

3 Q You did involve yourself with that?

4 BY WITNESS FRALEY:

5 A Yes, sir.

6 Q We've had a great deal of testimony about
7 Lift 15 and the problems of lighting and all of that.

8 In addressing the availability of adequate
9 concrete placing equipment, can you give me some idea
10 of what steps are taken under that item to assure that
11 the proper equipment is in place when necessary during
12 a pour?

13 BY WITNESS FRALEY:

14 A Yes, sir. As far as equipment is
15 concerned, it's a requirement now that we have one-for-
16 one backup.

17 That's to say if you are using four placing
18 techniques, that you would have four additional
19 techniques that back up each one of those.

20 Q Let me be sure I understand your use of
21 the term "techniques."

22 If I have two concrete pumps, do I have two
23 concrete pumps backing them up?

24 BY WITNESS FRALEY:

25 A Yes, sir. If you have two conveyors, you

5-8

1 have two conveyor belts backing them up, one-for-one.

2 Q On Item 10, I know you are involved in the
3 resumption of complex concrete placement.

4 BY WITNESS FRALEY:

5 A Yes, sir.

6 Q And Item 11, review of the quality of the
7 placement and documentation of the work?

8 BY WITNESS FRALEY:

9 A Yes, sir.

10 Q You are involved with that?

11 And in Item 12, will you be involved in the
12 expansion of the complex concrete placement as
13 additional B&R personnel are qualified?

14 BY WITNESS FRALEY:

15 A Yes, sir.

16 Q All right.

17 Is it the job of the Complex Restart
18 Review Committee to implement these 12 items?

19 Is this their charge, primarily?

20 BY WITNESS FRALEY:

21 A No, sir.

22 Q No?

23 BY WITNESS FRALEY:

24 A No, sir.

25 JUDGE BECHHOEFER: Mr. Sinkin, at some

5-9 1 point when you get to a good breaking point, we'd like
2 to take a morning break.

3 MR. SINKIN: About two more questions on
4 this line will be it.

5 JUDGE BECHHOEFER: Okay.

6 BY MR. SINKIN:

7 Q. These 12 points are the 12 points that
8 Houston Lighting & Power gave as a response to the
9 Order to Show Cause, as I read this testimony; is that
10 correct, Mr. Carvel?

11 BY WITNESS CARVEL:

12 A. Essentially, yeah, I think that that's
13 pretty much transcribed from the Show Cause response.

14 Q. Now, the Restart Committee, Review
15 Committee, who set that committee up?

16 BY WITNESS FRALEY:

17 A. It was set up through the direction of
18 HL&P management to Brown & Root management.

19 Q. Did HL&P define for Brown & Root what
20 they wanted that committee to do?

21 BY WITNESS FRALEY:

22 A. Sir, I think you'll have to ask someone
23 other than myself on that.

24 Q. Mr. Carvel, do you know?
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1 BY WITNESS CARVEL:

2 A I think that the task of that committee was
 3 more or less arrived at jointly by Houston Lighting &
 4 Power and Brown & Root, in that the committee was to
 5 meet at regular intervals to discuss the progress of
 6 the Restart -- initially, the Restart Program; any
 7 kind of problems that may have come up in placement,
 8 and what might be done to improve the program based on
 9 any kind of problems that we might have had.

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5-1 1 BY MR. SINKIN:

2 Q Mr. Fraley, in terms of the items among the
3 12 that you answered yes you are involved in, are you
4 involved in them in your capacity as Chairman of the
5 Complex Restart Committee?

6 BY WITNESS FRALEY:

7 A I have a co-chairman which is a QE --

8 Q That would be Mr. Yeisley now?

9 BY WITNESS FRALEY:

10 A Yes.

11 Q All right.

12 BY WITNESS FRALEY:

13 A And I am involved in monitoring those
14 activities. Some of these activities refer to sub-
15 contracts, for instance.

16 And we have subcontracts for later on the
17 job that are very heavily involved in that.

18 Q My last question is how much of your time
19 now is devoted to the work of the Complex Restart
20 Review Committee? Can you give me a rough percentage?

21 BY WITNESS FRALEY:

22 A Are you talking about all of the activities
23 that surround that committee or just the committee itself?

24 Q Well, if you can break it down, the
25 committee, itself, and all of the activities directly

1 related to the committee, that is fine. If you cannot,
2 if you can just tell me all activities directly related
3 to Concrete Restart, that is all right, too.

4 BY WITNESS FRALEY:

5 A I would say that I spend 40 percent of my
6 time today involved in Complex Concrete.

7 Q Would it be fair to say Complex Concrete
8 Restart?

9 BY WITNESS FRALEY:

10 A Yes, sir.

11 Q Okay.

12 MR. SINKIN: I guess it is break time.

13 JUDGE BECHHOEFER: Let's take a 15-minute
14 break.

15 (A short recess was taken.)

16 JUDGE BECHHOEFER: Back on the record.

17 Mr. Sinkin, you may proceed.

18 WITNESS FRALEY: Judge Bechhoefer?

19 JUDGE BECHHOEFER: Yes.

20 WITNESS FRALEY: I have one correction that
21 I would like to make to something that I did not under-
22 stand while ago.

23 JUDGE BECHHOEFER: Okay.

24 WITNESS FRALEY: I got messed up on some
25 dates in a question you asked me where did we place any

5-3 1 concrete between June and December. The answer to that
2 is yes, instead of no. We did, for a short period of
3 time.

4 CROSS-EXAMINATION (continued)

5 BY MR. SINKIN:

6 Q You did place concrete between June of 1979
7 and December of 1979.

8 BY WITNESS FRALEY:

9 A Yes, sir.

10 Q Was that Complex and non-Complex?

11 BY WITNESS FRALEY:

12 A It --

13 Q Or was it only non-Complex, do you know?

14 BY WITNESS FRALEY:

15 A Total concrete.

16 Q Both?

17 BY WITNESS FRALEY:

18 A Both.

19 JUDGE BECHHOEFER: I didn't hear that last
20 answer. Just repeat it, because I couldn't hear it.21 WITNESS FRALEY: All right, sir. The question
22 was asked if we had placed any concrete on the site
23 between June and December of 1979, prior to the Show
24 Cause.

25 JUDGE BECHHOEFER: Right.

5-4 1 WITNESS FRALEY: And I was confused on some
2 dates awhile ago, and in fact I said "No" and the answer
3 is "Yes," that we did for a short period of time prior to
4 the Show Cause Order.

5 JUDGE BECHHOEFER: What was your answer to
6 the question concerning whether it was Complex or non-
7 Complex? I didn't hear it.

8 WITNESS FRALEY: The answer to that was total
9 concrete, both non-Complex and Complex.

10 JUDGE BECHHOEFER: Thank you.

11 BY MR. SINKIN:

12 Q So that then -- Was that stopped by the
13 December meeting dealing with the Order to Show Cause?

14 BY WITNESS FRALEY:

15 A Yes, sir.

16 Q Nothing before that?

17 BY WITNESS FRALEY:

18 A (Nods head.)

19 Q On Page 6 of your testimony --

20 Say something orally.

21 BY WITNESS FRALEY:

22 A I thought I had.

23 Q You just nodded your head.

24 BY WITNESS FRALEY:

25 A No, sir.

5-5 1 Q On Page 6 of your testimony you state that
2 you expect to continue in the Restart activities until
3 normal Complex Concrete placement operations are resumed.

4 By "normal" are you contrasting normal versus
5 limited? What do you mean by "normal" there?

6 BY WITNESS FRALEY:

7 A Until we have the approval to go ahead and
8 do our work unlimited.

9 Q Well, --

10 BY WITNESS FRALEY:

11 A Let me add this.

12 Q Yes. Go ahead.

13 BY WITNESS FRALEY:

14 A Normal would be what we are doing now on
15 Complex concrete.

16 Q Now I am confused. According to this you
17 would continue with the Restart Panel until normal
18 Complex concrete operations were resumed. If what you
19 are doing now is normal, are you saying your job with
20 Complex Concrete Restart is finished?

21 BY WITNESS FRALEY:

22 A My job as a coordinator may be finished.

23 Q May be finished at this point?

24 BY WITNESS FRALEY:

25 A Yes.

5-6 1 Q Prior to the Order to Show Cause did Brown &
2 Root simulate complex concrete pours in any way?

3 BY WITNESS FRALEY:

4 A Sir, prior to the Show Cause?

5 Q Let's say prior to December of 1979.

6 BY WITNESS FRALEY:

7 A No, sir.

8 Q Prior to Decmeber 1979 did Brown & Root
9 evaluate the backgrounds of the construction organization
10 to assure that those assigned to particular
11 responsibilities for concrete had strong backgrounds?

12 BY WITNESS FRALEY:

13 A Yes, sir. Most definitely.

14 Q Prior to December 1979 did Brown & Root have
15 a program comparable to the zero defect program you now
16 have?

17 BY WITNESS FRALEY:

18 A We did not have a program as such.

19 Q Did you have anything that would be
20 comparable, similar?

21 BY WITNESS FRALEY:

22 A We had training as far as quality is
23 concerned, since day one on the project.

24 Q Prior to December 1979 did Brown & Root take
25 any steps to assure that the various organizations

5-7 1 involved in a complex pour interpreted the procedures for
2 that pour in a consistent manner?

3 BY WITNESS FRALEY:

4 A Yes, sir.

5 Q Does the current stop-work authority for
6 QC in this area of concrete differ in any way from their
7 authority prior to the Order to Show Cause?

8 BY WITNESS FRALEY:

9 A I would answer that question this way, and
10 I would like Bob or Gordon to pursue it some more.

11 The distinct difference is that we call out
12 hold points and inspection points and have clarified the
13 authority that the QC Inspector has to stop work at any
14 time.

15 Q Could you elaborate just a little bit?

16 BY WITNESS CARVEL:

17 A I think the way the procedure reads right
18 now is that if there is any doubt whatever in the QC
19 Inspector's mind about the acceptability about any work
20 that is in progress, he has the authority to stop work
21 and get a site Engineer at the place where the work is
22 taking place to determine the acceptability of that work.

23 Previously, I believe if he knew for certain
24 that something was non-conforming or could lead to a non-
25 conformance he had that responsibility.

6-8 1 Q So you are contrasting knowing for certain
2 versus having any doubt at all?

3 BY WITNESS CARVEL:

4 A Yes.

5 Q And is that distinction -- When you spoke
6 of clarifying the authority, Mr. Fraley, what did you
7 have in mind in that term "clarifying"?

8 BY WITNESS FRALEY:

9 A Making sure through the procedure and not
10 just word of mouth, or heads up, so to speak. Making
11 sure through the procedure that the Construction
12 Supervision understood and recognized that authority
13 one hundred percent.

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1 BY WITNESS CARVEL:

2 A I believe previously that the authority to
3 stop work came through a stop-work procedure, which in
4 turn had an impact on all activities on the site.

5 In rewriting the CCP-25 we specifically
6 included that authority in the procedure.

7 Q So you are saying that the source of a QC
8 stop-work authority before was a general statement you
9 have the authority to stop work. Now it specifically
10 says in concrete procedures you have authority to stop
11 work. Is that the distinction?

12 BY WITNESS CARVEL:

13 A Yes. It specifically outlines the process
14 to be followed, which is somewhat unique to concrete
15 placement.

16 BY WITNESS FRALEY:

17 A I would like to add one thing there. We have
18 always had a procedure on the South Texas Project to take
19 care of this problem. It has not always been incorporated
20 into the CCP-25, which is the concrete procedure. But we
21 have always had a procedure to stop work on anything that
22 a QC man might exercise that on.

23 Q Prior to the Order To Show Cause did Brown &
24 Root maintain individual personnel qualification and
25 training files?

6-10 1 BY WITNESS FRALEY:

2 A We have always maintained personnel files,
3 with their experience, this type thing in it. We have an
4 extensive personnel file now on personnel that are
5 involved in complex concrete.

6 More extensive, because it lays out required
7 training that these people must do initially and
8 periodically.

9 But to answer that, the answer is yes, we
10 have had.

11 Q Was there required training before the Order
12 To Show Cause, and was that documented in their personnel
13 file that they had had that training?

14 BY WITNESS FRALEY:

15 A I can't say that it was documented in the
16 personnel file. I can say that it was documented in
17 the training department, and, yes, there was requirements
18 for training for any -- on any procedure on anything that
19 we do on the site.

20 Q Prior to the Order To Show Cause did
21 Brown & Root review the qualifications of subcontractor
22 personnel?

23 BY WITNESS FRALEY:

24 A I was not personally involved in those, you
25 know, that we went through awhile ago, subcontracts, but

5-11 1 I know for a fact that they were performed by management.

2 Q Prior to the Order To Show Cause did
3 Brown & Root have a demonstration program for complex
4 placement procedures?

5 BY WITNESS FRALEY:

6 A I'm sorry. I don't understand the question.

7 Q Let me just try the same question one more
8 time.

9 Prior to the Order To Show Cause did
10 Brown & Root have a demonstration program for complex
11 placement procedures, complex concrete placement
12 procedures?

13 BY WITNESS FRALEY:

14 A Would you explain "demonstration program"?

15 Q Well, I am really taking the term from
16 Page 11 of your testimony at Line 14, where you state
17 "Most importantly, we devised a demonstration program
18 of seven complex placements."

19 I am wondering if before the Order To Show
20 Cause you had any comparable kind of demonstration
21 program for complex placements?

22 BY WITNESS FRALEY:

23 A We had -- No. No. The answer to that is
24 no.

25 That is not to say that we did not identify

6-12 1 problems before the Show Cause, and made corrective
2 actions even to the drawings at some times, actually
3 physically making a drawing of those areas, but we did
4 not have a program as such.

5 Q According to your testimony there has been
6 a fairly extensive re-evaluation and rewriting of the
7 concrete procedures for South Texas; is that correct?

8 BY WITNESS FRALEY:

9 A Yes, sir.

10 Q Among all of the procedures that were
11 rewritten which one or ones do you personally think was
12 the most important?

13 BY WITNESS FRALEY:

14 A Concrete placing and cleanup.

15 Q And why were those particularly important?

16 BY WITNESS FRALEY:

17 A Of course, I am still opinionating, but --

18 Q Just your own opinion.

19 BY WITNESS FRALEY:

20 A -- I think that we clarified things like
21 free-standing water, is a good example, what is free-
22 standing water.

23 We clarified those things, and they took
24 away several gray areas in that.

25 We also added training requirements on

-13

1 vibrators, this type thing.

2 Q Were there training requirements on vibrators
3 prior to this time?

4 BY WITNESS FRALEY:

5 A Yes, but it was informal.

6 Q Informal?

7 BY WITNESS FRALEY:

8 A Yes, sir.

9 Q Now it is formalized and required?

10 BY WITNESS FRALEY:

11 A Yes, sir.

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1 BY MR. SINKIN:

2 Q On Page 12 of your testimony -- well, you've
3 been talking on Page 11 and onto Page 12 about the
4 process you went through, the back and forth, the give
5 and take, as to what the revisions of the procedures in
6 the new procedures would look like.

7 Were there any particular areas that
8 construction QC and design engineering most vigorously
9 debated, any areas of particular disagreement that
10 really had to be hammered at?

11 BY WITNESS FRALEY:

12 A Visualize this: There was a representative
13 from each group, down to the craftsman level, depending
14 on what part of the procedure we were putting together,
15 and as we went into this we had several discussions. A
16 good "for instance" is what is free standing water.

17 The answer to your question is yes, that we
18 had some very good discussions on the procedures.

19 We all sat in a room. It was a thing that
20 took several weeks to do, but after we got through with
21 the procedures we felt very confident that anyone on the
22 project could understand and work towards that goal.

23 Q I can't resist; what is free standing water now?

24 BY WITNESS FRALEY:

25 A Free standing water now is no water at all.

7-2
1 Q Okay. On Page 1, you say that one of the
2 things that was done, or that you focused your attention
3 on was eliminating conflicting directives where they
4 existed. That's at Line 18.

5 Where did conflicting directives exist prior
6 to this revision, and who were those conflicts resolved?

7 BY WITNESS FRALEY:

8 A Well, I can only give you a couple of
9 examples just sitting here, but for instance, we had
10 in our forming procedure that forms must be removed
11 within 24 hours after completion of the concret, and
12 that's to say after you put the last shovelful in, you
13 look at your watch and 24 hours later you've got to have
14 those forms removed.

15 We tried to stay within those procedures but
16 it become impossible. At times -- let me add one thing.
17 Without prior approval of the engineer. Now, with prior
18 approval of the engineer we could leave the forms on.

19 But it become impossible to -- very
20 impossible to wreck forms out in 24 hours of time, so
21 you give a directive to do something, but it becomes
22 impossible to do it, and sometimes it takes six or eight
23 weeks to form up an "A" pour, and we'd take three or
24 four days to wreck it out.

25 So we had several conditions that we just

7-3
1 couldn't conform to, period.

2 And instead of just keep identifying this
3 by memos and what have you to the engineers and getting
4 prior approval, we changed that.

5 There's also a need for form work to be
6 left in place as an aid to bringing up the next lift,
7 as a construction aid. That's one thing.

8 Another thing that we clarified was free
9 standing water, what we talked about a while ago, what
10 is free standing water. It was an interpretation
11 problem. What free standing water would be to me may not
12 necessarily be to the craft superintendent or to the
13 quality control inspector, or whoever.

14 So to clarify that, we simply have no water,
15 period, in the pours. Those type things.

16 Q Fine. Prior to the Order to Show Cause,
17 did you ever conduct training programs?

18 BY WITNESS FRALEY:

19 A Yes, sir.

20 Q For whom?

21 BY WITNESS FRALEY:

22 A Sir?

23 Q For whom? Who did you train?

24 BY WITNESS FRALEY:

25 A Craftsmen.

7-4
1 Q And what was the nature of that training?
2 What were you training them to do?

3 BY WITNESS FRALEY:

4 A I trained in form work. I trained in rebar
5 placement. I trained in concrete placement. I trained
6 in civil blueprints. All of that's documented. Probably
7 several that I can't think of right now. But formally,
8 those.

9 Q Referring in the testimony to the training
10 on CCP 25, Page 13, starting at about Line 38, you say
11 that there are three phases, classroom, videotape and
12 hands-on in the field.

13 Q Could you tell me what is the extent of
14 each of those phases? For example, on the classroom
15 instruction on CCP 25, how long is a construction worker
16 in the class?

17 BY WITNESS FRALEY:

18 A For two four-hour sessions, eight hours.

19 Q And how about the videotape?

20 BY WITNESS FRALEY:

21 A Videotape takes around 15 minutes. I haven't
22 timed it, but, you know, somewhere around that time.

23 Q And the hands-on field training?

24 BY WITNESS FRALEY:

25 A Hands-on field training is two part. First

7-5
1 of all, we use a good journeyman, a good knowledgeable
2 journeyman in everyday work and put someone by him
3 that's learning every day on-the-job training.

4 Then we have a formal training that we go
5 through periodically that is required by our vibrating
6 and placement people, placement of concrete, and I think
7 that it's a cycle of every 90 days that they're required
8 to go back for a refresher hands-on training.

9 Q In vibration and placement?

10 BY WITNESS FRALEY:

11 A Yes, sir.

12 Q Do you conduct any of this new training
13 that's being done on CCP 25?

14 BY WITNESS FRALEY:

15 A No, sir, I do not.

16 Q You do not.

17 BY WITNESS FRALEY:

18 A I monitor that training at times.

19 Q You discuss in your testimony, and I believe
20 discussed yesterday with Mr. Gay, the input from the
21 construction craft personnel and their supervisors to
22 the revision of the procedures for concrete.

23 Was that input only as to whether they
24 understood the wording, or did it go to whether they
25 believed they could actually perform under the procedure

1 as written?

2 BY WITNESS FRALEY:

3 A All of it.

4 Q On Page 18, at Line 29, you speak of
5 utilizing concrete correlation testing in lieu of
6 taking samples at the pump line discharge.

7 Could you tell me briefly what is concrete
8 correlation testing? It's at Line 29.

9 BY WITNESS FRALEY:

10 A Let me read this.

11 Q Sure.

12 BY WITNESS FRALEY:

13 A Let me catch up where we're at.

14 BY WITNESS CARVEL:

15 A I think perhaps I could better answer that
16 for you, since it's a quality control/quality assurance
17 type of thing.

18 Q Fine.

19 BY WITNESS CARVEL:

20 A In correlation testing we first go on the
21 premise that in pumping concrete there is a certain
22 loss of slump and loss of air content because of the
23 pumping process itself.

24 In correlation testing you establish, based
25 upon the distance you are pumping concrete how much slump

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1 and how much concrete you will lose over a given
2 distance, and based upon those determinations we will
3 increase the slump and air contents required of the
4 concrete prior to putting it into the pump, and the
5 acceptance criteria will be altered somewhat.

6 There is a regular program to verify that
7 those determinations that we originally made are still
8 accurate.

9 Q Those determinations are statistical
10 determinations, is that correct?

11 BY WITNESS CARVEL:

12 A No -- well, to an extent, yes, but they
13 are based upon information which we have gathered at
14 the site, based upon our actual pumping operations
15 with our mixes.

16 Q Let me take just a sample pour right now.
17 If we were out at the site and there was a pour going on,
18 would you be sampling the concrete as it came out the
19 end of the slick line, or would you be sampling the
20 concrete at the truck and examining with some formula
21 calculation that had already been made on what should be
22 coming out of the truck?

23 BY WITNESS CARVEL:

24 A Primarily, we would be examining it as it
25 came out of the truck, and at certain intervals we would

1 also examine what was happening at the other end of the
2 pump line to verify that our determinations of slump
3 loss and air content loss were still accurate.

4 BY WITNESS FRALEY:

5 A I might add that that's very important
6 because of slump loss, keeping the concrete plastic
7 as it's distributed into the form. One inch slump is
8 very important, the loss of a one inch slump is very
9 important in placing concrete correctly.

10 Q Mr. Carvel, prior to the Order to Show Cause
11 was there a formal training program for HL&P QA, do you
12 know?

13 I realize you came on afterwards.

14 BY WITNESS CARVEL:

15 A From what I know -- I don't know how formal
16 the program was.

17 Q On Page 20 there's a discussion of some of
18 the problems that have been encountered during the
19 complex concrete placements, the seven restart placements,
20 and one of them noted is plugged slick lines. That's at
21 line 32, 33.

22 Could you explain to me what causes a slick
23 line to plug?

24 BY WITNESS FRALEY:

25 A Configuration of a slick line and the slump,

1 the heat, temperatures, the arrangement of the slick
2 line, the lengths of the slick line, are all contributing
3 factors that could cause a pump line to shut up, you
4 know, to close down. Those are all contributing factors.

5 BY WITNESS CARVEL:

6 A I think one significant factor as well
7 would be a delay in pumping. If the slick line is full
8 of concrete and if you have a delay at the placement or
9 if the trucks aren't arriving at regular intervals and
10 the concrete has to sit in the slick line without moving
11 for substantial periods of time, that very often leads
12 to a slick line being plugged.

13 BY WITNESS FRALEY:

14 A It is not an uncommon thing.

15 Q Do you have any feel, Mr. Carvel, about --
16 well, we've discussed at great length in these proceedings
17 Lift 15 and the things that went wrong on Lift 15, and
18 plugs coming out of the slick line, I believe, is one
19 of the things that was noted.

20 Do you have any feel for -- if a pump breaks
21 down so that the concrete is not moving through the
22 slick line, do you have any feel for how long it would
23 be before you would begin to worry about plugs?

24 BY WITNESS CARVEL:

25 A There are so many factors involved with that,

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1 that I really can't expound on Lift 15: The time of day,
2 whether the sun is shining on the slick line or not, how
3 hot it is, how much retarder you have in your mix, how
4 wet the concrete was when it went into the slick line,
5 there are so many factors that I wouldn't even venture
6 a guess with respect to Lift 15.

7 Q Well, then if a quality control inspector
8 is observing a lift, and I didn't mean to tie us to
9 Lift 15, I just noted that in Lift 15 we had a problem
10 of pumps breaking down and slugs of concrete, and you
11 had stated that that might happen if a pump broke down
12 or if it wasn't moving through the slick line you might
13 get a slug, and I was really looking for sort of a
14 general criteria on time as to when you would begin to
15 worry.

16 In your answer I hear you saying that there
17 are so many different factors other than time, such as
18 heat and time of day, and all that.

19 Does that mean that a quality control
20 inspector at a pour who is having to decide whether a
21 pump breakdown is important or not has to make a guess
22 from all of those factors you just outlined?

23 BY WITNESS CARVEL:

24 A I don't really think so. If a pump breakdown
25 leads to a plugged slick line, and that in turn leads to

7-11

1 a sufficient delay for there to be a cold joint in the
2 placement, that should be his prime concern, and he can
3 very readily determine that.

4 Q By?

5 BY WITNESS CARVEL:

6 A By observing the previously placed concrete
7 to see if it's still plastic.

8 Q Fine.

9 BY WITNESS FRALEY:

10 A I'd like to add something to that. There is
11 a requirement for the concrete to be rested in its
12 final position. There is a time requirement there.

13 Q Could you elaborate on that just a little,
14 for the concrete to be rested in its final position?

15 BY WITNESS FRALEY:

16 A The concrete to be distributed and resting
17 in its final position, there is a time requirement.

18 Q And the time requirement?

19 BY WITNESS FRALEY:

20 A From the time that we receive it until the
21 time that it's put into the form.

22 Q What is that requirement, do you know?

23 BY WITNESS CARVEL:

24 A Excuse me. To clarify that, it's the time
25 between the introduction of the water to the cement in

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the mix, which is when it's batched, to the time it's placed.

Q But it's batched off site, is that correct?

BY WITNESS CARVEL:

A It's on site but --

Q But not at the pour?

BY WITNESS CARVEL:

A -- within a mile of any reasonable location on site.

Q But do you know what the time is between batch and place?

BY WITNESS CARVEL:

A Normally it's 90 minutes.

- - -

8-1 1 BY WITNESS FRALEY:

2 A In reference to the slick lines, there's
3 also construction techniques on keeping concrete flowing
4 through slick lines, conveyor belts, and this type
5 thing; and we exercise those type options.

6 One option that we did exercise on the
7 dome is putting a concrete bucket up there and keeping
8 that concrete moving through the slick line.

9 We've exercised that quite often on the
10 project.

11 You get to the point that you have a plug
12 or that you are bothered about some other circumstances,
13 you do have an option to keep placing concrete in a
14 bucket and discarding it.

15 Q I see. You just keep it running through
16 the slick line, but it's not going into the pour?

17 BY WITNESS FRALEY:

18 A That's right.

19 Q Do you know if that was done on Lift 15?

20 BY WITNESS FRALEY:

21 A I am fairly reasonably sure that it was
22 done.

23 Q In addition to the problems noted here on
24 the seven complex placements, were there any other
25 problems?

8-2

1 BY WITNESS FRALEY:

2 A I'm sorry?

3 Q You noted here that there were problems of
4 the usual type encountered during these seven complex
5 concrete placements, and you note plugged slick lines,
6 insignificant rock pockets and vibrator breakdown.

7 Were there other problems encountered?

8 BY WITNESS FRALEY:

9 A We encountered, if I'm not mistaken, on the
10 first pour a very severe weather problem, and everyone
11 reacted very positive.

12 Procedures handled the situation, and we
13 were very confident.

14 As a matter of fact, after the pour we
15 were very glad the rain showed up, because it really
16 put us to the test.

17 We did experience a very severe weather
18 problem.

19 Q Any other particular problems that come to
20 mind?

21 BY WITNESS FRALEY:

22 A No, sir.

23 Q Did you have a problem on any of these
24 seven with forms moving?

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8-3
1 BY WITNESS FRALEY:

2 A I'm not aware of any cut-of-tolerance
3 movement on form work.

4 MR. SINKIN: Mr. Chairman, that concludes
5 my questions, but I do have one matter I would like to
6 bring up. I'm not sure exactly what to do about it.

7 CCP-25 was issued in July of 1980, and in
8 the testimony prepared here, there's a statement on
9 page 13 that CCP-3, 4, 6, 8, 11, 12 and 19 were
10 replaced and incorporated in CCP-25.

11 In the testimony to date, we do not have
12 an actual statement of CCP-25, and I don't believe
13 it's present in an Applicant exhibit.

14 I'd be more than happy to be corrected
15 on that if the Applicants' Counsel know whether CCP-25
16 is present in any of their exhibits?

17 MR. HUDSON: I don't believe it is.

18 MR. SINKIN: One of the things that we
19 are charged with in this hearing process under Issue B
20 is assessing the remedial measures taken by the
21 Applicants; and in this very serious area of concrete
22 placement, it seems to me that one way to assess
23 remedial measures would be to compare CCP-25 to the
24 last revision of the other CCP's noted on page 13, and
25 that the record would be enhanced by having in it those

8-4 1 concrete procedures.

2 We do not have them. We have some of the
3 earlier revisions on some of those CCP's, but it seems
4 to me that the most relevant one would be the last one.

5 I think that it would help the record for
6 the Applicants to produce into the record those CCP's,
7 including 25, so that that can be evaluated.

8 MR. HUDSON: Your Honor, this is nothing
9 more than a late, very late, discovery attempt by
10 CCANP.

11 Issue B was adopted in November, I believe,
12 at the prehearing conference. Yes, in November.

13 There was a discovery period extending for
14 some time beyond that.

15 This CCP-25 was out at that time. If they
16 had wanted to do this kind of comparison, the proper
17 course of action would have been to request these
18 documents in discovery, and then hire an expert or
19 do the comparison themselves, and put on a witness to
20 make this comparison.

21 I don't think we're going to get any kind
22 of valid comparison by us producing the documents to
23 Mr. Sinkin and then allowing him to make some
24 extemporaneous comments about them at some later
25 date comparing them.

8-5

1 I also don't see that it will really
2 further the record to put in this kind of comparison,
3 because the -- or even to have the document available,
4 because it's an extremely detailed document, and the
5 guts of it, I think, or the major changes that have
6 been made, are addressed in this panel's testimony.

7 We've just been through those and we've
8 talked about what types of things were in existence
9 prior and what types of things were in existence later,
10 and what the charges were.

11 So I believe the real heart of the matter
12 has been addressed, and just producing the document
13 itself is not going to get us anywhere. It's just a
14 paperwork exercise.

15 JUDGE BECHHOEFER: Let me ask you a
16 question.

17 Under the fairly recent decision of the
18 Appeal Board, I think in Diablo Canyon, aren't we
19 almost required to have that in the record if we were
20 going to make any findings with respect to it?

21 MR. HUDSON: I'll let Mr. Axelrad address
22 that.

23 MR. AXELRAD: Mr. Chairman, I certainly
24 do not believe so.

25 It is not the function of this Board to

8-6 1 review procedures in detail, to determine whether or
2 not those procedures are acceptable.

3 We have had testimony with respect to how
4 the Concrete Restart Program is taking place, and
5 the procedures to which the work is being performed.

6 If there are any questions of substance
7 with respect to how it's being done, if there are
8 any questions of substance as to how the present work
9 improves upon work that was done previously, there is
10 no reason why the Intervenors or the Staff or the Board
11 can either ask those questions of the individuals who
12 are present here to testify on those subjects.

13 There is absolutely no question that has
14 been raised with respect to the details of those
15 procedures, and there's no reason why details of those
16 procedures have to be reviewed unless there is a
17 significant question that's been raised, and no
18 such question has been raised.

19 JUDGE BECHHOEFER: How does that differ
20 from the, I believe it was the security plan in
21 Diablo Canyon?

22 MR. AXELRAD: Mr. Chairman, I have not
23 reviewed that particular decision in detail, but I'm
24 not aware of that decision requiring that a matter of
25 this kind where it is not a specific procedure or plan

8-7

1 which is being approved by this Board; but only whether
2 or not the concrete in place was acceptable and whether
3 the general competence and character of the Applicant in
4 performing future work is acceptable.

5 There is nothing in the issues, as I
6 understand them, which requires the Board or the Staff
7 or anyone else, to review a procedure in detail.

8 Perhaps the Staff can address that matter.

9 JUDGE BECHHOEFER: Yes. I was going to ask
10 the Staff to address the same question.

11 MR. GUTIERREZ: Well, initially, responding
12 to your question, Chairman Bechhoefer, it seems why
13 wouldn't your question hold to any procedure that HL&P
14 puts out?

15 Here we have a procedure that's been the
16 subject of three panels' testimony, and --

17 JUDGE BECHHOEFER: That may be the
18 difference.

19 MR. GUTIERREZ: -- and subject to cross-
20 examination. It's the Staff's function, I&E function,
21 to review particular procedures.

22 With respect to CCP-25, the Staff has
23 reviewed it and addressed it in the I&E Report, and
24 I'm trying to figure the exact time of the report.

25 I know it's in the record, and over lunch

8-8 1 break I can cite you to the exact I&E Report that
2 does address the adequacy of CCP-25.

3 Again, it seems to be a timing thing, as
4 well. I'm not saying that whether CCP-25 would be
5 helpful to the record; I have no way of judging that.
6 I haven't read it myself.

7 I am led to believe from talking with the
8 technical staff that to the extent it differs
9 materially to the prior procedures, those material
10 elements have been addressed in testimony, both by
11 the Applicant and by the Staff's testimony.

12 JUDGE BECHHOEFER: Are you familiar with
13 the Diablo Canyon thing that I'm referring to?

14 MR. GUTIERREZ: Not with the specific
15 problem you posed to Mr. Axelrad.

16 MR. AXELRAD: Mr. Chairman, if I may, just
17 one more thing.

18 I believe that earlier in this proceeding,
19 and perhaps it was Mr. Jordan that raised the question
20 with respect to a number of procedures and whether
21 those should be produced.

22 I think that that was the first time that
23 the question of this particular decision came up, that
24 you raised that.

25 I believe that we are in the process of

8-9 1 gathering together the linear feet of documents that
2 do contain all the applicable QA procedures, and I
3 believe that CCP-25 is part of those.

4 My recollection is that we are willing to --
5 not to introduce those in the record, but to gather in
6 one place somewhere those linear feet of documents
7 for the observation of anyone who wants to.

8 But to make the particular documents, or
9 any of them, part of the record, to us, seems to
10 just make an already extensive bulky record that
11 contains hundreds of exhibits at this point by the
12 Staff, the Applicants and the Intervenors, to make
13 that bulky record even bulkier, all to no good avail.

14 MR. SINKIN: Mr. Chairman....

15 (Bench conference.)

16 MR. GUTIERREZ: Mr. Chairman, before the
17 Board considers the question, I would just like to --
18 I think the heart of the Staff's concern, anyway, is
19 that I am led to believe CCP-25 is a document of some
20 180 to 200 pages.

21 To the extent the material elements in
22 that document are relevant, I think they have been
23 addressed through the testimony.

24 Therefore, my thinking is that to produce
25 the document would merely be cumulative with no added

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1 benefit, unless there is some showing that something
2 wasn't addressed in CCP-25, or somehow that document is
3 inadequate.

4 I guess without that initial showing, it's
5 just merely cumulative.

6 (Bench conference.)

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1 JUDGE BECHHOEFER: The Board has decided
2 not to put the older procedures in, but with respect
3 to the new procedure, I would want to find out,
4 Mr. Sinkin, what use do you plan to make of it, in
5 terms of either further cross-examination or further....

6 MR. SINKIN: Well, my point in raising that
7 entire item was -- really, two points.

8 One is a minor point. In discovery we
9 did ask for the concrete procedures, and we were
10 given some of these but not all of these.

11 We have a revision of the ones that we
12 were given.

13 We can introduce that into evidence, but
14 it makes more sense to me that the comparison you
15 would want to make was between the last revision and
16 CCP-25.

17 That's why the point was raised, and as far
18 as CCP-25 and testimony having been presented on it, and
19 cross-examination having been allowed, essentially what
20 we've been permitted so far is the perception of the
21 Applicants' witnesses and their characterizations of
22 CCP-25, without the specific document.

23 We felt that the value was the comparison
24 of the two documents, as to what has been changed and
25 what has not been changed; and if Issue B is remedial

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1 measures, I don't know how you can decide whether
2 something has been remedied without looking at what
3 was done in the past compared to what is being done
4 now.

5 Really, the most important point to me
6 about raising the whole issue was voiding in the complex
7 concrete and breakdowns in the concrete program is one
8 of the most serious issues to arise in these
9 proceedings.

10 That's been clear from the very beginning,
11 as a construction deficiency and a difficulty, that
12 that's been one of the most serious issues.

13 Here we have how they plan to do it right
14 in the future, and it seems to me you can't really
15 evaluate that without looking at how they said they
16 would do it in the past.

17 MR. AXELRAD: Mr. Chairman, if I may just
18 respond to that.

19 I simply cannot understand Mr. Sinkin's
20 point.

21 The principal matter here is whether the
22 Concrete Restart Program is being done adequately and
23 whether it is now an adequate program to place concrete.

24 Mr. Sinkin had every opportunity to
25 cross-examine this panel in detail as to exactly how

9-3 1 it's being done, if he had any interest in doing so.

2 He has taken the opportunity to the extent
3 that he wanted to do so, and I see absolutely no
4 benefit to introducing this additional bulky document
5 into the record for purpose of sometime in the future
6 having some type of a comparison made and proposed
7 findings and conclusions.

8 It appears to us that the record can be
9 fully complete on the basis of direct testimony and
10 cross-examination of witnesses who can tell you and
11 have told you exactly what they're doing and how they
12 are going about it.

13 The Board can make a full decision as to
14 whether it's now being done properly.

15 He also -- Mr. Sinkin also had an
16 opportunity with respect to the other panel that
17 testified before to question as to how the concrete was
18 poured before, what the problems were that arose before.

19 He had the opportunity to cross-examine,
20 and did, a large panel with respect to the verification
21 program that was conducted, to ascertain the adequacy
22 of the concrete already in place.

23 He could have wound up, if he had so
24 desired, making a complete comparison through the
25 cross-examination of our witnesses as to how the work

9-4 1 was done before and how it's being done now.

2 What he is asking for very simply is
3 additional discovery to which he is not now entitled,
4 and he is asking for the record to be burdened with
5 additional information which it does not now need.

6 JUDGE BECHHOEFER: Does the Staff have
7 any view?

8 MR. GUTIERREZ: The Staff would only
9 acknowledge that it agrees with Mr. Sinkin that CCP-25
10 may be relevant, or is relevant.

11 However, in light of the previous three
12 panels, I think there's ample evidence on the record
13 right now which goes to the question what the concrete
14 practices were before the Show Cause Order and how
15 they differ in material ways after the Show Cause
16 Order.

17 Therefore, I only cite my previous
18 observation that although relevant, CCP-25 would be
19 cumulative at this point.

20 The Staff of I&E has reviewed the procedure
21 in total, and I had mentioned to the Board previously
22 that it was contained in an I&E Report.

23 I checked on that and I refer you to
24 Staff Exhibit No. 65, which is I&E Report 80-19,
25 where the I&E civil inspector reviewed the report in

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1 total, including the material changes.

2 All the Applicants' witnesses, as well as
3 that particular I&E inspector, will be on the stand
4 and can be subject to cross-examination.

5 JUDGE HILL: Mr. Gutierrez, do you intend
6 to, in your direct with I&E inspectors and so forth, do
7 you intend to pursue this subject of CCP-25?

8 MR. GUTIERREZ: Well, pursue it -- we
9 intend to pursue it, Judge Hill, in the sense that we
10 think it's important to know what HL&P did in the past
11 and how they have remedied certain deficiencies.

12 Pursue it in that sense, yes. Does that
13 answer your question?

14 JUDGE HILL: Well, no. My question is, in
15 order to do that, are we going to need the new
16 document and the old documents in the record for that
17 purpose?

18 MR. GUTIERREZ: I guess my answer is I don't
19 think so, because they are very bulky documents, and
20 all that this Board should be concerned about is how
21 those two bulky documents differ in material ways,
22 important ways; and there are going to be -- There are
23 witnesses, have been witnesses, and will be I&E
24 witnesses in the future which can address how those
25 two bulky documents differ in materials ways.

9-6
1 So to answer your question, I'd say no, I
2 don't think so.

3 MR. SINKIN: Mr. Chairman, could we have
4 just another moment.

5 MR. GAY: CEU hasn't been heard on this,
6 Mr. Chairman.

7 I think that it's incumbent on the Board to
8 make a finding on this issue.

9 The Board cannot relinquish its
10 responsibility to the Staff and the Staff witnesses to
11 simply review these documents and give an impression.

12 I think the best evidence possible to the
13 Board of what this Applicant did in prior occasions
14 and what it is contending it will do in the future to
15 remedy the situation that occurred in the past is
16 contained in those documents.

17 I think it is incumbent upon the Board to
18 have those documents in the record so that the record
19 can be complete and to have all the relevant information
20 before it so that it can make a finding on the best
21 available evidence.

22 I would encourage the Board to accept
23 Mr. Sinkin's offer and to have that procedure made
24 a part of the record.

25 MR. GUTIERREZ: Judge Bechhoefer, if I

9-7

1 can respond to that.

2 I think that what Mr. Gay is suggesting
3 flies in the face of NRC case law, which says -- I
4 believe it's the Shearon Harris case, although I'm
5 not certain -- which says in essence, unless the Board
6 first has reason to believe that the NRC Staff review
7 is somehow either inadequate or improper, it's not this
8 Board's role to duplicate the Staff's reviewing process.

9 I think that's what Mr. Gay seems to be
10 suggesting. He would have you as the Board essentially
11 duplicate I&E's function and NRR's function.

12 MR. GAY: Just one minor --

13 JUDGE BECHHOEFER: Let's go off the
14 record.

15 (Bench conference.)

16 JUDGE BECHHOEFER: I think we will take a
17 lunch break now and we will decide after the lunch
18 break.

19 MR. AXELRAD: Mr. Chairman, before we do
20 that, I would just like to talk about schedule.

21 My recollection, when we asked the Board
22 to schedule evening sessions a day ago, was that the
23 Intervenors said at that time, CEU said it didn't have
24 much cross-examination of the forthcoming panels at
25 all.

9-8 1 CCANP indicated it didn't have much
2 cross-examination, except with respect to the welding
3 panel.

4 The result of all that, because of a number
5 of things, is that CEU took about an hour or two to
6 cross-examine this particular panel; CCANP has taken
7 this entire morning.

8 I realize we took up other matters besides
9 just cross-examination, but we are now at noon on
10 Wednesday, and we are not yet finished with the
11 concrete rebar panel.

12 I don't know how much cross-examination the
13 Staff has of this panel. I don't know how many Board
14 questions there are.

15 But we still have the entire welding
16 panel to go through, the Warnick, Singleton, Wilson
17 panel, and the two segments of testimony by Mr. Peverley.

18 I respectfully suggest that unless we have
19 evening sessions this evening -- well, let me put it
20 this way.

21 I would assume that if the Staff doesn't
22 have too many questions this particular panel might be
23 completed an hour or two after lunch.

24 That's just my assumption.

25 If we could then start the welding panel

9-9 1 and run through this evening, I would --

2 JUDGE BECHHOEFER: By the way, it was my
3 understanding that we were starting with the harassment
4 panel.

5 MR. AXELRAD: No, the welding panel.

6 JUDGE BECHHOEFER: We were told last night
7 that there was a reversal.

8 MR. AXELRAD: No, no. The reversal was
9 between the intimidation and harassment panel and the
10 Peverley testimony.

11 JUDGE BECHHOEFER: I see, okay.

12 MR. AXELRAD: The welding panel comes next.

13 JUDGE BECHHOEFER: Okay. I misunderstood,
14 but that's all right.

15 MR. AXELRAD: So on the assumption that we
16 can start the welding panel, I would hope, sometime
17 early this afternoon, still, unless we run an evening
18 session tonight and come close to finishing the welding
19 panel tonight, and perhaps even finishing them tonight,
20 and then spend tomorrow and perhaps tomorrow evening on
21 the intimidation and harassment panel, and then have
22 Mr. Peverley on Friday morning, I'm not sure how we
23 can complete that testimony unless we adopt the schedule
24 I'm just suggesting.

25 If the Board has other information which

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1 makes it believe that things will move faster after
2 this morning, I just don't know how we can complete
3 this without having evening sessions both tonight and
4 tomorrow night.

5 We do have to, I guess, give advance
6 information to the reporter, if that's what we're going
7 to be doing.

8 So we would repeat our request.

9 We also suggest that the Board carefully
10 examine what the cross-examination schedules are to
11 see whether we're going to be able to do this this
12 week.

13 JUDGE BECHHOEFER: We will take that under
14 advisement and discuss it after lunch.

15 (Whereupon, at 12:02, the hearing was
16 recessed.)

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AFTERNOON SESSION

1:35 p.m.

JUDGE BECHHOEFER: Back on the record.

During the lunch period the Board considered at least the two matters that were before us.

First, we've decided to run this session today until 7:00 o'clock and then quit.

On the other matter, the documents, we have elected to defer any decision at all on them for now. We think the Diablo Canyon decision may be crucial as to whether or not these documents are needed, and before we made any final decision we would want to rule on it and we'd like to hear the parties' views on it as well, so presumably that will be during the next session.

We will defer ruling at least for this July session on that question.

MR. HUDSON: Your Honor, did you say that you wanted our views on the Diablo Canyon decision and its applicability in this situation?

JUDGE BECHHOEFER: Yes.

JUDGE HILL: As applies to this fact situation.

JUDGE BECHHOEFER: I can't give you a number, but it's the particular decision that involved the security plan and whether the Licensing Board should have

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1 had that plan before it, rather than just testimony
2 based upon it when it made its ruling.

3 MR. GUTIERREZ: Excuse me. Mr. Chairman,
4 I'm informed that the decision I think we're all talking
5 about is ALAB 580, 11 NRC 220.

6 I did go and check at the law library here
7 and they don't have the most current issuances, so a
8 copy of it isn't here, but I'm informed that that's the
9 proper citation.

10 JUDGE BECHHOEFER: Right. Well, the Board
11 does not feel it wants to rule on it before we've had a
12 chance to examine that in detail and hear the parties'
13 views on it as well.

14 Is there anything further before we go into
15 the Staff's cross-examination?

16 Oh, Mr. Sinkin, you wish to note for the
17 record all the documents you passed out?

18 MR. SINKIN: Oh, yes. I would like to note
19 for the record that we have distributed to all parties
20 and the court reporter copies of CCANP Exhibits Nos. 1
21 through 14, which were stipulated to earlier in these
22 proceedings, and to reiterate that Exhibit 15, CCANP,
23 has already come in as Staff Exhibit 92.

24 MR. GAY: Mr. Chairman, one notation from CEU,
25 I distributed to the Board and all parties what I would

1 like for the court reporter to mark for purposes of
2 identification as CEU Exhibit No. 30, and the reason
3 for that is it contains three pages that I was discussing
4 with Mr. Singleton during my cross-examination yesterday,
5 and those three pages, which refer to Lift 15 and the
6 problems therein, are contained within the NCR on Lift 15,
7 so I have reproduced the entirety of what we were provided
8 by the Applicant pertaining to the NCR on Lift 15, and I
9 highlighted to the Board and to the parties the three
10 pages that I showed Mr. Singleton, but you have before
11 you the entire document.

12 JUDGE HILL: That was 30?

13 MR. GAY: Yes, sir. Exhibit No. 30. I'm
14 not moving for its introduction at the moment. I wanted
15 to give all the parties an opportunity to review that,
16 and bring that up at some later time.

17 JUDGE BECHHOEFER: All right.

18 (CEU Exhibit No. 30 was
19 marked for identification.)

20 JUDGE BECHHOEFER: Is the Staff prepared to
21 proceed?

22 MR. GUTIERREZ: Yes, Mr. Chairman.

23 Just one point of clarification; when you
24 said you wanted our views on Diablo, the Diablo Canyon
25 decision during the next session, did you mean tomorrow

10-4
1 or the September session? I was unclear.

2 JUDGE BECHHOEFER: September is fine, or I
3 might even say appropriately about the time when the
4 Staff inspector who is going to testify on this matter
5 gets on the stand. That would be an appropriate time.

6 MR. GUTIERREZ: Okay. Thank you.

7 MR. AXELRAD: Mr. Chairman, just one other
8 matter of clarification that is only with respect to
9 CCP 25, the Board did previously reject the other --

10 JUDGE BECHHOEFER: That's correct. We
11 rejected the others. It's only the current procedure.

12 MR. AXELRAD: Thank you. I wanted to
13 mention that.

14 JUDGE BECHHOEFER: If that procedure changes
15 by the time the proceeding progresses, it will -- our
16 reasoning, which was based on my understanding of Diablo
17 Canyon, but I'd have to go back and re-read it to make
18 sure the case really holds that, it would be based only
19 on the current plan, whatever the current plan might be
20 that's before us.

21 CROSS-EXAMINATION

22 BY MR. GUTIERREZ:

23 Q Panel members, before I begin my prepared
24 cross, I just want to clarify a few things you've
25 testified to thus far.

10-5

1 Mr. Fraley, you said that by a letter of
2 April 16, '81, HL&P was authorized to make eleven
3 placements and thus far two were performed.

4 Was one of those two performed Lift 9 on
5 Reactor Containment 2?

6 BY WITNESS FRALEY:

7 A Yes, sir.

8 Q And Mr. Purdy, you said that one of the roles
9 of quality engineering was to make sure that the various
10 PSAR commitments and applicable code sections that were
11 committed to were translated into procedures, and I
12 believe you limited it to QA/QC procedures. Is that
13 correct?

14 BY WITNESS PURDY:

15 A I don't remember specifically addressing
16 the PSAR, but I did say that it was quality engineering's
17 responsibility to ensure that those items that we had
18 committed to, whether they be regulatory guides from a
19 quality related standpoint, not necessarily quality
20 procedures, but quality commitments through the reg
21 guides or ANSI standards, and those referenced codes,
22 standards and requirements conveyed by design criteria
23 through design specifications, were in fact incorporated
24 into all applicable project procedures.

25 Q And now I'll ask you specifically, do you

1 include within those commitments the PSAR commitments?

2 BY WITNESS PURDY:

3 A We have recently completed a re-evaluation
4 and resubmittal to the Nuclear Regulatory Commission of
5 the project quality program, which is in essence a
6 reiteration of our SAR commitments, and yes, sir, those
7 are incorporated into that document.

8 Q Now, you also said that your group, the
9 quality engineering group as it now exists was a result
10 of the Show Cause Order.

11 My question is, do you have any knowledge
12 what group prior to the Show Cause Order had as one of
13 its functions ensuring that PSAR commitments and other
14 applicable code commitments were translated into
15 procedures? This is still limiting it to quality
16 assurance, quality related commitments.

17 BY WITNESS PURDY:

18 A Yes, sir. There was actually a joint effort
19 at the time. Perhaps to amplify on that, a group out of
20 Houston, a group which I had out of Houston was assigned
21 the responsibility of reviewing the design specifications,
22 procurement documents, basic documents that were
23 considered under the purviews of the quality program
24 for the South Texas Project to ensure the translation of
25 those requirements into the documents.

10-7

1 Those documents subsequently being trans-
2 mitted to the project through whatever mechanism or
3 whatever organization was developing it, be it engineering
4 or our QA group.

5 The quality control engineering group on
6 the site, and a small group of quality specialists on
7 the site were assigned to the responsibility of ensuring
8 that those design and home office or basic quality
9 commitments that were established by the corporate
10 office for the South Texas Project were included in the
11 South Texas Project actual operating procedures.

12 Q And what group was this?

13 BY WITNESS PURDY:

14 A They were the quality control engineers and
15 quality assurance engineers that were on the South Texas
16 Project at the time, up until the reorganization in the
17 May-June period of 1980.

18 Q What I hear you saying is relative to a
19 mechanism of ensuring that the various commitments were
20 translated into procedures, what you've done in response
21 to Show Cause is an organizational change, is that the
22 thrust of it?

23 BY WITNESS PURDY:

24 A That was one of the responses to the Show
25 Cause, was a change in the organizational concept.

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Quality assurance, speaking specifically
quality assurance --

Q Right.

BY WITNESS PURDY:

A -- moved and consolidated our operations
physically on South Texas Project instead of having
several groups responsible for implementation of the program,
the group that I currently head was established
specifically at the South Texas Project and assigned
all of those responsibilities under one umbrella of
quality engineering.

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11-1 1 Q So is it a fair statement to say that prior
ge 2 to show cause, as following show cause, there has always
3 been an attempt to translate commitments into procedures,
4 but following show cause, there's now a centralized
5 clearinghouse, your organization, which assures that
6 this is done? In other words, that's your function?

7 BY WITNESS PURDY:

8 A Yes, sir, that is a fair statement.

9 Q Mr. Fraley, does construction have a
10 similar group that ensures that commitments are properly
11 translated into construction procedures?

12 BY WITNESS FRALEY:

13 A Yes, sir. The craft superintendents on the
14 project, along with the construction management on the
15 project, review procedures prior to the sign-off.

16 Q My question is do they review them and
17 compare them to what has been committed to, and ensure
18 that what has been committed to is translated into an
19 actual procedure; is that part of their review?

20 BY WITNESS FRALEY:

21 A No, sir.

22 BY WITNESS PURDY:

23 A Let me help Mr. Fraley on that, if you
24 would.

25 Q All right.

11-2 1 BY WITNESS PURDY:

2 A Currently there's a Procedures Review
3 Committee that's established for South Texas Project.

4 This consists of quality, it consists of
5 engineering, it consists of construction, both from
6 Brown & Root and the client, HL&P, side.

7 The development or the revision of a
8 construction procedure is a very programmed, well-
9 evaluated change before it is ever made, thoroughly
10 reviewed by all parties to ensure that we are not
11 violating any previous commitments or we have
12 appropriately translated existing commitments into the
13 construction procedures.

14 There are requirements for review and
15 signature of all the interfacing parties, not just
16 construction.

17 So the development of what we currently
18 call a quality construction procedure no longer means
19 that it is a procedure developed solely and implemented
20 by construction, or if that's what the indication was.

21 It's a very coordinated effort between all
22 parties, and it is part of that Procedures Review
23 Committee's responsibility to ensure that we are not
24 violating previously established commitments, regardless
25 of whether they are project commitments to the client

11-3 1 or to the Commission, or previous commitments
2 established as conditions of the construction permit.

3 Quality engineering is specifically
4 relegated the task, through our procedures, to review
5 all changes to quality construction procedures to
6 ensure the doublecheck system that that is in fact being
7 adhered to before we sign off on them.

8 Q And when was this Procedures Review
9 Committee established?

10 BY WITNESS PURDY:

11 A The Procedures Review Committee was
12 established about the middle of 1980.

13 It was established after, obviously, the
14 development and implementation of CCP-25, which all
15 of us participated in anyway.

16 The committee itself was procedurally
17 addressed in a revision to a project procedure
18 governing the development and implementation of quality
19 construction procedures somewhere in the middle of that
20 year.

21 I don't recall the exact date, but it was
22 a natural follow-on to what we had gone through in the
23 development of the other procedures.

24 Q And is it fair to say that this Procedures
25 Review Committee is, again, the clearinghouse to ensure

11-4

1 commitments are translated into procedures that
2 didn't exist before?

3 BY WITNESS PURDY:

4 A That is correct.

5 Q Mr. Purdy, you also said that the quality
6 engineering group assures that QA people understand
7 the language of their procedures; is that correct?

8 BY WITNESS PURDY:

9 A I'm sorry, I didn't hear your last few
10 words.

11 Q That the quality engineering, one function --
12 You were listing the various functions of quality
13 engineering, and I understood you to say that quality
14 engineering assures QA people understand the language
15 of the procedures they have to follow, translating
16 procedures into understandable language.

17 BY WITNESS PURDY:

18 A Yes, sir.

19 Q What group assures that construction
20 procedures are similarly put in understandable language?

21 BY WITNESS PURDY:

22 A Procedures Review Committee, sir.

23 Q Okay. This morning, Mr. Purdy, you were
24 asked questions relative to the megawattage of the
25 various plants you've been involved with prior to

11-5

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1 South Texas.

2 My question is, isn't it true that
3 regardless of the megawattage of the plant that's
4 being built, the procedures, whether it be quality
5 assurance procedures or concrete construction procedures,
6 that need to be addressed and established are the
7 same; it's not dependent on the megawattage of the
8 plant?

9 Is that a fair statement?

10 BY WITNESS PURDY:

11 A Yes, sir. As a matter of fact, other than
12 size of components, the philosophy, the principles
13 involved, the particular control mechanisms, the
14 procedures involved in the fabrication, construction,
15 erection would be the same.

16 Q And lastly, Mr. Fraley, you said that
17 prior to December of 1979, Brown & Root had made
18 efforts to ensure that workers interpreted procedures
19 in a consistent way.

20 Could you elaborate on that? What efforts
21 did Brown & Root make prior to December '79 to ensure
22 that procedures were interpreted by the workers in a
23 consistent way?

24 BY WITNESS FRALEY:

25 A Yes, sir. We had periodically training on

11-6

1 the procedures, that we went through the procedures
2 step-by-step, made notes of those things, of those
3 problems that the craftsmen or whoever might have with
4 the procedures and got clarification from the engineering
5 and the QC people, if needed.

6 BY WITNESS PURDY:

7 A I don't mean to keep injecting, but I'd like
8 to add something to that, if I could, please, because
9 I believe it's very germane to the current procedure
10 in the training program established at South Texas
11 Project.

12 An extensive amount of effort and planning
13 has been put in in addition to the procedures, to the
14 training that's currently conducted on the training
15 procedures -- or the construction procedures, quality
16 procedures, any of the procedures at South Texas
17 Project.

18 One of the major functions of training is
19 to ensure that people understand the procedure, not to
20 read the words that are in the procedure.

21 An extensive amount of effort and concern
22 by all parties, whether it be quality engineering or
23 construction, is to ensure that we present a training
24 session and not a reading session of the text of the
25 document.

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It is of utmost importance to us now to ensure that the people understand why we are doing this particular activity or why this particular change is being made, primarily because it's the current project management philosophy that if you understand the basic theory or the philosophy behind the program, it's part of the zero defects program, in essence, that Mr. Fraley was discussing previously.

You understand that these are the requirements. We will accept nothing less than the requirements, and these are why the requirements are there, that the philosophy and attitude of the people on the project will be such that they will -- eagerly may be the wrong word, but will be very readily willing to implement those particular programs and that criteria.

Our philosophy now is not a motivational program. It's a reorientation and training program to get them to understand the requirements.

- - -

11-8

1 BY WITNESS FRALEY:

2 A I think that it's also very important to
3 note that in cleaning the procedures up and making them
4 better for applications, we did not take all of the
5 problems, as such, out of the procedures.

6 What I am saying is that they are still
7 very rigid. You will still see things in the procedures
8 that are very hard, if you may, to accomplish; and there
9 is good reasons for that, too.

10 Q Well, let's follow this a little bit more.

11 You say that you had training before '79,
12 December of '79. Now, is what you are saying -- I
13 understand you to be saying that the scope and breadth
14 of the training is much more elaborate now.

15 Let me be more specific. You talk on page
16 13 of this three-phase training program.

17 Was that in existence prior to the Show
18 Cause when you were educating your craftsmen about
19 procedures? Are these new innovations?

20 BY WITNESS FRALEY:

21 A Sir?

22 Q Are these new innovations following
23 December of '79?

24 BY WITNESS FRALEY:

25 A Excuse me for a moment. Let me refresh

11-9 1 myself here.

2 (Witness reviews document.)

3 Q I'm looking on line 40, and following, there,
4 Mr. Fraley, where you describe the three phases of
5 training.

6 BY WITNESS FRALEY:

7 A Okay. Basically, we had, prior to the '79,
8 we had classroom instructions and we had field training,
9 but we did not have it set periodically.

10 It wasn't a requirement that we do it,
11 for instance, every 90 days; but we did have classroom
12 training.

13 We did -- The videotape, we did not have.
14 We had some parts of videotapes that explained the
15 vibrators and this type thing, but we did not have the
16 videotape that we have now.

17 Q Could you explain to me generally and not
18 relative to each new procedure, but could you explain
19 to me generally how that classroom training differs
20 now from prior to December of '79?

21 Is there a difference? I think Mr. Purdy
22 hinted at it earlier, but, Mr. Fraley, can you offer
23 a distinction, if there is one?

24 BY WITNESS FRALEY:

25 A The classroom training that we have now is

11-10

1 more distinct, in depth per spec, per procedure.

2 The people that are involved in the work
3 that this procedure would cover would be the people
4 that are in this classroom, and instead of a two-hour
5 session, it's a six to eight-hour session now.

6 It's just in-depth, step-by-step, word-for-
7 word, line-for-line.

8 Q Is there some kind of an exit test or exam
9 to see if anything sunk in?

10 BY WITNESS FRALEY:

11 A Yes, there is.

12 Q Was that the case before December '79?

13 BY WITNESS FRALEY:

14 A In some cases, but it wasn't a requirement.

15 Q Going to Applicants' Exhibit No. 1, which
16 is the Nine-Point Program, does the panel have a copy
17 of that?

18 I call your attention to Item 6. It
19 says, "Procedures will be revised to provide a
20 controlled method for judging when re-inspection of
21 concrete placement is necessary prior to sign-off of
22 the pour card."

23 Could you tell us what those procedures are?

24 BY WITNESS PURDY:

25 A I'm trying to get my brain in motion here

11-11 1 on the scenarios that went along with this.

2 As I recall, several questions had occurred
3 prior to this period in 1979 relative to when the
4 quality control had to reperform an inspection that had
5 previously been completed, relative to a preplacement
6 or a pour activity.

7 CCP-3 and CCP-4, the old procedures which
8 dealt with concrete preplacement and concrete placement,
9 were revised in response to this particular commitment
10 in the Nine-Point Action Plan to specify -- and again,
11 this is as I recall. I don't have the procedures in
12 front of me. -- that QC must perform a re-inspection
13 of any activity that has received additional craft or
14 craft activity or attention after the original signature
15 on the pour card that originally accepted the item.

16 That was subsequently translated in intent,
17 I believe, into CCP-25.

18 BY WITNESS FRALEY:

19 A I think it's also covered in the procedure
20 that if that pour lays idle for a period of time, and I
21 can't say that period of time right now; if it lays
22 idle for a period of time, then it's necessary to
23 re-inspect it.

24 Q Could you explain a little bit what you
25 mean by "if the pour lays idle"?

11-12

1 BY WITNESS FRALEY:

2 A If we have the pour card signed off, we're
3 ready to make the pour, and if for any reason whatsoever
4 that we don't make that pour that day --

5 Q Oh, I see.

6 BY WITNESS FRALEY:

7 A -- that it would be re-inspected after a
8 period of time.

9 Q Let me tell you what came to my mind when
10 I read that and ask for your thoughts on it.

11 The previous panel stated that -- and I'm
12 paraphrasing it. I might be incorrect, but it was
13 my understanding.

14 Currently, the QC inspectors, if they have
15 any reason to believe something is irregular on the
16 pour, that gives rise to post-placement inspection, or
17 more detailed post-placement inspection.

18 What I'm wondering is, does this procedure
19 referenced in Item 6 address what incidents give rise
20 for the QC inspector to go and make further post-placement
21 inspections? Is that what this is attempting to address?

22 BY WITNESS CARVEL:

23 A I don't believe so. I believe this was
24 intending to address the situation where perhaps a
25 placement was ready to go, something had to be installed

11-13

1 that may have been left out inadvertently, and perhaps
 2 some bars had to be removed to get that piece of
 3 equipment in there somehow, conduit or whatever it might
 4 be; and a re-inspection be performed after the fact to
 5 ascertain that those bars indeed that were removed
 6 temporarily were replaced and properly tied down and
 7 that sort of thing.

8 It really has to do with preplacement more
 9 than the placement activities.

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1 BY MR. GUTIERREZ:

2 Q Is it your understanding, as I believe it
3 was the last panel's understanding, that if any
4 irregularity comes up during the pour, itself, as opposed
5 to preplacement that the decision for further inspection
6 is still left to the discretion of the QC Inspector?

7 BY WITNESS CARVEL:

8 A Yes, and these things would be brought up
9 at the post-placement meetings that are held for safety-
10 related placements.

11 Q Just to close this line of questioning, is
12 there any procedures, or any guidance given to the QC
13 Inspectors as to what irregularities during the pour
14 would trigger a reinspection?

15 BY WITNESS PURDY:

16 A During the pour or prior to -- I sure I
17 fully understand.

18 Q Well, I am particularly thinking about what
19 happened during Lift 15 where certain things happened
20 of a long pour or machine breakdown, and I am wondering
21 if there is any list given to QC Inspectors saying if
22 any of these things happen that should trigger further
23 inspection. Do any of your procedures currently --

24 BY WITNESS CARVEL:

25 A I think it would be impossible to attempt to

2-2 1 list all of the situations, which might necessitate a
2 closer look upon post placement for that placement. I
3 think it is incumbent upon -- it is expressed that it is
4 imcumbent upon the Inspector that if for any reason he
5 has any doubts whatsoever that there might be problems
6 with that placement that it is his responsibility to --
7 not only the Inspector, but anybody involved in that
8 pour it is their responsibility to bring those up in the
9 post-placement meeting to make everyone aware of what the
10 concerns might be.

11 Q And is the post-placement an innovation in
12 response to the Show Cause?

13 BY WITNESS CARVEL:

14 A I believe so. I wasn't here at that point
15 in time, but it is my belief that it was.

16 Q Does any other panel member know for sure?

17 BY WITNESS FRALEY:

18 A I personally think that that is a fact. I
19 think that it was a commitment in the Show Cause.

20 BY WITNESS CARVEL:

21 A I think it was more related to 79-19. It
22 came about at that point in time. It was prior to the
23 actual Show Cause Order. It was during 79-19 that that
24 thing came up. Back in December of 1979, as I remember.
25

1 BY WITNESS PURDY:

2 A That is correct.

3 BY WITNESS FRALEY:

4 A I would like to add one thing to the question
5 that you just asked about the inspection. There are a
6 number of things that can happen in placing concrete that
7 would cause a number of different things to come out of
8 tolerances.

9 For instance, an anchor bolt. Those things
10 are monitored, and we do have the mechanism in our
11 procedure to put hold points and to check out for those
12 type things, which is exercised when needed.

13 Q Referring to Item 3 on Page 9 --

14 WITNESS CARVEL:

15 A Page what?

16 Q Page 9.

17 Mr. Purdy, I think last night in response to
18 Mr. Gay's question you cited this review by the
19 Construction people as something that was particularly
20 helpful in a very positive thing.

21 Could you be any more specific as to what
22 specific procedural changes occurred as a result of this
23 contribution by Construction?

24 BY WITNESS PURDY:

25 A Let me make sure that I understand your

12-4 1 question. You are asking specifically what Construction
2 contributed to the development of the new procedures?

3 Q Yes.

4 BY WITNESS PURDY:

5 A Okay. The, or what I feel to be the most
6 significant contribution by Construction was that they
7 were able to provide an input which provided in essence
8 a methodology or a sequence of performing an activity.

9 Requirements for the concrete activity,
10 requirements for the various civil activities established
11 by the designer, or Design Engineering can be implemented
12 in several different ways, or the various acts can be
13 implemented in several different ways.

14 In the past whether it be the methodology
15 of construction to the sequencing of the activities of
16 construction, or even the sequencing of how QC would go
17 out and make sure that they were able to get that point,
18 at what point they would check it to insure that they
19 were able to get the verification necessary, was not
20 always solicited from those individuals doing the work.

21 I am sure that the designer would have no
22 great objections to letting the individual performing
23 the activity identify particular techniques or
24 methodologies that he would like to follow, as long as
25 the satisfaction of the design base or design requirements

12-5 1 were established. And that, I believe, is what we
2 accomplished from the Construction and the Quality Control
3 input. They understood and the sequence was logical to
4 their activity.

5 Q So to paraphrase what you are saying is the
6 fellow who was writing the procedures went out to ask the
7 fellow who was doing the work what he thought of the
8 procedures he was writing, and asked him for some feed-
9 back. Is that it in a nutshell?

10 BY WITNESS PURDY:

11 A Right.

12 Q This wasn't done before -- well, was not
13 formally done before December 1979?

14 BY WITNESS PURDY:

15 A It was not formally done, and may not have
16 been totally effective in doing it.

17 Q Item No. 6 on Page 9, verification of the
18 availability of qualified Pittsburgh Testing Laboratory
19 concrete testing personnel, it came to my mind that that
20 suggests that prior to December 1979 Brown & Root might
21 not have felt that PTL was consistently providing
22 qualified testing personnel. Is that a proper reading?

23 BY WITNESS FRALEY:

24 A I think there was some questions raised in
25 this area on the qualification of some of those personnel.

12-6 1 Q And as a result of those questions, what
2 specifically did you do that you cite here in Item 6?

3 BY WITNESS FRALEY:

4 A I can't answer that.

5 BY WITNESS PURDY:

6 A I can answer that for you.

7 Pittsburgh Testing Laboratory is required
8 to comply with requirements of Reg Guide 1.58, the
9 qualification of inspection personnel for nuclear power
10 plant construction, as is Brown & Root committed to that
11 particular document, and the standards and the criterion
12 that it embraces.

13 The question was brought up during that
14 period in 1979, did the individuals of Pittsburgh Testing
15 Laboratory have actually complied with the requirements
16 of Reg Guide 1.58 relative to the various education
17 experience requirements for their specific level of
18 capability.

19 Brown & Root, in conjunction with Pittsburgh
20 Testing Laboratory management did an exhaustive review,
21 extensive review of the qualifications of the Pittsburgh
22 Testing Laboratory personnel to assure that those
23 personnel performing the inspection activity on South
24 Texas Project did in fact comply with those particular
25 requirements.

1 There were -- and I cannot remember
 2 specifically -- a small number of people of which
 3 questions were raised because of a verification of
 4 education or experience was not available. And those
 5 were obtained where at all possible, and those individuals
 6 on which there were existing questions were addressed
 7 through the non-conformance reporting system, and properly
 8 dispositioned.

9 Q Is it a fair statement to make, or rather is
 10 it true that prior to December 19, Brown & Root, or HL&P
 11 did not routinely check or verify the credentials of
 12 Inspectors, whereas one of their responses to either
 13 79019 or the Show Cause was that this is now a routine
 14 process of going back to -- if a fellow comes to you now
 15 and says I have these qualifications, you call his former
 16 employer, or you do in fact verify his education. Is
 17 that one of the things that happened as a result of the
 18 concerns you were just talking about?

19 BY WITNESS CARVEL:

20 A I think that is addressed in 79-19, more or
 21 less along the lines that you just stated.

22 BY WITNESS PURDY:

23 A There is a positive verification of
 24 education experience of personnel working on the South
 25 Texas Project now in that area, yes.

2-8 1 JUDGE BECHHOEFER: Mr. Purdy, so that I can
2 understand your last answer, did you say there is or there
3 was? I understood the question was, was there?

4 WITNESS PURDY: I'm sorry. There is
5 currently.

6 Perhaps, maybe I can say a few more words,
7 if I could.

8 MR. AXELRAD: Mr. Chairman, before he answers,
9 could we just have the question clarified? Did it
10 pertain to subcontractor personnel or to Brown & Root and
11 HL&P personnel, and did it apply prior '79 and post '79?
12 Is it a four-part question, or two-part question, or --

13 MR. GUTIERREZ: Well, no. The question was
14 tied to Item 6, and specifically I was asking whether as
15 a result of the concerns expressed by Mr. Purdy in his
16 addressing Item 6, that Brown & Root, or HL&P, whoever
17 the proper checker is, did they establish a program or
18 a system to verify the qualifications, either experience
19 or education, of Inspectors, be they subcontractor
20 inspectors or Brown & Root inspectors when they come on
21 the job, and is this something that has happened since --
22 I don't want to say since 79-19. Was there a recent
23 innovation?

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2-9 1 WITNESS PURDY: No, I believe the question
2 came up in yesterday's panel, also, relative to the
3 qualification of inspection personnel. I believe Mr.
4 Artuso was addressing Reg Guide 1.58 and ANSI 45.26

5 Brown & Root training and certification
6 program has always been, in my opinion, far more
7 restrictive in the latitudes that were permitted by our
8 committed to the 1973 issue of ANSI 45.26.

9 ANSI 45.26 for Brown & Root purposes --
10 and this was also translated to PTL -- the ANSI 45.26
11 says that be certified for a given level of capability
12 that a particular candidate must satisfy a certain set
13 of education and experience requirement.

14 The amount of experience varies somewhat
15 inversely to the amount of education, formal education
16 that that particular candidate has.

17 The lead-in to that particular paragraph,
18 Paragraph 3.1 as a matter of fact of 45.26, said, however
19 very clearly, that below education and experience
20 requirements should not be considered in context, or in
21 text should not be considered as absolute when other
22 factors can be used to demonstrate in essence the
23 proficiency of the candidate, whether it be through
24 training and comprehensive examination, or demonstrated
25 proficiency.

1 Brown & Root has used a combination of all
2 of these throughout the South Texas Project, in which
3 we have required a certain amount, equivalent amounts
4 of education, experience, have always had a very
5 comprehensive training program, and required examinations
6 of all those candidates.

7 So, where an individual may not of had
8 precisely the number of months that were required for
9 that given education level, the Level 3 personnel
10 certifying those candidates achieved the necessary degree
11 of confidence in their capabilities through observations
12 of performance, training and comprehensive examination.

13 So, if you ask did I have a program of
14 verifying education and experience before, I will answer
15 you in one of two ways.

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Where the education and experience was used solely as a justification of certifying a candidate to a level of inspection capability, that was done.

A condition to that is that that was not done very often. Okay? And, therefore, it was at that time not gone into in detail to ascertain the degree of education or previous experience, because the final evaluation by my people before they certified those candidates was based on his receiving the required training, a satisfactory score on his examination, which included a practical demonstration of his ability to perform a function. Okay?

So I had to qualify that statement, and probably the question that would arise is that on the certification forms Brown & Root and PTL did not always state the basis for certification.

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13-1

1 Q Is your answer to my question that in the
2 past we didn't always have a formal verification of
3 prior education or experience, however, regardless of
4 that, we certified them ourselves when they came onto
5 the job so that the verification of past experience
6 wasn't all that important? Is that the gist of what
7 you're saying?

8 BY WITNESS PURDY:

9 A Yes, in essence that's true.

10 Q And that being said, you now have a more
11 formal verification system?

12 BY WITNESS PURDY:

13 A Right now we do have a very formal verifi-
14 cation that is implemented by our group procedure which
15 requires objective evidence of education and experience
16 that is claimed by the particular applicant.

17 JUDGE BECHHOEFER: One more clarification
18 while we're here, and I think I asked questions yesterday
19 on that, the ones you were referring to; does this mean
20 that the experience and education would have to be
21 obtained before the individual received the job, or
22 could he or she get such training after he and she were
23 hired, subject to proper documentation of that training?

24 WITNESS PURDY: The current personnel services
25 procedure, as of the time of interview or application by

13-2

1 a potential employee, has a requirement that they will
2 sign a release of information from educational
3 institutions and from places of previous employment
4 that are germane to the job that they're seeking, or
5 the position they're seeking.

6 Those are sent out prior to, in most cases,
7 the employment of that particular individual.

8 In all cases for quality control personnel
9 a verification must be obtained prior to the certifi-
10 cation of that candidate currently.

11 There is a condition in our procedure that
12 would permit us to certify that individual based on a
13 documented telephone conversation with the reputable
14 relayer of the information, whether it be something like
15 the registrar of a school or the personnel officer of a
16 previous employer, subject to final receipt of those
17 particular paper documents that would give the signature
18 of the person verifying it.

19 JUDGE BECHHOEFER: Well, to carry this one
20 step further, suppose a job applicant lacks some element
21 of, say, education, would he or could he be hired and
22 then before he was allowed to start the job be trained
23 in-house by another Brown & Root, or other Brown & Root
24 personnel? Could they sit down with other QC inspectors
25 or QA personnel and be trained in that way, assuming they

13-3
1 were lacking some portion of whatever qualifications were
2 required?

3 WITNESS PURDY: There are provisions within
4 our program to have personnel in training status to
5 achieve the necessary experience, if that's what you're
6 asking, Judge Bechhoefer.

7 JUDGE BECHHOEFER: Right. Then would that
8 be documented, the fact that the employee, or prospective
9 employee received that training before he got assigned
10 to a job that required it, would there be a record of
11 that, a documentation of that?

12 WITNESS PURDY: If that individual was
13 determined to be qualified for the position and that
14 qualification was based on his training and the
15 examination of what we had witnessed and performed for
16 that individual in lieu of his education, yes, sir, it
17 would be documented to that extent.

18 JUDGE BECHHOEFER: And just to follow up,
19 I think Mr. Artuso said that the company, Brown & Root,
20 does not use a waiver provision, saying that we waive
21 such and such a requirement, for whatever reason.

22 WITNESS PURDY: The conditions of 45.23 are
23 not a waiver. They are a permitted latitude of the ANSI
24 standard, as mandated by Reg. Guide 1.58 that we have
25 committed to in our safety analysis report, so it's not

1 really a waiver. It is a set of conditions under which
2 you can determine the qualifications of an applicant.

3 JUDGE BECHHOEFER: Sorry for the interruption.

4 BY MR. GUTIERREZ:

5 Q On Page 10, Item 11, you said that one of
6 the other things you committed to was the review of the
7 quality of the placement and documentation of the work
8 for conformance with requirements.

9 Could you explain a little bit further what
10 you're talking about here, the time frame? Is this for
11 placements after December '79, or is this a review of
12 documentation for prior placements? What exactly are
13 you referring to here? What were you committing to?

14 BY WITNESS CARVEL:

15 A I think that's a natural correlary to No. 10,
16 which says that we will restart the work on a limited
17 basis, and based upon that restart activity, those are
18 the placement documentations that we will review.

19 Q And has this been done for the two placements
20 made since April '81?

21 BY WITNESS CARVEL:

22 A They're more or less underway for those
23 placements. It was done for the initial seven placements
24 before -- well, it was -- that's what's done before
25 requesting the second phase release of the complex program.

13-5

1 Q Just so the record is clear, what do you
2 mean by the second phase release?

3 BY WITNESS CARVEL:

4 A Well, initially we were released by an
5 immediate action letter from the NRC to perform and
6 make seven complex placements. That was Phase I.

7 Phase II consists of the succeeding set of
8 14 placements which we requested to be released.

9 Q Going down to the bottom of that page,
10 Page 10, Line 42, you said that you re-evaluated the
11 construction organization and put your strong people in
12 the areas where -- which were appropriate, and in answer
13 to a question by Mr. Sinkin you said that you also did
14 this prior to December of '79.

15 Is there any distinction about the way in
16 which you went about it before December '79 and the way
17 you're going about it now?

18 BY WITNESS FRALEY:

19 A Yes, sir, I'd like to answer that one.

20 In '78 I was -- my job description was re-
21 arranged and I was put in the reactor buildings in charge
22 of rebar and form form, I think I stated earlier.

23 That's one thing that management did, took
24 the responsibility away from me other than containment
25 buildings.

13-6

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1 The next thing we done was zeroed in on the
2 craft supervisor, the craft superintendent, and we
3 assigned a rebar superintendent and a carpenter super-
4 intendent to the containment buildings that didn't have
5 any responsibility other than to the containment
6 buildings.

7 We also did the general foreman and the
8 foremen that way prior to '79.

9 Q Now, how has that been changed? What you
10 just described is what you did prior to '79, is that
11 correct?

12 BY WITNESS FRALEY:

13 A Yes, sir.

14 Q And my question was, how does this re-
15 evaluation, if it does differ in any way from what
16 you've done in the past?

17 It's listed here as an additional commitment
18 or additional improvement to your program, and my
19 question is how is what you're doing now any different
20 from what you just described?

21 BY WITNESS FRALEY:

22 A We still make an evaluations daily. We
23 were shut down on concrete there for quite a while.
24 We've had people that left the project for various
25 reasons, and therefore it's an ongoing thing to keep the

13-7
1 best people available in those buildings.

2 Q Do the other two panel members have anything
3 to add relative to -- is there any difference between
4 the evaluation of personnel now in their assignments,
5 how you're going about doing it?

6 I only ask that because it's couched here
7 as an additional commitment, and if what you're saying
8 is no, really, it's an ongoing thing and we've always
9 done it -- that's what your answer is so far, as I
10 understand it.

11 BY WITNESS FRALEY:

12 A No, let me clarify something. We brought
13 other people aboard since '79, and I think I made this
14 statement with Harlan Fowler that had some 20-some-odd
15 years of heavy civil, and he was brought on board as a
16 general civil superintendent at this time.

17 That was another thing that we done to
18 strengthen that area.

19 Q Now, you next say that you instituted a zero
20 defect program.

21 Mr. Purdy, is this -- drawing on your Navy
22 experience -- is this the zero defect program used
23 commonly in the Navy nuclear, or associated with it?

24 BY WITNESS PURDY:

25 A The zero defect program that we have

1 implemented on the South Texas Project is more commonly
2 associated with production, manufacturing organizations.

3 As a matter of fact, Brown & Root was the
4 first architect engineer constructor to become actively
5 involved in committing to the zero defects program as we
6 currently have.

7 It is not a motivational program, by any
8 stretch of the imagination. We don't give people money
9 or things like this if they do a good job, but it is
10 very similar to the program that you may be referring to
11 in the Navy in which the requirements were established
12 and that's what you expect the people to do.

13 Q Could you put a timeframe on when Brown & Root
14 implemented it in other areas of its business?

15 Was that what you just said, Brown & Root
16 was the first to implement this program?

17 BY WITNESS PURDY:

18 A Brown & Root was the first architect
19 engineer to commit to the program. It's been widely
20 used, obviously, by the Japanese management association
21 in Japan, by major industrial firms within the United
22 States, and International Telephone & Telegraph, even
23 American Express Company, believe it or not, is committed
24 to this particular type of a program, and most of the
25 electronic firms in the country are committed to it.

1 Wht it is, is a program that if management --
2 it starts at the top levels of management. We committed
3 to the thing in early '79 with a presentation by
4 Mr. Phillip Crosby of the Quality College, a consultant
5 to Brown & Root, in which he outlined the basic steps to
6 our upper management, and upper management made the
7 decision that it would in fact be applicable to an
8 architect engineer constructor. We could make it
9 applicable, and we had every intention of making it
10 apply.

11 Q So just to be clear, when you said that
12 Brown & Root was the first AE to implement this, you
13 were referring to the implementation on the South Texas
14 Project, to its implementation on the South Texas Project?

15 BY WITNESS PURDY:

16 A Yes, specifically that's....

17 Q Now, going to the authority of the quality
18 control inspectors to stop work, and the understanding
19 of everybody that they do have that authority, is it
20 true that prior to -- this is my question for Mr. Fraley --
21 is it true that prior to December 1979 it wasn't uniformly
22 understood by construction who in QC did or did not have
23 authority to stop work?

24 BY WITNESS FRALEY:

25 A No, sir. I think that it would be a fair

1 statement to say that there were isolated situations
2 that that may not have been a known fact to some
3 isolated individuals, but in a broad sense, or in a
4 sense, or in reality we all understood that QC had --
5 and have since they went on the project, that QC could
6 start any -- stop any activity when they deemed
7 necessary to do so.

8 Q Well, since December of '79 what have you
9 done to inform these isolated individuals that the QC
10 inspectors have the authority to stop work?

11 BY WITNESS FRALEY:

12 A The extensive training that we talk about in
13 the procedures relate to the hold points in the procedures.
14 I also had one-on-one conversations with the individuals.
15 There's also some of the individuals that are not on
16 the project.

17 The training on the responsibilities of QC,
18 the responsibility of construction, we have training on
19 that, various training classes that this comes out in.

20 I think we have a good, clear definition of
21 quality and their responsibilities and -- to stop and
22 restart the work.

23 Q Mr. Purdy, you have something to add?

24 BY WITNESS PURDY:

25 A Can I add one thing to that. Very recently

13-11

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1 the efficiency control program for South Texas Project,
2 which included the procedure for stop work, was addressed
3 in our refresher training program which I personally gave
4 to something on the order of 500 personnel at South
5 Texas Project, which included the crafts from the
6 foremen up to the superintendents, necessary engineering
7 personnel and quality personnel, and this stop work
8 authority at that particular time was very clearly
9 delineated and what the requirements were for it, not
10 just relative to the concrete activity but to the project.

11 Q Now, this refresher training program, just
12 to put it in context, is this something that -- or is
13 this that 90-day cycle retraining that is occurring now
14 that wasn't occurring in the past? Is that how this
15 came up?

16 BY WITNESS PURDY:

17 A Yes, sir. It also came up in the fact that
18 we have committed to retraining all affected parties
19 when procedures are revised, and in the major procedure
20 rewrite and redevelopment program that we recently
21 completed it was also the natural course of events for
22 the presentation, so the two dovetail together very well.

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1 BY WITNESS FRALEY:

2 A I would also add to this that also
3 executive management from Brown & Root and HL&P have
4 sat down with the people down through to the foreman
5 ranks, and went over this very thoroughly with them.

6 Q Are you referring to a particular meeting,
7 or -- when you say this?

8 BY WITNESS FRALEY:

9 A I am referring to a particular meeting, plus
10 satellite meetings that I've been involved in.

11 Q When did that particular meeting occur that
12 it was generally distributed among the ranks?

13 BY WITNESS FRALEY:

14 A Sir, I can't give you the date.

15 Q Well, I mean a time frame. Early '77 or
16 '80, or --

17 BY WITNESS FRALEY:

18 A I would say in '79, the middle part of '79.

19 BY WITNESS PURDY:

20 A Management semi-annually presents a re-
21 statement of management policy relative to the quality
22 program for the South Texas Project in which this is one
23 of the topics that is addressed, and that was most
24 recently done not more than six or eight weeks ago.

25 Q Now, the last area I have to question you on

14-2 1 relative to the additional commitments you make is on the
2 top of Page 11 you say that you established individual
3 personnel qualification and training files.

4 As I read that, the question came to my
5 mind why wasn't this something that was done from the
6 very start of the project?

7 Would any of you like to answer that
8 question?

9 BY WITNESS PURDY:

10 A I believe in order to address that we have
11 to separate the organization. From a Quality Assurance
12 Department standpoint, those types of folders have always
13 been maintained, very comprehensive training and
14 qualification, certification folder.

15 Q On QA/QC people?

16 BY WITNESS PURDY:

17 A Yes, sir.

18 Q How about crafts people?

19 BY WITNESS FRALEY:

20 A Okay. We have always had a personnel file
21 of new people that are coming in that would have a back
22 reference to their abilities or to their experience.

23 We did not have a file showing the extensive
24 training that these people have done, or showing the
25 requirement of training to be done for each individual.

4-3 1 We do have that now. Every individual that is involved
2 in complex placement has a very thorough history of their
3 past, plus what they have done at the South Texas Project
4 as far as training is concerned.

5 Q So is it fair to say with respect to crafts-
6 men prior to December 1979 what was in their file was
7 maybe their past experience and education that would
8 typically be put on an application, but now there is a
9 much greater detailed form relative to both previous
10 experience and education and the training he is
11 receiving at the site?

12 BY WITNESS FRALEY:

13 A Yes, sir.

14 Q Mr. Carvel, on Page 14 you state that HL&P
15 has monitored Brown & Root's retraining to assure that
16 changes were adequately explained to QC Inspectors, and
17 that the various criterias were understood.

18 How did HL&P actually monitor that
19 retraining activity?

20 BY WITNESS CARVEL:

21 A We, of course, sat in on the training that
22 was done for CCP-25 to, on to the actual training itself,
23 and in addition to that we are constantly evaluating
24 the performance of the inspectors in the fields. We are
25 monitoring many of the -- well, we are monitoring all of

14-4
1 the complex placements on a hundred percent basis. Now
2 if that means a hundred percent of the time it takes to
3 do it, someone from my staff is present at the placement.

4 We also do that for non-complex, as well.

5 Through personal contact with the Inspectors,
6 themselves, we get a feeling for their understanding of
7 the procedures, and there has been some testing done on
8 CCP-25.

9 Q This would be testing over and above the
10 testing that Mr. Fraley referred to?

11 BY WITNESS CARVEL:

12 A No. I think I am referring to the same thing.

13 Q What level HL&P employee was sitting in
14 during these retraining programs or procedures? Is that
15 someone that works directly under you, or could you give
16 me some flavor for who --

17 BY WITNESS CARVEL:

18 A When CCP-25 was first approved, everyone on
19 my staff sat in on the training program, as well as myself
20 personally.

21 Q Now, you refer to documentation flow problems
22 and in that context you deal specifically with the
23 concrete procedures references to codes, and that the
24 procedures themselves were self contained.

25 My question to you is other than that problem,

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1 the problem of incorporating the code language into the
2 procedures, which you have already testified to, were
3 there any other documentation flow problems that you had
4 in mind in preparing this testimony?

5 BY WITNESS CARVEL:

6 A Yes. I think that in the process of preparing
7 for and making a concrete placement, you just naturally
8 go from preplacement activities into placement activities
9 and then post-placement activities.

10 Previously these three activities were
11 separated into individual procedures. I think now, of
12 course, they are all incorporated into CCP-25, and the
13 flow of paperwork, as well as the orders of inspections,
14 and that sort of thing, are very clear now and it is a
15 natural progression.

16 Q Now you also say on Page 15, Line 20, you say
17 that the new procedures expand and clarify the QC
18 Inspector's stop-work authority.

19 Now, we have already heard from Mr. Frazier
20 and heard his explanation of how these procedures have
21 changed the QC Inspector's stop-work authority, but I
22 wonder if either Mr. Carvel or Mr. Purdy could in a nut-
23 shell give the critical difference between what the
24 procedures, what authority the procedures gave the QC
25 Inspectors before December '79, and how that has changed

14-6
1 now?

2 BY WITNESS PURDY:

3 A By the procedures are you referring to the
4 concrete procedure or the programatic procedures for
5 stop-work authority?

6 Q I am referring to on Line 20 it says "the
7 new procedures." Whatever you had in mind when you wrote
8 that sentence?

9 BY WITNESS PURDY:

10 A CCP-25, we are talking specifically about
11 CCP-25 in this document, did not previously address per se
12 the QC Inspector's stop-work authority.

13 Q Is that your understanding of the prior
14 problem or the confusion relative to what the QC
15 Inspector's authority was?

16 BY WITNESS PURDY:

17 A I do not believe that became a question of
18 their authority to stop that activity unless they could
19 prove beyond a shadow of a doubt that there was, you know,
20 non-conformance or something that would lend to non-
21 conformance.

22 Because of the nature of concreting
23 activities CCP-25 is specifically incorporated into that
24 document the right of the QC Inspector to halt production
25 at any time he believes there may be a question, and get

14-7 1 it resolved. That's the biggest change.

2 BY WITNESS CARVEL:

3 A I think concrete is somewhat of a unique
4 situation, and there was some confusion on the Inspector's
5 part in that an in-process non-conformance is practically
6 impossible to disposition after the fact.

7 For example, if you have an excessive lift,
8 it is pretty difficult for an Engineer to assess the
9 impact on that placement of an excessive lift when there
10 are perhaps seven or eight additional lifts placed on
11 top of it. He can't really see any more what the impact
12 might be.

13 And we very explicitly outlined in the CCP-25
14 and in the training sessions the fact that if a situation
15 like that does come up he has the authority and the
16 responsibility to not just wait until the placement is
17 complete and report that situation, but to stop the work
18 then and there and get the Engineer out to the placement
19 and to disposition that non-conforming condition on the
20 spot.

21 JUDGE BECHHOEFER: Let me break in here,
22 because that is a subject I am interested in.

23 Previously was the only requirement in
24 effect the general stop-work authority, or was there
25 something specifically directed toward concrete?

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WITNESS CARVEL: Previously, is my

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understanding.

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JUDGE BECHHOEFER: Previously, I mean prior

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to NOVember/December 1979.

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WITNESS CARVEL: My understanding of that is

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that there wasn't anything specifically in the concrete

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procedures to address that, that it was left to the

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training or the stop-work procedure itself, and the

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training that people received on that procedure. This

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was a gray area with respect to that stop work.

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JUDGE BECHHOEFER: So the CCP-25 really

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introduced into the concrete specific directions for

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carrying out the stop-work authority for the first time?

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WITNESS CARVEL: Yes.

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14-9

1 BY MR. GUTIERREZ:

2 Q Going to Page 18 reference is made to the
3 National Bureau of Standard Cement and Concrete Reference
4 Laboratory, and the test or inspection on the STP site
5 laboratory.

6 My first question is what was the result of
7 that test? Does anybody know?

8 BY WITNESS CARVEL:

9 A The inspection and evaluation revealed that
10 there were some discrepancies in the equipment at the
11 South Texas Project with respect to the national standards.

12 The report that we received from the
13 National Bureau of Standards, CCRL, was forwarded to our,
14 to Brown & Root Engineering, and those, each of those
15 deficiencies was addressed by Engineering.

16 Q Now, when you say "discrepancies" or
17 "deficiencies" are you referring to was the equipment
18 not calibrated correctly, or what was the -- Can you be
19 a little more specific?

20 BY WITNESS CARVEL:

21 A There was no problem with respect to
22 calibration. I understand there was a problem in the
23 thickness of a piece of equipment which is used to
24 determine the saturated surface dry condition of sandy
25 materials.

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1 Now, there was one other discrepancy that
2 had to do with the flatness of the unit weight, the top
3 rim of a unit weight bucket.

4 Q Now, this inspection is required every three
5 years; correct?

6 BY WITNESS CARVEL:

7 A That inspection is required on a tri-yearly
8 basis, tri-annual basis.

9 Q And these inspections are initiated either
10 upon either HL&P or Brown & Root's request; is that
11 correct?

12 Mr. Purdy, you are shaking your head yes?

13 BY WITNESS PURDY:

14 A Yes, sir.

15 Q Were these inspections always performed on
16 time, do you have knowledge to that effect?

17 BY WITNESS PURDY:

18 A The last inspection that was performed was
19 performed beyond the date that it should have been. That
20 was identified by my organization in conducting an audit
21 on that particular activity.

22 Q I didn't catch the last part of your comment,
23 Mr. Purdy. You said that an internal audit --

24 BY WITNESS PURDY:

25 A I say my people in a review of the testing

14-11

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1 laboratory and during a surveillance of that activity
2 Quality Engineering on the site identified that they had
3 exceeded the required time.

4 Q By how much? Do you remember?

5 BY WITNESS PURDY:

6 A I --

7 Q Approximately. I mean had it been six years,
8 or a month, or --

9 BY WITNESS PURDY:

10 A I believe the time frame was 18 months, I
11 think.

12 BY WITNESS CARVEL:

13 A I think that that is correct.

14 Q Now, on Page 19, Mr. Carvel, you say that
15 HL&P is involved in the pre and post-placement meetings.
16 Just to get an idea of the nature of that involvement
17 who at HL&P or what positions at HL&P are involved in
18 those meetings?

19 BY WITNESS CARVEL:

20 A That statement is in reference to my staff.

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15-1

1 BY MR. GUTIERREZ:

2 Q Mr. Carvel, who is your counterpart in terms
3 of job function with Brown & Root?

4 BY WITNESS CARVEL:

5 A Presently, that would be Mr. John Adachi.

6 Q Adachi?

7 BY WITNESS CARVEL:

8 A Adachi, yes.

9 Q On Page 7 of your testimony you refer to
10 December 21, 1979, and the meeting HL&P officers had with
11 Region IV of the NRC, and you say that HL&P verbally
12 instructed Brown & Root not to place any safety-related
13 concrete until certain aspects of the site QC concrete
14 program were resolved.

15 Would you elaborate a little bit on what
16 those certain aspects that were of concern at that time
17 were?

18 A (No response.)

19 Q Let me ask a more specific question. I
20 understand that is vague.

21 Are those certain aspects the aspects that
22 are addressed in the 9-point program?

23 BY WITNESS CARVEL:

24 A I believe so, yes. Since I wasn't there,
25 I --

15-2 1 BY WITNESS PURDY:

2 A Yes, sir. Those were the items that had to
3 be addressed.

4 MR. GUTIERREZ: Mr. Chairman, I believe I am
5 finished. I need to review my notes, if you want to take
6 a break, and I might have one or two questions when we
7 come back.

8 JUDGE BECHHOEFER: Yes. We will do that.
9 We will take 15 minutes.

10 (A short recess was taken.)

11 JUDGE BECHHOEFER: On the record.

12 BY MR. GUTIERREZ:

13 Q On Page 16, Lines 33 through 38, you say
14 that as a result of the review of the seven initial
15 concrete pours you made certain improvements and
16 recommendations.

17 Could you be a little more specific as to
18 what the first seven concrete pours showed, and what
19 additional improvements or recommendations were made?

20 BY WITNESS FRALEY:

21 A Give me one moment.

22 Q Sure.

23 BY WITNESS FRALEY:

24 A Okay. Some of the findings in our review of
25 the complex pours of the committee, we found that we were

15-3 1 having a lot of visitors, inspection, from various groups
2 of people we identified at the company.

3 People were real enthused about what was
4 going on, and we identified a problem there, and we
5 somewhat limited access into the pours, because of the
6 congestion and people just flat being in the way.

7 Another thing was the configuration of slick
8 lines. We identified a problem with the configuration of
9 some slick lines.

10 Bob may be able to add something to that.
11 Those are some of the things that we did.

12 Q Just one question. When you say the
13 configuration of the slick line, was that something
14 unique to the particular pour, or is that something that
15 has general applicability?

16 BY WITNESS FRALEY:

17 A It was unique to a particular pour, but it
18 is something that you run into quite often, and that is
19 the more often you have 90's in a line, the more difficult
20 it is to pump the concrete.

21 So we made the decision that where these --
22 this configuration is necessary, we would use two pumps
23 and go with two different lines. And, therefore, cut
24 down some of the turns that are made in the slick lines.

25 Q Mr. Purdy, did you have anything to add to

15-4

1 that?

2 BY WITNESS PURDY:

3 A. No, not specifically.

4 MR. GUTIERREZ: Thank you, Panel. That's all
5 I have, Mr. Chairman.

6 BOARD EXAMINATION

7 BY JUDGE LAMB:

8 Q I just have a few quick questions.

9 One thing I don't believe was covered in
10 going over background. Mr. Fraley, are you a licensed
11 professional engineer?

12 BY WITNESS FRALEY:

13 A. No, sir.

14 Q Mr. Purdy, are you?

15 BY WITNESS PURDY:

16 A. No, sir.

17 Q Mr. Carvel, are you?

18 BY WITNESS CARVEL:

19 A. No, sir.

20 Q Mr. Purdy, on Page 12, Line 40 of your
21 testimony, you mention an extensive training program, and
22 I think we have discussed this somewhat before.

23 To whom does this training program apply?

24 BY WITNESS PURDY:

25 A. The training program that I am referring to

15-5 1 here, Judge Lamb, applied to the crafts persons involved
2 in the actual concreting activities, the foremen's
3 supervision of those, engineering personnel that were
4 involved in interfacing in the activity, and the quality
5 assurance/quality control personnel interfacing.

6 All of those individuals who would be
7 interfaced or involved in the concreting action were
8 trained.

9 Q. So it is pretty well across-the-board
10 training program as far as the people who are involved
11 in concrete activities?

12 BY WITNESS PURDY:

13 A. Yes, sir.

14 Q. Presumably these are different training
15 programs for the different categories of personnel; is
16 that correct?

17 BY WITNESS PURDY:

18 A. Some areas were emphasized more with certain
19 groups, yes, sir, depending upon whether they were the
20 doers or the overseers, or the checkers.

21 Q. Mr. Fraley, on Page 13, Line 35, you mention
22 that concrete construction procedure 25 was approved in
23 July 1980.

24 This was approved by whom?
25

15-6

1 BY WITNESS FRALEY:

2 A It was approved by all parties, Construction,
3 Quality, QC, and HL&P.

4 Q Okay. That does not necessarily include
5 NRC; is that correct?

6 BY WITNESS CARVEL:

7 A That's correct. This approval does not
8 include the NRC.

9 Q This is, well, an approval of the people
10 involved on the sites?

11 BY WITNESS CARVEL:

12 A Yes, as all procedures are approved on site.
13 The normal approval process.

14 Q I just wanted to clarify that this did not
15 mean an NRC approval, necessarily; is that correct?

16 BY WITNESS CARVEL:

17 A That is correct. Although there was a
18 later approval by the NRC, as referenced --

19 Q Yes.

20 BY WITNESS CARVEL:

21 A -- in one of their I&E reports.

22 Q On Page 14, Line 8, you mentioned, Mr. Fraley,
23 90-day cycles for retraining.

24 Is this a continuous operation; that is,
25 every 90 days there is another training program?

15-7
1 BY WITNESS FRALEY:

2 A Yes, sir. Every 90 days the people are
3 trained, training program every 90 days.

4 Q Is that a repetition of the same program,
5 or is the program modified?

6 BY WITNESS FRALEY:

7 A It is repetitious, but if there is
8 modifications needed that would be identified by the
9 committee it would be handled as a modification in the
10 program.

11 Q Mr. Carvel, you mention on Line 27 of that
12 same page that HL&P monitored B&R's retraining.

13 How did you monitor this? What was
14 involved in your monitoring program?

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1 BY WITNESS CARVEL:

2 A There was no formal program for the
3 monitoring of the Brown & Root retraining.

4 I think I stated before that it consisted
5 primarily of sitting in on the actual training sessions
6 themselves, and monitoring of the activities in the
7 field, personal contact with the Inspectors, and results
8 of the testing that was done on the procedure.

9 Q But was someone on your staff assigned to
10 do this; that is, to attend all of the training sessions?

11 BY WITNESS CARVEL:

12 A Initially everyone from my staff attended
13 the training on CCP-25. There is one person on my staff
14 who full-time, activities are related to complex concrete.

15 Q That person goes to all of these?

16 BY WITNESS CARVEL:

17 A Yes. He attends everything that has to do
18 with the complex concrete.

19 Q Did your group participate in the planning
20 of the training program and approving the content of the
21 training program, or just monitor it after the fact?

22 BY WITNESS CARVEL:

23 A We had some involvement in the review of
24 the types of things that were going to be covered in the
25 training, and these were discussed in the process of

15-9 1 these procedure revision meetings that we previously
2 referred to, where all parties met to hammer out this
3 new procedure.

4 As early as then we discussed possible
5 training aids, various ways in which we would get this
6 information across to the affected party.

7 Q You also mention on Page 19 the project
8 trending program that was developed by HL&P. What is
9 your feeling about how successful that has been? Is that
10 program working, and if so, how do you know that it is?

11 BY WITNESS CARVEL:

12 A We have received some trend investigation
13 reports out of that group. That group is our quality
14 systems group in HL&P QA Department. We have received
15 some trend investigation reports from them, and it seems
16 to be working fairly well.

17 They seem to be picking up the trends which
18 are apparent from our documentation that we file with
19 our implementation reviews.

20 Q You say it is working. What is that based
21 on? The fact that they are finding things which should
22 be corrected, that you didn't know otherwise, or --

23 BY WITNESS CARVEL:

24 A Yes. They are identifying trends that in a
25 cases we hadn't necessarily picked up otherwise, or

15-10 1 possible trends, in any event.

2 Q You also mention, I believe you did, on
3 Page 20, yes, specialized institutes to which you send
4 selected individuals for training.

5 Are those offsite, or are they company
6 training programs, or are they conducted by other
7 organizations offsite?

8 BY WITNESS CARVEL:

9 A Those programs that I was referring to are
10 offsite programs, generally speaking.

11 Institute of Applied Sciences offers
12 training courses in different areas.

13 Various other companies offer -- General
14 Atomic has an extensive training program, which we send
15 people to.

16 Gilbert Commonwealth Associates has some
17 pretty good training programs that we utilize.

18 Q Can you give me some idea of the extent to
19 which you have sent people to these types of programs?

20 BY WITNESS CARVEL:

21 A The extent to which we have?

22 Q Yes.

23 BY WITNESS CARVEL:

24 A Well, --

25 Q I mean is this an occasional rare person,

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or is this pretty broad coverage?

BY WITNESS CARVEL:

A. It works this way: On an annual and then a quarterly basis, I as a supervisor analyze each individual's training needs, and try to select, if possible, training courses within HL&P or in the Houston area that might fulfill those training needs, and if need be we will look around the industry to find offsite training that might apply.

Q But how many people might you send to this type of training?

BY WITNESS CARVEL:

A. To date, since the beginning of the year I believe we have sent two people offsite. Otherwise, we have been able to get things onsite.

We utilize Brown & Root's onsite training capabilities, as well.

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16-1

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1 As a matter of fact, presently two of my
2 people are in Philadelphia on a training session.

3 Q At the top of Page 21 -- and this would be
4 for either Mr. Purdy or Mr. Carvel, I guess -- I don't
5 believe anyone has explained yet for the record what a
6 rock pocket is and how it happens.

7 Could one of you do that just briefly?

8 BY WITNESS CARVEL:

9 A A rock pocket generally is an area where
10 the concrete has filled the area initially, and
11 generally speaking, the most common example would be a
12 loose form which would permit the mortar to leave the
13 concrete in that area, and you would be left with
14 essentially rocks. There would be no binding mortar to
15 keep it together.

16 Q In other words, the mortar drains away from
17 the rocks and leaks out?

18 BY WITNESS CARVEL:

19 A Yes.

20 Q This is usually not the result of bad mixing
21 but the result of leaking forms?

22 BY WITNESS CARVEL:

23 A That's generally what causes a rock pocket.
24 There are perhaps other things that conceivably cause a
25 rock pocket. That's what they're generally associated

16-2 1 with, and for the most part they're located next to the
2 forms. Every one I've ever seen has been on the form
3 surface.

4 JUDGE LAMB: Thank you. That's all I have.

5 JUDGE BECHHOEFER: The first inquiry I have
6 is really to the lawyers rather than to the panel.

7 I would like to ask some questions about
8 Paragraph 3 of Applicants' Exhibit 1, and I wanted to
9 inquire whether the later panel on harassment would be
10 more appropriate to ask those questions of, since this
11 document is referred to specifically in the testimony
12 here but in a somewhat different sense.

13 Do you know whether Mr. Logan -- Mr. Wilson,
14 I mean, for Houston, and Mr. Singleton and Warnick for --

15 MR. HUDSON: I believe that they can address
16 this. I suspect that this is PGM-002 that's being
17 referred to here. That's the procedure number.

18 JUDGE BECHHOEFER: That's correct. Your
19 response, Applicants' Exhibit 2, I think, does identify
20 that.

21 MR. HUDSON: I believe they could address it,
22 but the gentlemen may be able to as well, so you can
23 take your pick or ask both of them, if you wish.

24 JUDGE BECHHOEFER: Okay. Well, I will ask
25 any member of the panel, really.

BOARD EXAMINATION

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2 BY JUDGE BECHHOEFER:

3 Q In the area of concrete have there been any
4 incidents of concrete pouring and in the implementation
5 of the restart program, have there been incidents which
6 would have been covered by Paragraph 3 of the nine-point
7 commitment letter, which is Applicants' Exhibit 1?

8 Do you have the document?

9 BY WITNESS FRALEY:

10 A Yes, sir, we have it.

11 BY WITNESS PURDY:

12 A Judge Bechhoefer, to the best of my knowledge,
13 from the QA/QC aspect, there has never been an occasion
14 for personnel to follow those permitted steps in PGM-002
15 to seek the resolution of differences of opinion.

16 Mr. Fraley may be able to shed some light
17 from construction, but I'm not aware of any from the
18 quality aspect.

19 BY WITNESS FRALEY:

20 A Sir, I didn't understand from what time frame
21 you were talking. Did you have a time frame in mind?

22 Q Well, I really wanted to find out both, in
23 terms of the period of time when there was certain
24 problems in the concrete area and application for the
25 future. But if the problem hasn't arisen in the concrete

16-4

1 area, then I'll ask the other panel.

2 MR. AXELRAD: Mr. Chairman, I thought your
3 original question was in the course of the concrete
4 restart work. That was the question that was addressed
5 to this panel, wasn't it?

6 JUDGE BECHHOEFER: Well, I wanted to know
7 whether -- that was part of it. I also wanted to know
8 whether in the past there had been problems which, if
9 the procedure had been in force, would have come under it.

10 BY WITNESS FRALEY:

11 A Let me answer that one.

12 In the restart program, I am not aware of
13 any problems whatsoever there.

14 Prior to that, I'm aware of isolated
15 situations that may have been a problem, or was in fact
16 a problem.

17 BY JUDGE BECHHOEFER:

18 Q And so this new procedure would have applied
19 to those problems, I take it, if it had been in effect?

20 BY WITNESS FRALEY:

21 A Yes, sir.

22 Q Could any of you address how the new procedure
23 was different from whatever was in effect before?

24 BY WITNESS FRALEY:

25 A I will attempt to address that. The new

16-5

1 procedure spells out specifics on how to handle a
2 situation when there is an interpretation problem or
3 a difference of opinion between a QC inspector and a
4 hand, if you will, a constructor.

5 And that comes on up through the chain of
6 command and you can and do have the capabilities of
7 questioning to determine -- I don't know exactly how
8 I want to say this -- there is a means in the procedure
9 where that if there is a misinterpretation or a
10 discrepancy or people are not interpreting the same way,
11 carry it to your immediate supervisor.

12 Before this procedure it was not clearly
13 spelled out that neat.

14 Q All right. Now, what happens then if the
15 supervisor on both sides, say both construction and QC,
16 agree with the person who raised the problem, and there's
17 a disagreement between supervisors, in other words? It's
18 gone up one level, then what happens?

19 BY WITNESS FRALEY:

20 A It's carried to the next step, but keep in
21 mind the procedure also says that the hold is already
22 placed on the work. The work is not continuing, but
23 the interpretation problem can continue up through the
24 ranks, but the work is physically stopped, no matter what
25 the problem is; interpretation problem, the work is

1 still stopped.

2 Q And that would continue until some resolution
3 of the question were reached?

4 BY WITNESS FRALEY:

5 A Yes, sir.

6 Q Whether it was QC or the other way?

7 BY WITNESS FRALEY:

8 A Yes, sir.

9 I might add that it's very explicitly
10 spelled out that there wouldn't be any bickering or
11 this type thing, that immediately this situation would
12 be carried up to the next authority.

13 Q How have you addressed -- in the last
14 sentence it says the policy will specifically address
15 the fact that threats will not be tolerated; how has
16 that been carried out?

17 BY WITNESS PURDY:

18 A How was it carried out or addressed?

19 Q Yes. How was it addressed?

20 BY WITNESS PURDY:

21 A It is specifically addressed in PGM-002,
22 Judge. It indicates that threats and intimidation will
23 be cause for terminations.

24 Q Do both the construction workers and the
25 quality control inspectors know this?

16-7

1 BY WITNESS PURDY:

2 A That particular document is also reviewed
3 with all project personnel semi-annually, Judge
4 Bechhoefer.

5 Q I see. Would normally a supervisor sit down
6 with a person working for him and go over that, or would
7 there be a broad meeting?

8 BY WITNESS PURDY:

9 A It is generally a presentation to a
10 relatively larger group of people from varied responsi-
11 bilities. There will be crafts persons, quality control
12 personnel, engineering personnel. The training depart-
13 ment is assigned responsibility of bringing together
14 this group of people for a semi-annual presentation, and
15 the presentation is given by project management to those
16 people.

17 Q We're going to shift gears a little bit.

18 We heard a lot yesterday that there was a
19 problem in connection with Lift 15, about the work being
20 done at night and there had been inadequate lighting.

21 I'd like a description from this panel as to
22 how each of you would -- really, Mr. Purdy and Mr. Carvel,
23 I guess, and Mr. Fraley, you can comment if you wish to,
24 but how would you envisage a problem like that being
25 handled under the new procedure?

16-8

1 BY WITNESS CARVEL:

2 A I'm not exactly sure which problem you're
3 talking about.

4 Q Well, the inadequate lighting. I realize
5 that you testified that there's a one-for-one replacement
6 policy, or policy for having equipment to replace other
7 equipment.

8 BY WITNESS CARVEL:

9 A I think first of all if it was anticipated
10 that the placement -- the duration of the placement
11 would take into the nighttime that the pre-placement
12 plan would indicate that the level of lighting that was
13 necessary.

14 If for some reason the duration of the
15 placement caused it to go into the nighttime, on an
16 anticipated situation the request for lighting would be
17 made by QC to construction.

18 Q Now, when would that occur? Would that
19 occur before any placement started?

20 BY WITNESS CARVEL:

21 A Well, under normal circumstances, yes, if
22 any kind of lighting is required, or deemed to be
23 required for the inspection of that placement, that's
24 handled well in advance of the placement in the planning
25 stage. But if for some unforeseen reason the placement

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takes longer than expected or goes to some state where
it's darker than was anticipated, additional lighting
would be requested by QC when they deemed that additional
lighting was required, and I have no doubt that
construction would provide that lighting.

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17-1 1 Q Well, if the pour were ongoing, how would
2 that work?

3 BY WITNESS CARVEL:

4 A Presumably, the placement would be stopped
5 until adequate lighting was provided.

6 Q I see.

7 BY WITNESS CARVEL:

8 A In conjunction with any condition which
9 might lead to a nonconformance or any stop-work
10 provisions of CCP-25.

11 Q Mr. Purdy or Mr. Fraley, do you have --

12 BY WITNESS FRALEY:

13 A Let me make a comment on that.

14 As far as lighting is concerned, we have
15 a predetermined number of yards to place in any pour.

16 Throughout that pour we have the
17 information at our side through a radio to tell how
18 many yards we've placed in the form.

19 We know how long -- we know what time the
20 pour started. If, for instance, you are placing a
21 500-yard pour and your pouring rate is 100 yards an
22 hour, that's a five-hour duration, if nothing happened.

23 We have a good feel for a time to finish up
24 on any pour, and I think that by knowing these things,
25 yardage, the amount of yards we have distributed into the

17-2 1 form as of now, giving you a ratio per hour, is a
2 good indication well in advance of night or darkness.

3 A combination of this knowledge, through the
4 engineer, through QC and through construction, would
5 identify a light problem way before the light problem
6 would come up.

7 Q Was this not done in Lift 15, or was it
8 purely the mechanical problem, the pumps and that type
9 of thing, which caused that to turn out differently
10 than was expected?

11 BY WITNESS FRALEY:

12 A I think personally Lift 15 was a combination
13 of several things that happened.

14 I might talk about Lift 15 for a few
15 minutes if....

16 Lift 15 actually started around 9:00 or
17 9:15. We got into it and was into it about two hours
18 before we experienced the first failure on the pump.

19 I think there was actually four different
20 pumps involved with five different failures.

21 What I'm saying there is that one pump had
22 two failures.

23 A combination of fatigue, in my opinion, was
24 very much a factor in that pour. We had a night shift
25 scheduled.

17-3 1 We had a pour duration of approximately
2 eight hours, eight or nine hours, and I'm speaking from
3 memory.

4 But because of problems that we encountered,
5 the pour went on up to 6:00 o'clock the next morning.

6 Some of the light problem was compounded by
7 lights being busted. We had a couple of lights that
8 were broken.

9 We had lights that was causing shadows. We
10 actually had lights that were causing us problems. We
11 had to rearrange the lights.

12 It's very difficult, a hundred and fifty
13 foot in the air with rebar sticking up trying to get
14 adequate lighting to the pour.

15 It's not impossible, but it's difficult; and
16 we encountered several problems.

17 In my opinion, fatigue was the biggest
18 problem that we had.

19 We had a night shift -- as I was going to
20 say a while ago -- we had a night shift scheduled in,
21 but the night shift was the number that it would take
22 to do the prepour activities, the cleanup, putting the
23 equipment up and this type thing.

24 We just flat weren't prepared for that
25 thing to take all night.

17-4

1 Q Do you think you would be -- Assuming all
2 the other conditions, which I know are not applicable,
3 do you think you would be more prepared today?

4 BY WITNESS FRALEY:

5 A Yes, sir, and we would be so because of our
6 procedures. The procedures call for a one-to-one
7 backup.

8 That's to say if you have four pieces of
9 equipment placing, you have four standing by to take
10 its place in case something happens.

11 Lighting has been addressed. Ratio to
12 vibrators has been addressed.

13 Also, it's a requirement in the procedure
14 that the concrete superintendent be on site during the
15 entire placement; that engineer would be on site during
16 the entire placement on complex pours, no matter what
17 time of the day or night it is.

18 There's also a requirement in the procedures
19 that a foreman would be at each point of placement.

20 It's also in the procedures that a general
21 foreman would coordinate this effort and be on the job
22 site, not necessarily at the placement.

23 These things all go together to ensure that
24 the pours could be adequately made now.

25 Q There was further testimony yesterday that

17-5 1 there was a failure of certain of the QC inspectors to
2 be able to grasp the importance of some of the problems
3 which were arising.

4 Could the QC inspectors today, in view of
5 the training that you've described in some detail, the
6 training programs, do you think the QC inspectors today
7 could handle that question?

8 I say this when I know they don't have to
9 unaided today, but do you think they are better
10 qualified to handle that today than they were back in
11 the Lift 15 days?

12 BY WITNESS PURDY:

13 A. I feel that the QC inspectors today are
14 significantly better versed in the over-all activity
15 and the interfacing activities.

16 I believe that they would be less hesitant
17 and more aggressive in their identification of what
18 they thought may be a problem, to cause a correction
19 before it became this type of a problem.

20 During this Restart Program, we have had a
21 quality engineer, one of our senior quality engineers, on
22 every complex placement.

23 That was originally identified as being
24 part of the Restart Program. However, we have been
25 so satisfied with the activities that have occurred to

17-6

1 date, that's going to become our normal program.

2 We will keep people out there to support the
3 QC personnel from the quality engineering standpoint
4 on all these pours, also.

5 So I believe the systems of checks and
6 balances within the Quality Department would
7 significantly diminish the probability of that
8 occurring.

9 I can't tell you that it's a hundred percent
10 foolproof, but we have certainly tried to train and
11 indoctrinate all personnel accordingly.

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17-7 1 BY WITNESS CARVEL:

2 A I would echo the comment that Mr. Purdy
3 just made, and I'd like to state that just based on
4 the training alone, irrespective of whatever else he
5 said, which I do agree with; but just based on training
6 alone, I think it's highly unlikely that that situation
7 would come up today, based upon what I've seen with
8 respect to the training program for CCP-25.

9 (Board reviews file.)

10 Q Just for a matter of clarity, either
11 Mr. Fraley or Mr. Carvel, on page 10 there's a reference
12 to a simulated complex concrete pour program, and on
13 page 11 there's a reference to a demonstration program.

14 Are those different?

15 Page 11, line 14, and page 10, line 42.

16 (Witnesses review document.)

17 BY WITNESS CARVEL:

18 A Page 10, which line?

19 Q Line 42.

20 BY WITNESS CARVEL:

21 A I believe those are one and the same
22 program.

23 (Witnesses conferring.)

24 A Those are indeed the same programs.

25 Q On page 13, I had a question about the

17-8 1 incorporation of codes and standards into procedures.

2 Is what is incorporated -- I know the
3 testimony is that the codes and the standards were
4 incorporated verbatim.

5 What I wanted to find out is whether --
6 maybe this is not even a problem, but do the codes and
7 standards ever have interpretive documents or
8 interpretive aids; and if so, how would that be
9 handled?

10 BY WITNESS CARVEL:

11 A I don't really know what you mean by
12 interpretive aids.

13 Q Well, I'm trying to think of a situation
14 where there would be a specific requirement of a code,
15 and then perhaps an Industry Committee advising what
16 is meant by the words in that. I shouldn't say
17 "industry," but a committee of the organization which
18 is sponsoring the code.

19 BY WITNESS PURDY:

20 A Judge Bechhoefer, do you mean that there
21 may be something in a code which is subject to
22 interpretation in one or more different ways by the
23 parties that are developing a procedure?

24 Q Right. I'm referring to the fact -- I don't
25 know whether it's a fact or not, but whether the party

17-9

1 developing the procedure or the code has given
2 instructions or guidelines as to how to interpret
3 certain terms which may appear in the standard.

4 If it doesn't exist, please tell me, because
5 that will --

6 BY WITNESS PURDY:

7 A Depending on the code that we're addressing,
8 there are such things as code interpretations or
9 commentaries that are generally put out by a particular
10 Code Committee; and these particular items would be
11 considered obviously in our design engineering's
12 commitments to those particular codes or standards, if
13 that's what you're referring to.

14 Q Well, I want to carry it the next step.

15 Since the code or the standard is
16 incorporated verbatim, how would those guidelines be
17 handled?

18 How would the worker who has to carry out
19 the procedure be aware of the guideline?

20 BY WITNESS PURDY:

21 A Perhaps if I gave an example of what we
22 meant by incorporating the requirements of codes or
23 standards in the procedure, it would clarify that.

24 In the previous concrete procedures, we
25 would tell people to place vibrators at distances in

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accordance with the ACI Code.

That meant that they had the concrete procedure and then they had to have the American Concrete Institute Code to figure out the size of the vibrator and what radius they were to put the vibrators in to achieve the consolidation.

We took those quantitative requirements out of the particular ACI Code and put them into CCP-25.

The items that we were putting in were those qualitative inspection criteria or directions that were very clearly specified in the Code, but were merely referenced.

Q I see.

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18-1

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1 Q So what you incorporated is self-explanatory?

2 BY WITNESS PURDY:

3 A Yes, sir.

4 Q Mr. Carvel, I'd like a little more detail,
5 perhaps, on how HL&P's QC arm works.

6 Do inspectors merely accompany the Brown &
7 Root inspectors to see that they are inspecting
8 correctly, or is this an independent check?

9 BY WITNESS CARVEL:

10 A It's an independent check. Of course, in a
11 lot of cases you have to accompany a Brown & Root
12 inspector, because in-process inspection can only be
13 done at a specific time; and if it's a 100 percent
14 requirement that Brown & Root inspect it, then both
15 inspectors have to be there at the same time.

16 It's not at all intended to be dependent
17 upon Brown & Root inspectors being there at the time,
18 though.

19 Q Is this done on a spot-check basis? Do you
20 pick your situations?

21 BY WITNESS CARVEL:

22 A The way that works is there are prepared
23 checklists based on existing construction procedures,
24 specifications that these people do inspections in
25 accordance with.

18-2 1

2 On a monthly basis, say for the civil
3 area, the civil supervisor, myself, would sit down with
4 the quality control supervisor for HL&P, and set a
5 frequency of inspection for specific areas for that
6 month and specific activities that might be occurring
7 that month that we would like QC to look at for us.

8 The inspection results are presented to us
9 as an additional guarantee that the hardware is per
10 the specificatio.s and procedures.

11 Q Is Brown & Root informed of this schedule
12 beforehand, or do your people just show up when they
13 are programmed to show up?

14 BY WITNESS CARVEL:

15 A IF the Brown & Root people need to be aware
16 in order to get in touch with us prior to doing something,
17 something, they are made aware that a certain
18 inspection will be done at a certain time; but
19 generally speaking, no.

20 As an example, for concrete activities, one
21 of the HL&P inspectors might show up on a concrete
22 placement and Brown & Root not have any prior knowledge
23 that he would be doing the placement inspection on that
24 placement.

25 Q Have you had a chance to evaluate the
results of this program?

18-3

1 BY WITNESS CARVEL:

2 A The program right now is in its infancy.
3 As a matter of fact, we just recently finished certifying
4 our inspectors; even though we had an inspection arm in
5 our organization previously, we couldn't technically call
6 what these people were doing inspections, since they
7 weren't certified as inspectors at that time.

8 They were simply monitoring for us up until
9 quite recently, at which time they were formally
10 certified.

11 Q So I take it there haven't been too many
12 inspections performed under this program?

13 BY WITNESS CARVEL:

14 A Not formal inspections, no. Like I say,
15 it's in its infancy right now.

16 Q I would like to ask each of you now three
17 fairly broad questions, similar to what Judge Hill
18 asked the other day of another panel.

19 First, are each of you -- I might as well
20 start with Mr. Purdy and go my left to my right.

21 Are you satisfied that the Concrete
22 Restart Program and procedures, including CCP-25, will
23 avoid or mitigate problems which have occurred in the
24 past in the concrete area?

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1 BY WITNESS PURDY:

2 A I am currently satisfied with the CCP-25
3 procedure and the performance of the personnel in
4 accordance with it during the Restart Program, and I
5 believe it will significantly serve to reduce the
6 problems previously encountered in concreting activities.

7 Q My second question is will the program
8 assist in identifying and pinpointing problems which
9 may occur?

10 BY WITNESS PURDY:

11 A I'm sorry, Judge Bechhoefer, I didn't hear
12 the question.

13 Q I'm sorry. Will the program assist in
14 identifying and pinpointing problems which may arise?

15 BY WITNESS PURDY:

16 A Yes, I'm very confident in the current
17 program, both from the CCP-25 aspect and from the
18 over-all quality assurance program that it will aid in
19 pinpointing or identifying and pinpointing root causes
20 of problems and aid in the prevention of their recurring.

21 Q And finally, is the program likely to
22 result in concrete in safety-related structures about
23 which you and possibly we may have reasonable assurance
24 that applicable requirements have been satisfied?

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1 BY WITNESS PURDY:

2 A I'm very confident that that will be the
3 case.

4 Q Mr. Fraley, would you like to -- First, are
5 you satisfied that the Concrete Restart Program, including
6 procedure CCP-25, will avoid or mitigate problems such
7 as have occurred in the past?

8 BY WITNESS FRALEY:

9 A Yes, sir. I feel that we've done a lot to
10 help the program. I have all the confidence in the
11 program and being able to apply the program on the
12 site.

13 Q Do you think it will assist in identifying
14 and pinpointing problems which may arise?

15 BY WITNESS FRALEY:

16 A Yes, sir, I think it will and it has.

17 Q And finally, is it likely -- Is the
18 program likely to result in concrete in safety-related
19 structures about which you and eventually we may have
20 reasonable assurance that applicable requirements have
21 been satisfied?

22 BY WITNESS FRALEY:

23 A Yes.

24 Q Mr. Carvel, are you satisfied that the
25 Concrete Restart Program procedures, including CCP-25,

18-6

1 will avoid or mitigate the problems which have occurred
2 in the past?

3 BY WITNESS CARVEL:

4 A I have a much greater degree of -- I think
5 that the procedures provide a much greater degree of
6 assurance that those things will not happen.

7 I'm satisfied from what I've seen of the
8 program -- I'm very satisfied.

9 Q And second, will the program assist in
10 identifying and pinpointing problems which may arise?

11 BY WITNESS CARVEL:

12 A Yeah, I think that we, to this point, have
13 seen that work, and I feel that will continue to work
14 that way, that we will be able to foresee the problems
15 with the program as they arise or before they arise.

16 Q And finally, is the program likely to
17 result in concrete in safety-related structures about
18 which you and eventually we may have reasonable
19 assurance that applicable requirements have been
20 satisfied?

21 BY WITNESS CARVEL:

22 A Yes, the program is very likely to do that.

23 JUDGE BECHHOEFER: That's all the questions
24 the Board has.

25 Do you have any, Mr. Hudson?

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Do you have any redirect?

MR. HUDSON: Yes, Your Honor, we have a limited amount of redirect, which I'll be glad to start now.

JUDGE BECHHOEFER: Okay.

REDIRECT EXAMINATION

BY MR. HUDSON:

Q First, Panel, I'd like to ask again a question that Judge Bechhoefer asked, because I was confused by the answer.

I direct your attention to page 10 of your prepared testimony, line 41-42 -- or line 40 through 42, I guess.

The sentence beginning on 40 states that, "In addition, the project instituted a simulated complex concrete pour program."

Is this program that's being discussed there the program of, I believe it was, nine non-complex pours which were treated procedurally as if they were complex and were carried out in accordance with the new procedures that applied to complex pours?

BY WITNESS FRALEY:

A Yes, sir.

Q Okay. In turning to page 11, line 14 through 18 states that, "Most importantly, we devised a

18-8 1 demonstration program of seven complex placements to
2 test out the new procedure and to confirm that the
3 complex placements can be resumed."

4 Is this demonstration program of seven
5 complex placements the Phase I of the restart, which was
6 authorized by the NRC.

7 BY WITNESS FRALEY:

8 A No, sir.

9 Q Okay. So then these were the first seven
10 of the nine non-complex pours that were treated as
11 complex?

12 BY WITNESS FRALEY:

13 A Yes, sir.

14 Q Okay, my confusion.

15 (Counsel reviews documents.)
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1 BY MR. HUDSON:

2 Q I direct your attention to CEU Exhibit 29,
3 which is the memo from Mr. Tolley to yourself, dated
4 August 27, 1979.

5 I believe there was some discussion of this
6 yesterday during the cross-examination by Mr. Gay in which
7 you indicated that part of the problem discussed here was
8 one of your foremen acting on a written memorandum from
9 a Site Quality Engineer had cut some rebar before an NCR
10 had been received back on site.

11 Had the NCR in question been dispositioned
12 by Houston Engineering?

13 BY WITNESS FRALEY:

14 A The person that we got the three-part memo
15 from was a PSE representative, Houston, on site.

16 And, yes, disposition was, in fact, in
17 Houston at that time. We hadn't received it onsite yet.

18 Q Did the individual that you received the
19 memo from, had he communicated with the Engineering
20 person representative in Houston who was actually working
21 on the NCR?

22 BY WITNESS FRALEY:

23 A Yes, sir.

24 Q And he informed you that the NCR had been
25 dispositioned and was being sent to the site?

19-2
1 BY WITNESS FRALEY:

2 A Yes.

3 MR. GUTIERREZ: Mr. Chairman, I would like
4 to object, only that they are such leading questions.
5 If something should be cleared up, I think it should be
6 cleared up.

7 But we only object that Mr. Hudson is leading
8 the witness I think impermissibly.

9 MR. HUDSON: I will rephrase the question,
10 Your Honor.

11 BY MR. HUDSON:

12 Q Let me ask again, was the NCR -- Had the
13 NCR been dispositioned at the time that your foreman
14 received the authorization to do the work?

15 BY WITNESS FRALEY:

16 A Yes, sir.

17 Q How do you know that?

18 BY WITNESS FRALEY:

19 A I got a three-part memo from the PSE, who
20 through a telephone conversation authorized us to -- or
21 giving us the disposition of, and that was to cut the
22 rebar.

23 Q When did you receive the NCR, itself, the
24 physical piece of paper back on the site?
25

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1 BY WITNESS FRALEY:

2 A About four days later.

3 Q Did Mr. Tolley know, when he wrote this
4 memo, that you were proceeding pursuant to the
5 disposition of this NCR? Did he know that the NCR had
6 been dispositioned at the time your men did the work?

7 BY WITNESS FRALEY:

8 A No, sir.

9 Q Were any procedural steps or other steps
10 taken to prevent this type of problem from happening
11 again, subsequent to this?

12 BY WITNESS FRALEY:

13 A Yes, sir.

14 Q Would you explain what those were?

15 BY WITNESS FRALEY:

16 A There was a disposition to a CAR around the
17 middle of the month that explained, that gave that
18 answer.

19 And that answer was that we got all the
20 supervision back together in the Reactor Building. I
21 did, personally, myself, in the Training Room, and went
22 through what an NCR was, and what a hold point was.

23 There was not a hold tag in the vicinity
24 of this problem.

25 We went back through a training program on

19-4
1 NCR, and not having the NCR in our hand before doing the
2 work. I did not do it with just that person. I did it
3 with the entire group that was in the Reactor Building.

4 In addition to that, the foreman's superin-
5 tendent sat down with him and talked heads up about it.
6 We were very confident that it would not happen again.

7 Q Has it happened again, to your knowledge?

8 BY WITNESS FRALEY:

9 A No, sir.

10 Q Were the problems, general problems of
11 craft supervision that are discussed somewhat in this
12 memo, CEU Exhibit 29, pervasive on the site? In other
13 words, were they worse than similar problems you have
14 experienced elsewhere in your career?

15 BY WITNESS FRALEY:

16 A No, sir.

17 MR. GUTIERREZ: Excuse me. Mr. Hudson, just
18 for clarification, was there a timeframe in that last
19 question?

20 MR. HUDSON: No.

21 BY MR. HUDSON:

22 Q Mr. Fraley, in earlier testimony you
23 indicated that your job as coordinator of the Complex
24 Safety-Related Restart Committee, I believe is its name,
25 may be finished.

19-5 1 Is the activities of the Committee going to
2 continue? Are the activities of the Committee going to
3 continue?

4 BY WITNESS FRALEY:

5 A Yes, sir. The Committee, itself, will
6 continue throughout complex concrete.

7 Q This is even after the limited Restart
8 Program is ended?

9 BY WITNESS FRALEY:

10 A Yes, sir.

11 Q Will you always be the coordinator of that
12 Committee?

13 BY WITNESS FRALEY:

14 A I will be that coordinator until relieved
15 by Construction management.

16 Q Are there any present plans that you know
17 of to relieve you of that responsibility?

18 BY WITNESS FRALEY:

19 A No, sir.

20 Q Is the post-placement inspection of a complex
21 concrete pour a requirement or simply an option that can
22 be utilized, if desired?

23 BY WITNESS CARVEL:

24 A Post-placement inspection is not an option,
25 and it is not unique to complex concrete, either. There

19-6
1 is a post-placement inspection done of every concrete
2 placement, safety-related concrete placement on the South
3 Texas Project.

4 Q Is this specified in the procedure; required
5 in the procedure?

6 BY WITNESS CARVEL:

7 A Absolutely.

8 Q Who performs this inspection?

9 BY WITNESS CARVEL:

10 A At the time the forms are removed, the actual
11 inspection the first day is performed by Quality Control,
12 but at the time the forms are removed both Quality Control
13 and Construction Engineering are present to evaluate any
14 problems that might come up with respect to defects.

15 Q Mr. Purdy, in response to a question from
16 Judge Lamb you gave a rather extensive explanation of
17 the system under which you were able to train and test
18 people on the site in order to compensate for any lack
19 in experience, or some lack of experience or education,
20 formal education in order to meet certain specifications.

21 Do you recall that conversation?

22 BY WITNESS PURDY:

23 A Yes, sir.

24 Q Is it possible under the procedures currently
25 in effect for the certification of batching and placing

19-7 1 QC Inspectors for you to substitute training and testing
2 for education and experience requirements?

3 BY WITNESS PURDY:

4 A Not for concrete inspection personnel, no,
5 sir.

6 Q So when you during your conversation with
7 Judge Lamb you were talking about the qualification of
8 other QC personnel?

9 BY WITNESS PURDY:

10 A I was talking about the qualification of
11 QC personnel within Brown & Root and PTL who were not
12 either concrete inspectors or non-destructive examination
13 personnel.

14 Q Okay. Now going back specifically to the
15 qualifications for batching and placing QC Inspectors,
16 is there a procedure in the code -- I believe it is code
17 that we have committed to that permits a waiver of the
18 education and experience requirements, permits an
19 Engineer to waive those requirements?

20 BY WITNESS PURDY:

21 A In addition to committing to Reg Guide 1.58,
22 we have also committed to ASME Section III Division II
23 minus the stamping, but we are -- we implement the
24 additional restrictive, more restrictive requirements of
25 ASME III Div. II, Appendix 7 on concrete inspectors.

19-8 1 There are provisions in which latitude can
2 be provided by the code. We have never invoked that. We
3 have always required all five characteristics of concrete

4 They must have the education, experience, be
5 trained, examined, and demonstrate the proficiency.

6 Q So you are in agreement, then, with
7 Mr. Artuso's statement that the waiver provision has not
8 been utilized in the certification of QC batching and
9 placing inspectors at South Texas?

10 MR. GUTIERREZ: Excuse me. I have to object
11 to that form of the question. I am just concerned that
12 they are leading, and the testimony should be from the
13 witness, rather than through counsel.

14 MR. HUDSON: Well, Your Honor, I was trying
15 to summarize Mr. Artuso's testimony, and I don't believe
16 that was leading. I was simply saying I believe Mr. Artuso
17 said this, do you agree with that? In order to get a
18 statement of the witness whether or not he agrees with
19 Mr. Artuso, I have to state what Mr. Artuso stated.

20 If I ask him do you agree with Mr. Artuso,
21 he is then being asked to agree to everything that
22 Mr. Artuso testified to, and I don't believe -- I believe
23 that would be an impermissibly vague question.

24 JUDGE BECHHOEFER: I will overrule that
25 objection.

19-9 1 BY WITNESS PURDY:

2 A ASME Section III Division II is very specific
3 in the requirements for the qualification of personnel
4 performing concrete inspection.

5 Mr. Artuso's statement relative to a waive
6 capability, I believe he was trying to relate the ANSI
7 45.26 latitude to the ASME boiler and pressure vessel
8 code for concrete. Okay?

9 We do not use that option for concrete. We
10 take all of the requirements that are specified in
11 Appendix 7 of Division II for ASME and say these are what
12 the Inspectors must have.

13 We do have that latitude for other personnel
14 with the demonstrated proficiency examination, but in that
15 context, no, I don't disagree with Mr. Artuso. It is
16 just that I don't choose to call it a waiver.

17 MR. HUDSON: If I could have a minute to
18 confer with my co-counsel and review my notes.

19 JUDGE BECHHOEFER: Why don't we take a short
20 break.

21 MR. HUDSON: We don't need it, just a quick
22 conference, but if you want to take a break anyway.

23 JUDGE BECHHOEFER: Let's take a short break.
24 About ten minutes.

25 (A short recess was taken.)

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JUDGE BECHHOEFER: Back on the record.

Mr. Hudson?

MR. HUDSON: We have no further redirect.

JUDGE BECHHOEFER: Mr. Gay?

MR. GAY: CEU has no recross.

JUDGE BECHHOEFER: Mr. Sinkin?

MR. SINKIN: Just a few questions, Your Honor.

RECROSS-EXAMINATION

BY MR. SINKIN:

Q Mr. Fraley, you talked about how you can measure the number of yards poured during a pour and that gives you an idea of how you are doing.

Is that measurement based on the number of trucks that have been emptied, or how exactly are you measuring the number of yards when you are in the midst of a pour?

BY WITNESS FRALEY:

A You can do it several different ways, sir, but, of course, the quickest way is by batch. You know, calling in and getting how much they have batched out for a particular pour.

But you could do it through measurements, depth of lifts.

There are several different ways you could do

20-2
1 it.

2 Q And in your discussion of Lift 15 you said
3 that there were four pumps in use, and there were five
4 failures, meaning that one pump failed more than once.
5 Is that correct?

6 BY WITNESS FRALEY:

7 A To the best of my recollection, yes.

8 Q Were those four pumps in use simultaneously?

9 BY WITNESS FRALEY:

10 A No, sir.

11 Q Was it two and two? I mean when the four
12 pumps you say were being used, how many are being used
13 at one time?

14 BY WITNESS FRALEY:

15 A I am doing this complete by memory now.

16 Q To the best of your memory.

17 BY WITNESS FRALEY:

18 A To the best of my knoweldge there was three
19 pumps setting in the vicinity.

20 We were also placing concrete on other parts
21 of the project.

22 There was also a pour going on around the
23 I think the equipment hatch area. There was three pumps
24 set there in that vicinity.

25 When we finished up on the equipment hatch,

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1 of course, that gave us the lateral movement of the third
2 pump, and we actually moved in an additional pump, which
3 would be four pumps.

4 Q Were any of the failures simultaneous?

5 BY WITNESS FRALEY:

6 A Yes.

7 Q Do you know how many --

8 BY WITNESS FRALEY:

9 A Not that they happened at exact the same
10 moment, but, yes, there was two pumps down at one time.

11 Q Do you know how many of the five failures
12 involved a simultaneous failure?

13 BY WITNESS FRALEY:

14 A No, sir. I do not.

15 Q But you know that it happened at least once
16 in the five?

17 BY WITNESS FRALEY:

18 A Yes, sir.

19 MR. SINKIN: That's all I have, Your Honor.

20 JUDGE BECHHOEFER: Mr. Gutierrez?

21 MR. GUTIERREZ: The Staff has one question.

22 RE-CROSS-EXAMINATION

23 BY MR. GUTIERREZ:

24 Q You stated that in reference to CCP-25 it
25 was your understanding that the NRC had reviewed it and

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1 approved it.

2 I would like to refer you to Staff Exhibit 55
3 and ask your counsel to give you that, I&E Report 80-19,
4 dated August 8, 1980.

5 (Document handed to witness.)

6 With respect to that Staff Exhibit, I refer
7 you to Pages 3 through 5, and ask you if that is your
8 understanding of the I&E Report where the NRC reviewed
9 and approved the procedures set forth in CCP-25?

10 BY WITNESS CARVEL:

11 A Yes. That is the one.

12 MR. GUTIERREZ: The Staff has no further
13 questions.

14 JUDGE BECHHOEFER: The Board has no further
15 questions.

16 Mr. Hudson, do you have anything further?

17 MR. HUDSON: No, Your Honor.

18 JUDGE BECHHOEFER: Mr. Gay or Mr. Sinkin,
19 anything further on I guess the one Staff question?

20 MR. SINKIN: No, Mr. Chairman.

21 MR. GAY: No, Mr. Chairman.

22 JUDGE BECHHOEFER: This panel may be
23 excused.

24 (Panel excused.)
25

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1 JUDGE BECHHOEFER: Mr. Axelrad.

2 MR. AXELRAD: At this time, Mr. Chairman, we
3 will call the Welding Panel.

4 MR. GUTTERMAN: Mr. Chairman, I notice the
5 only one not is Mr. Purdy, and he has already been
6 sworn.

7 While we are waiting for him maybe we can
8 swear the panel.

9 JUDGE BECHHOEFER: Okay. Mr. Saltarelli,
10 Mr. Muscente, Mr. Molleda, Mr. Wilson, Mr. Sullivan, Mr.
11 Hauser.

12 Whereupon,

13 EUGENE A. SALTARELLI
14 MATTHEW D. MUSCENTE
15 GORDON R. PURDY
16 RODOLFO MOLLEDA
17 LOGAN D. WILSON
18 MICHAEL D. SULLIVAN
19 DANIEL HAUSER

20 were called as witnesses and, having been first duly sworn
21 to testify the truth, the whole truth and nothing but the
22 truth, were examined and testified on their oaths as
23 follows:

24 MR. GUTTERMAN: Just so everyone can know
25 who is who, perhaps I ought to point out which people are
in which seats.

Starting with the front row, closest to me
is Michael Sullivan.

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Next to him is Mr. Muscente.

Then Mr. Saltarelli.

And then Mr. Molleda.

The back row, closest to this side is
Dr. Hauser.

In the middle is Mr. Wilson.

And Mr. Purdy has already testified.

DIRECT EXAMINATION

BY MR. GUTTERMAN:

Q Starting with Mr. Sullivan, will you please
state your names, and current employment?

BY WITNESS SULLIVAN:

A My name is Michael Sullivan. I work for
NUTECH, and I was a member of the Task Force.

BY WITNESS MUSCENTE:

A My name is Matthew Muscente, and I am
employed by Brown & Root.

BY WITNESS SALTARELLI:

A I am Eugene Saltarelli, and I am employed by
Brown & Root.

BY WITNESS MOLLEDA:

A My name is Rodolfo Molleda, and I am employed
by Houston Lighting & Power.

BY WITNESS PURDY:

A My name is Gordon Purdy, and I am employed

20-7
1 by Brown & Root.

2 BY WITNESS WILSON:

3 A My name is Logan Wilson, and I am employed by
4 HOUSTON Lighting & Power.

5 BY WITNESS HAUSER:

6 A My name is Daniel Hauser, and I am employed
7 by Battelle Columbus Laboratories.

8 Q Does each of you have a copy of the document
9 entitled "Testimony On Behalf Of Houston Lighting & Power
10 Company, Et Al, Of Mr. Eugene A. Saltarelli, Mr. Matthew D.
11 Muscente, Mr. Gordon R. Purdy, Mr. J. Rodolfo Molleda,
12 Mr. Logan D. Wilson, Mr. Michael D. Sullivan, Dr. Daniel
13 Hauser On the Welding Program At STP"?

14 BY WITNESS SULLIVAN:

15 A Yes, sir.

16 BY WITNESS MUSCENTE:

17 A Yes, sir.

18 BY WITNESS SALTARELLI:

19 A Yes, sir.

20 BY WITNESS MOLLEDA:

21 A Yes, sir.

22 BY WITNESS HAUSER:

23 A Yes, sir.

24 BY WITNESS WILSON:

25 A Yes, sir.

1 BY WITNESS PURDY:

2 A Yes, sir.

3 Q Are each of you familiar with the contents
4 of that testimony?

5 BY WITNESS SULLIVAN:

6 A Yes, sir.

7 BY WITNESS MUSCENTE:

8 A Yes, sir.

9 BY WITNESS SALTARELLI:

10 A Yes, sir.

11 BY WITNESS MOLLEDA:

12 A Yes, sir.

13 BY WITNESS HAUSER:

14 A Yes, sir.

15 BY WITNESS WILSON:

16 A Yes, sir.

17 BY WITNESS PURDY:

18 A Yes, sir.

19 Q Are there any corrections that need to be
20 made to it?

21 Starting with Mr. Saltarelli.

22 BY WITNESS SALTARELLI:

23 A Yes. There are two corrections I would like
24 to put into my testimony.

25 The first one is on Page 3 in Answer 6, on

20-9
1 Line 29, it states my position in Brown & Root, and I wish
2 to add that on May 15, 1981 I became Project Sponsor
3 and Acting Project General Manager.

4 Q Where do those words get inserted?

5 BY WITNESS SALTARELLI:

6 A They are inserted after the first sentence
7 on Line 29 on Page 3.

8 JUDGE BECHHOEFER: Would you repeat that?

9 WITNESS SALTARELLI: Yes, sir.

10 Following that first sentence, which reads:

11 "I am Senior Vice President and Chief Engineer of the
12 B&R Power Group," you can add "and on May 15, 1981 I
13 became Project Sponsor and Acting Project General Manager."

14 I have a second correction on that page,
15 also. Starting on Lines 42 through 44, the last sentence
16 currently reads: "In addition, I have closely followed
17 the Welding Task Force activities through regular
18 meetings with the Task Force Chairman who reports directly
19 to me."

20 I would like to correct that to read: "In
21 addition, I have closely followed the Welding Task Force
22 activities through regular meetings with the Task Force
23 Chairman who reported directly to me during the period of
24 the Task Force activity."

25 Those are the only corrections I have.

20-10
1 BY MR. GUTTERMAN:

2 Q Mr. Molleda?

3 BY WITNESS MOLLEDA:

4 A I would like to make a correction on Page 4,
5 Line 25, the answer to Question 8 should read:

6 "Until July 13th, 1981 I was HL&P's
7 Supervising Engineer..." Strike out the words "I am."

8 On Line 29, change the word "provide" to
9 "provided."

10 On Line 36, change the word "review" to
11 "reviewed."

12 On Line 42, add the sentence, "On July 13th,
13 1981, HL&P's STP Engineering Team was reorganized. Under
14 the new organization I am the Nuclear Engineering Team
15 Leader."

16 Q I suspect you will have to repeat that again,
17 slowly, for everybody to get it.

18 BY WITNESS MOLLEDA:

19 A Okay. Add a sentence on Line 42: "On July
20 13th, 1981, HL&P's STP Engineering Team was reorganized.
21 Under the new organization I am the Nuclear Engineering
22 Team Leader."

23 Those are the only corrections I have.

24 Q I believe Mr. Purdy had one.
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BY WITNESS PURDY:

A I have one correction on Page 10, Lines 21 and 22, the first sentence, change "twenty-one" to "nineteen."

Q I believe Mr. Sullivan had a correction or two.

BY WITNESS SULLIVAN:

A Yes. I have four corrections. The first one is on Page 11, Answer 18, Line 36, delete the word "NUTECH's" and add "a."

MR. GUTIERREZ: Excuse me, Mr. Sullivan. What page and line is that?

WITNESS SULLIVAN: That is Page 11, Line 36.

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20-12
1 BY WITNESS SULLIVAN:

2 A The second correction is Page 27, Line 36,
3 delete the "s" at the end of "procedures" and add
4 "specifications, and a significant portion of the..."

5 Should I read the line as corrected?

6 Q Yes.

7 A As corrected it should read: "All the STP
8 welding procedure specifications, and a significant
9 portion of the documentation were also examined."

10 JUDGE BECHHOEFER: Delete "and"?

11 BY MR. GUTTERMAN:

12 Q Are we to delete the word "and" as well?

13 BY WITNESS SULLIVAN:

14 A I'm checking.

15 No, the "and" stays in there. The line
16 should read: "All STP welding procedure specifications,
17 and..." -- the "and" stays in -- "...a significant portion
18 of the documentation..."

19 JUDGE BECHHOEFER: I think everyone has that
20 one.

21 WITNESS SULLIVAN: The next correction is
22 Page 28, Line 19, delete "...and most of the procedures
23 were..." and add "was."

24 BY MR. GUTTERMAN:

25 Q How would that sentence read, then?

20-13
1 BY WITNESS SULLIVAN:

2 A The sentence would read: "The Report
3 indicated that much of the documentation was in compliance
4 with Code and Prjject requirements."

5 The next correction is on the same page,
6 Line 20, delete "the" and add "...some of the construction
7 procedures, some of the..."

8 MR. GAY: Excuse me, Mr. Sullivan. Could
9 you do that again? What page and line are you on?

10 WITNESS SULLIVAN: That is Page 28, Line 21.
11 Excuse me.

12 Delete the first "the" in the sentence, and
13 insert "...some of the construction procedures, some of
14 the..." So I will read the sentence as corrected.

15 "However, deficiencies were identified in
16 some of the construction procedures, some of the AWS and
17 ASME welds as well as in the performance of NDE."

18 The last correction is on Page 31, Line 16,
19 delete "...facilitate tracking of welder performance."
20 Add "...verify that only qualified welders were used."

21 Those are all the changes I have.

22 BY MR. GUTTERMAN:

23 Q Mr. Wilson?

24 BY WITNESS WILSON:

25 A Yes. Turn to Page 18, please. The middle

20-14
1 of the page, the second paragraph, Line 25, change the
2 figure "374" to "over 650."

3 Q Are those all of the corrections?

4 BY WITNESS WILSON:

5 A Those are all of the corrections.

6 Q Mr. Wilson, at Pages 10 and 11 of the
7 testimony in Answer to Question 17 about your professional
8 qualifications, you reference your testimony on harassment
9 and intimidation of QC Inspectors.

10 Just so everyone can have that before them
11 now, please summarize your educational and professional
12 background.

13 BY WITNESS WILSON:

14 A I received a degree in Industrial Arts from
15 Sam Houston State University in 1967.

16 Following that I was employed by Todd
17 Shipyards Nuclear Division, Galveston, Texas.

18 I worked there until about 1971. I was on
19 the Technical Staff of the Savannah, where we did
20 modifications to the ship, new designs for the ship,
21 worked on the shore base facilities, and the ship itself.

22 I was on the decommissioning crew for the
23 ship when it was decommissioned.

24 I was in charge of a crew during the fuel
25 shuffle. I was in charge of a crew that was to modify

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the Core II fuel bundles. While there I designed the ship motion simulator.

I originally went to work there as a draftsman and Lead Draftsman, and then Junior Engineer.

I left Todd in '71, and went to work for Southwestern Gas Pipelines in Mineral Wells. While I was there I authored the company operation and maintenance plan, emergency plan, wrote the welding procedures, qualified the welders, designed pulsation dampeners, and various gas-handling equipment.

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21-1
1 In 1974 I went to work for Houston Lighting &
2 Power Company and have been there ever since.

3 I've been at South Texas for the last -- the
4 South Texas Project for the last five and a half years.

5 I started out there as the lead mechanical,
6 in charge of the mechanical group. After about two years
7 I was promoted to the site QA supervisor, where I had
8 the complete responsibility for HL&P QA there at the
9 site.

10 Then in July of '80, after a reorganization,
11 I was made the project QA supervisor for mechanical NDE.

12 Q Thank you.

13 Mr. Sullivan, at Pages 29 through 36 of the
14 testimony you describe the conclusions of the task force
15 final report.

16 Please describe the revision of that final
17 report that was made after the testimony was filed.

18 BY WITNESS SULLIVAN:

19 A As a result of an additional review by the
20 welding review team of the welding procedure specifi-
21 cations and the comments to the construction procedures
22 addressed in the final report, additional deficiencies
23 with 5 ASME welding procedure specifications were
24 identified.

25 It was also decided by the welding review team

21-2

1 that a comment regarding a deficiency in an AWS
2 construction procedure which presently appears in
3 Appendix F of the final report should be moved to the
4 main body of the report for emphasis; specifically,
5 deficiencies found in the 5 ASME welding procedure
6 specifications concerned the method of qualification
7 and of controlling heat input for impact tested base
8 material.

9 The scope of the review team's review did
10 not include investigation of the effects of the procedural
11 deficiencies on the impact properties of the welds at STP.

12 However, reduction of the impact properties
13 below the code requirements is unlikely because of the
14 type of material and the welding processes used at STP.

15 The comment in Appendix F indicated that an
16 AWS construction procedure failed to require additional
17 inspection if a crack was found during visual examination
18 of a weld.

19 Although the effect of this omission was not
20 investigated, it is unlikely that it resulted in a
21 reduction of the structural integrity of any STP welds
22 because of the structural material used at STP because
23 these structural materials used at STP -- because the
24 structural material used at STP has a low susceptibility
25 to cracking.

1 MR. GAY: Could I interrupt and ask where
2 Mr. Sullivan was reading from? Was that part of the report
3 that we have in our hands that we could refer to that?

4 WITNESS SULLIVAN: That's essentially a summary
5 of the amendments to the -- the revisions of the final
6 report.

7 MR. GAY: Is that a summary of the revisions
8 that we were handed yesterday?

9 WITNESS SULLIVAN: That's correct.

10 BY MR. GUTTERMAN:

11 Q Mr. Muscente, have the task force revisions
12 regarding these five welding procedure specifications that
13 Mr. Sullivan has just mentioned, have those welding
14 procedure specifications been evaluated, or revisions
15 regarding those welding specifications -- procedure
16 specifications been evaluated by Brown & Root?

17 BY WITNESS MUSCENTE:

18 A Brown & Root materials engineering is presently
19 evaluating the task force comment in order to establish
20 whether or not the method of qualification and the method
21 of controlling the heat input complied with the total
22 requirements. They have not yet resolved or established it.

23 Did you have two questions, or did you have one
24 question?

25 Q Well, have those five welding procedure

1 specifications been used to weld materials that require
2 impact testing at STP?

3 BY WITNESS MUSCENTE:

4 A. No systems which require impact testing have
5 been welded since the restart of the ASME welding.

6 Presently Brown & Root/STP materials engineering
7 group is investigating whether or not these welding procedure
8 specifications were used prior to April 1980 to weld materials
9 which require impact testing.

10 In the event that these WPS's were used prior to
11 April, the WPS's will be requalified to show that although
12 the higher heat input may have been used the materials still
13 comply with the impact property requirements of the code.

14 Q. Mr. Muscente, at Pages 46 and 47 of the testimony
15 you describe the results of the repair and re-examination
16 program through accessible AWS and ASME welds.

17 Could you please update that by describing the
18 current status of that program?

19 BY WITNESS MUSCENTE:

20 A. The R&R program is progressing in accordance
21 with the plan that we submitted to the NRC in September,
22 HL&P submitted to the NRC in September 1980.

23 Under the current schedule the ASME portion of
24 the R&R program is scheduled to be completed in November.

25 The AWS portion of the R&R program will be

1 completed next February or March.

2 Approximately 60 percent of the accessible AWS
3 welds have been re-examined. All welds found to be out of
4 compliance with AWS D-1.1 requirements have been repaired.

5 The ratio of strength related deficiencies
6 versus non-strength related deficiencies has remained
7 relatively consistent throughout the R&R program. In other
8 words, approximately six percent of the re-examined welds
9 contain deficiencies which engineering has established are
10 related to the strength of the weld, while 54 percent contain
11 deficiencies which are non-strength related. These will be
12 characterized as non-spatter, or something of this nature.

13 Relative to the ASME re-examination program,
14 there's a total -- well, there's approximately a total of
15 1,212 welds in the re-examination of ASME welds. This is
16 exclusive of the essential cooling water system welds.

17 Approximately 55 percent of those welds have
18 been completed as of July 10th, 1981.

19 Eight percent of the 309 re-examined pressure
20 retaining welds, that is the socket welds and pipe butt welds,
21 were found to contain surface deficiencies.

22 Approximately 50 percent of the 150 re-examined
23 pipe hanger welds -- these are the structural welds which
24 support pipe -- were found to contain surface deficiencies.

25 All the deficiencies in all ASME welds found to

21-6
1 date have been repaired.

2 In the essential cooling water system there are
3 approximately 400 welds in the total re-examination program.

4 As of July 10th, 1981, 200 of these welds had
5 been re-examined by radiography, surface examination, and
6 liquid penetration examination.

7 165 welds were found to have rejectable radio-
8 graphic indications. One weld was found to have a rejectable
9 liquid penetrant indication, and none of the welds were
10 found to have rejectable indications visually.

11 All of the unacceptable welds have been repaired.

12 Q. Dr. Hauser, at Pages 52 through 56 of the
13 testimony you describe the Battelle program for evaluation
14 of inaccessible AWS welds.

15 Please update that by describing the current
16 status of that program.

17 BY WITNESS HAUSER:

18 A. Yes. That written testimony began on about
19 Page 50 and describes the over-all program scope. The
20 program is looking at three different areas, statistical
21 analysis, stress analysis, and selected metallurgical studies
22 of accessible AWS welds.

23 The statistical analysis is being conducted by
24 reviewing the reinspection reports at the STP site, bringing
25 those reports to Battelle Columbus and transcribing them for

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1 keypunching into a computer data base.

2 Various kinds of analysis methods are being used
3 to describe quantity and the characteristics of noncompliances
4 that have been found in those welds.

5 At this time we have about 2,000 welds in the
6 data base, which is equivalent to approximately 16,000 inches
7 of welding.

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22-1 1 BY WITNESS HAUSER:

g 2 A The collection of reinspection data is
3 continuing.

4 In the stress analysis task, the facts of
5 non-compliances on load-carrying capacity are being
6 determined using several different stress analysis
7 methods.

8 A preliminary analysis has been completed
9 for the embedment plates and the analysis is in
10 progress for other types of structural connections.

11 The stress analysis methods are using
12 conventional design techniques and some fracture
13 mechanics techniques that are widely accepted.

14 In the metallurgical portion of the
15 program, four different designs of embedment plates
16 were delivered to Battelle.

17 Our first step was to have the inspection
18 markings documented by photography. The markings were
19 then removed and we had them reinspected by a licensed
20 professional engineer, who is a Level 3 ASNT inspector.
21 He is also a certified AWS inspector.

22 Following the reinspection, we cut up
23 some of the plates to perform metalgraphic examinations
24 on some selected non-compliances.

25 As stated in the earlier testimony, these

22-2
1 three tasks will be combined to define the kinds of
2 non-compliances likely to exist in the inaccessible
3 welds and to define the effect of these non-compliances
4 on structural integrity.

5 Q Mr. Muscente, in Answer 54, at page 50 of
6 the testimony, you estimate the number of inaccessible
7 ASME welds.

8 Would you please update that by stating
9 how many ASME welds are now thought to be inaccessible?

10 BY WITNESS MUSCENTE:

11 A The original estimate of approximately 50
12 inaccessible ASME welds was proven to be too high.

13 Further investigation since April 1981 has
14 shown that the number is 19.

15 However, of these 19 welds, 12 are in the
16 ECW, or the essential cooling water system, and
17 these welds, a decision has been made to dig these
18 welds up, uncover them.

19 One other weld in another system will also
20 be dug up because it's not under concrete. It's
21 underground, but not under concrete.

22 Then another weld, the radiograph of another
23 weld is being re-evaluated. We don't consider that as
24 inaccessible.

25 There are five remaining inaccessible, non-

22-3

1 ECW welds 1 ft in the fuel pool cooling.

2 Q Mr. Saltarelli, in answers to Questions 64
3 through 66 on pages 56 and 57 of the testimony,
4 Mr. Muscente describes a plan for evaluation of
5 inaccessible ASME welds.

6 Would you please update that by describing
7 the current status of the inaccessible ASME weld
8 evaluation program?

9 BY WITNESS SALTARELLI:

10 A As has been pointed out, there are --

11 MR. GUTIERREZ: Excuse me. Could you give
12 me the page cite on that?

13 MR. GUTTERMAN: That's page 56 and 57.

14 BY WITNESS SALTARELLI:

15 A There are only five inaccessible ASME welds
16 for which good radiography exists so you can characterize
17 the defects.

18 They are currently being examined by
19 engineering, and there are two options available to us.

20 We will attempt to do an engineering
21 analysis to determine whether they are adequate for the
22 service intended; and should we decide that that is not
23 the case, then we will probably have to reroute pipe.

24 Because the pipe is buried in concrete, we
25 would not consider taking the pipe out; but we would

22-4 1 reroute the pipe if we have to, if we find that the
2 analysis is not adequate.

3 That evaluation is under consideration right
4 now, and we intend to formalize that decision and
5 complete the work by the end of the year.

6 Q Mr. Muscente, at pages 44 through 46, in
7 answer to Question 49, you describe the status of the
8 ASME Restart Program.

9 Please update that by describing the
10 current status of the ASME Restart Program.

11 BY WITNESS MUSCENTE:

12 A By letter of July 3rd, 1981, a new 12-week
13 work plan for ASME safety-related welding was submitted
14 to the NRC.

15 Authorizatio: was granted by the NRC on
16 July 10th, 1981, and work commenced under the new plan
17 on July 13th, 1981.

18 Q Mr. Muscente, at pages 48 and 49 of the
19 testimony, in answer to Question 52, you describe the
20 results of the ASME and AWS Restart Programs.

21 Would you please update that with more
22 recent data?

23 BY WITNESS MUSCENTE:

24 A The reject rate since the restart of AWS
25 welding has been maintained at less than one percent.

22-5 1 The reject rate for the 186 ASME non-ECW
2 Class III butt welds made since January 5th, 1981, is
3 one-and-a-half percent.

4 Nine point four percent for the 65 radiographed
5 ASME Class II butt welds, and thirty percent for the 81
6 radiographed butt welds in the aluminum bronze ECW
7 piping.

8 Q Mr. Muscente, Mr. Wilson and Mr. Saltarelli,
9 at pages 49 and 50 of the testimony, in response to
10 Question 53, you evaluate the results of the re-examination,
11 repair and restart programs.

12 In light of the updated data described by
13 Mr. Muscente, do your evaluations of these programs
14 remain the same?

15 BY WITNESS SALTARELLI:

16 A I'm sorry. Would you repeat the last part?
17 I didn't clearly hear you, the last sentence.

18 Q The question was, in light of the data
19 that Mr. Muscente has described of the update of the
20 data from all of these programs, does your evaluation of
21 the results of these programs remain the same as
22 described in the testimony?

23 BY WITNESS SALTARELLI:

24 A Yes, sir.

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1 BY WITNESS MUSCENTE:

2 A Yes.

3 Q Mr. Wilson, at page 39 of the testimony,
4 in answer to Question 45, you state that HL&P's
5 certified Level III NDE inspector will conduct a
6 100 percent review of the radiographs approved by the
7 Brown & Root Level III inspector until "a long-term
8 trend of high reliability is attained."

9 Is HL&P still doing that 100 percent
10 review?

11 BY WITNESS WILSON:

12 A No, we are not. We performed 100 percent
13 review of the radiographs for about a year, something
14 over, I'd say, 2,000 radiographs; and due to the
15 much-improved track record, we went from 100 percent
16 review back to a random review.

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1 Q Now, this question is for the whole panel.

2 With all of the corrections and updates to
3 the testimony that have just been described, is the
4 testimony we have been discussing true and correct, to
5 the best of your information, knowledge and belief?

6 BY WITNESS SALTARELLI:

7 A Yes.

8 BY WITNESS MUSCENTE:

9 A Yes.

10 BY WITNESS PURDY:

11 A Yes.

12 BY WITNESS MOLLEDA:

13 A Yes.

14 BY WITNESS WILSON:

15 A Yes.

16 BY WITNESS SULLIVAN:

17 A Yes.

18 BY WITNESS HAUSER:

19 A Yes.

20 MR. GUTTERMAN: I move that the document

21 entitled, "Testimony on Behalf of Houston Lighting &

22 Power Company of Mr. Eugene A. Saltarelli,

23 Mr. Matthew D. Muscente, Mr. Gordon R. Purdy,

24 Mr. J. Rodolfo Molleda, Mr. Logan D. Wilson,

25 Mr. Michael D. Sullivan, Dr. Daniel Hauser on the Welding

22-8

1 Program at STP," be received into evidence and bound
2 into the transcript as if read.

3 The document consists of 57 pages and a
4 12-page attachment.

5 JUDGE BECHHOEFER: Any objections?

6 MR. GAY: No objection.

7 MR. SINKIN: Mr. Chairman, not an objection
8 so much to the entry of this as to the method of
9 updating and correcting.

10 It seems to me to defeat the purpose of
11 prefiled testimony for a witness to come in and read
12 fairly extensively from something that we don't have a
13 copy of, and to charge through at the speed with which
14 they were charging through, making rather major
15 corrections in various parts of the testimony.

16 I can't say that my prefiled testimony, the
17 testimony now reflects as well as I would wish what the
18 witnesses have actually testified to.

19 I don't object to the entry of the
20 testimony.

21 (Bench conference.)

22 JUDGE BECHHOEFER: The Board is having
23 some trouble ascertaining how a party or the Board
24 itself could ask questions on the updated figures.

25 We certainly agree that they went in so

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22-9 1 fast that some of them we were able to take down, but
2 not, I would say, a majority.

3 I don't mean the corrected figures, because
4 we were able to do that, but the updated figures.

5 We are maybe anticipating incorrectly, but
6 if there would be cross-examination on numbers that
7 are no longer there, it could be very confusing.

8 Does the Staff have any particular
9 recommendation?

10 MR. GUTTERMAN: Your Honor, if I could
11 just make an offer before this goes too far.

12 JUDGE BECHHOEFER: Okay.

13 MR. GUTTERMAN: I believe most of the
14 witnesses spoke from notes, and if we could take those
15 notes back from them and Xerox it and distribute it to
16 the Board and the parties, that might alleviate the
17 problem.

18 JUDGE BECHHOEFER: What's the Staff's
19 suggestion?

20 MR. GUTIERREZ: The Staff was sitting here
21 trying to scribble it all down as well, and also had a
22 hard time.

23 What was going through my mind was that we
24 are going to have the transcript of today the first
25 thing tomorrow morning and I was going to refer to it.

22-10 1 Probably have a morning break and maybe lunch to
2 digest it.

3 If we can all agree that if there's any
4 questions that come up as a result of these changes, any
5 party can reserve it for redirect, that might solve
6 the problem.

7 The Applicant's suggestion of providing the
8 witnesses' notes might be helpful as well.

9 JUDGE BECHHOEFER: Well, Mr. Gay, let me
10 ask you specifically.

11 You'll be first on cross-examination, and
12 will those figures affect your cross-examination?

13 MR. GAY: Well, I think that obviously it
14 does. I'm going to be compelled to ask some questions
15 that I was not prepared to ask, based upon the few
16 things I was able to jot down.

17 I still do not plan an extensive cross. I'm
18 going to try to limit myself to a few questions, but I
19 think it obviously affects the nature and scope of the
20 cross-examination that I prepared.

21 JUDGE BECHHOEFER: And would it assist you
22 to have the notes that were mentioned?

23 MR. GAY: Yes, sir, it would assist me.

24 JUDGE BECHHOEFER: Yes. When could those
25 be delivered?

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1 MR. GUTTERMAN: I think it will be just a
2 few minutes, Mr. Chairman.

3 MR. AXELRAD: Mr. Chairman, we could probably
4 have that in about ten minutes.

5 We should point out that what we are
6 Xeroxing are the notes of those people who gave new
7 figures, not the notes of other people who were just
8 answering questions based upon the evaluation being
9 done.

10 MR. SINKIN: What about the summary by
11 Mr. Sullivan?

12 MR. AXELRAD: Okay. We can do that. I
13 think we can do that.

14 MR. GUTTERMAN: I think there were notes
15 for Mr. Sullivan's summary, and the only exceptions I
16 know of are Mr. Wilson did not have any notes that I
17 know of for his statement about the hundred percent
18 re-examination of radiographs, and I don't believe
19 Dr. Hauser had any notes for his update on the
20 description of the Batelle program, but neither of
21 those involved a lot of data that will really affect
22 the testimony.

23 I should also point out that it's
24 unfortunate, but this is the nature of an ongoing
25 program that you're testifying about, that things

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change and the testimony gets out of date.

I apologize for it, but....

(Bench conference.)

JUDGE BECHHOEFER: Well, I think we should have those notes as soon as we can, and although Mr. Gay can start his cross-examination, I think we would allow him to reserve the right tomorrow morning to ask perhaps some additional questions based on the notes.

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MR. GUTTERMAN: I have a couple more questions on direct, Your Honor.

JUDGE BECHHOEFER: Well, do you want us to rule on the offer of the evidence first?

MR. GUTTERMAN: Yes, please.

JUDGE BECHHOEFER: Did the Staff have any objection, because I don't think we got your position?

MR. GUTIERREZ: The Staff has no objection.

JUDGE BECHHOEFER: Okay. The testimony will be admitted into evidence and bound into the record.

(See attached pages.)

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7 UNITED STATES OF AMERICA
8 NUCLEAR REGULATORY COMMISSION
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11 BEFORE THE ATOMIC SAFETY AND LICENSING BOARD
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14 In the Matter of: §
15 §
16 HOUSTON LIGHTING & POWER § Docket Nos. 50-4980L
17 COMPANY, ET AL. § 50-4990L
18 §
19 (South Texas Project, §
20 Units 1 & 2) §
21 §
22

23
24 TESTIMONY ON BEHALF OF HOUSTON LIGHTING & POWER COMPANY, ET AL.
25

26 OF
27

28 MR. EUGENE A. SALTARELLI
29 MR. MATTHEW D. MUSCENTE
30 MR. GORDON R. PURDY
31 MR. J. RODOLFO MOLLEDA
32 MR. LOGAN D. WILSON
33 MR. MICHAEL D. SULLIVAN
34 DR. DANIEL HAUSER
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36 ON
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38 THE WELDING PROGRAM AT STP
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5 UNITED STATES OF AMERICA
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10 BEFORE THE ATOMIC SAFETY AND LICENSING BOARD
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12 In the Matter of: §
13 §
14 HOUSTON LIGHTING & POWER § Docket Nos. 50-498OL
15 COMPANY, ET AL. § 50-499OL
16 §
17 (South Texas Project, §
18 Units 1 & 2) §
19 §
20
21

22 TESTIMONY OF
23 MR. EUGENE A. SALTARELLI, MR. MATTHEW D. MUSCENTE,
24 MR. GORDON R. PURDY, MR. J. RODOLFO MOLLEDA,
25 MR. LOGAN D. WILSON, MR. MICHAEL SULLIVAN AND
26 DR. DANIEL HAUSER REGARDING
27 THE STP WELDING PROGRAM
28

29 Q. 1 Please state your names.

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31 A. 1 Eugene A. Saltarelli, Matthew D. Muscente, Gordon R.
32 Purdy, J. Rodolfo Molleda, Logan D. Wilson, Michael Sullivan,
33 and Daniel Hauser.
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36 Q. 2 Mr. Molleda and Mr. Wilson, by whom are you
37 employed?
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40 A. 2 (JRM, LDW): Houston Lighting & Power Company
41 (HL&P).
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44 Q. 3 Mr. Saltarelli, Mr. Muscente, and Mr. Purdy, by
45 whom are you employed?
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47 A. 3 (EAS, MDM, GRP): Brown & Root, Inc. (B&R).
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5 Q. 4 Mr. Sullivan, by whom are you employed?
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7 A. 4 (MS): Nuclear Technology, Inc. (NUTECH), a
8 consulting firm specializing in nuclear plant analysis and
9 design, with particular expertise in American Society of
10 Mechanical Engineers (ASME) Code applications.
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13 Q. 5 Dr. Hauser, by whom are you employed?
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15 A. 5 (DH): Battelle Columbus Laboratories (Battelle),
16 a research and development firm which performs, among other
17 things, studies of welding procedures, inspection processes
18 and metallurgy.
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22 Q. 6 Mr. Saltarelli, what is your position and what
23 are your current responsibilities?
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25 A. 6 (EAS): I am Senior Vice President and Chief
26 Engineer of the B&R Power Group, ^{✓*} I am responsible for the
27 engineering of all fossil and nuclear power plants in the
28 Power Group, including South Texas Project (STP). Since
29 April 1980 when I joined B&R, one of my responsibilities has
30 been to help develop plans for the STP welding reexamination,
31 repair, and restart programs. In addition, I have closely
32 followed the Welding Task Force activities through regular
33 meetings with the Task Force Chairman who reports directly
34 to me. *during the period of the task force activity.*
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45 Q. 7 Mr. Muscente, what is your position and what are
46 your current responsibilities?
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48 ** And on May 15, 1981, I became Project Sponsor and*
49 *Acting Project General Manager.*
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5 A. 7 (MDM): I am the Welding Program Manager for STP
6 and am responsible for coordinating and directing all welding
7 activities including welder training, engineering surveillance
8 of production welding, and development and implementation of
9 welding specifications and procedures. I am also responsible
10 for directing the STP welding reexamination, repair, and
11 restart program and overseeing the evaluation of inaccessible
12 welds being performed by outside consultants. I report
13 directly to the STP General Manager.
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21 Q. 8 Mr. Molleda, what is your position and what are
22 your current responsibilities?
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24 *Until July 13, 1981, I was*
25 A. 8 ~~I am~~ HL&P's Supervising Engineer and Lead Project
26 Engineer for mechanical-nuclear systems on STP. In this
27 position, I ~~provide~~ *provided* direction and guidance to HL&P's STP
28 Mechanical, Nuclear, Health-Physics and Nuclear Fuels Engineering
29 Teams, which perform design reviews of the Westinghouse
30 Nuclear Steam Supply System, B&R design systems and other
31 vendor supplied designs. Additionally we ~~review~~ *revised* numerous
32 specifications for items other than equipment such as weld,
33 filler material, stress analysis documents and various NRC
34 issued documents. **
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43 Our principal duties relating to the STP welding program
44 are to review and approve the welding specifications and
45 associated welding Technical Reference Documents (TRD)
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48 ** On July 13, 1981, HL&P's STP Engineering Team was
49 reorganized. Under the new organization, I am the
50 Nuclear Engineering Team Leader.
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5 generated by B&R. We review design criteria, design speci-
6 cations and changes to the criteria or specifications to
7 assure that the design properly addresses appropriate engi-
8 neering requirements, including regulatory requirements,
9 applicable industry standards and HL&P's design preferences.
10 HL&P Engineering also participates in the resolution of
11 problems that are identified during the design and construction,
12 such as the resolution of field design change requests and
13 nonconformance reports, and participation in the recent Task
14 Force effort to reexamine the adequacy of Project welds made
15 prior to April 11, 1980.
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25 Q. 9 Mr. Purdy, what is your position and what are
26 your current responsibilities?
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28 A. 9 (GRP): I am the Quality Engineering (QE) Manager
29 for the B&R Power Group. I am responsible for the manage-
30 ment and direction of QE personnel at the STP site where I
31 report to the Project Quality Assurance (QA) Manager for
32 STP. Since April 1979 when I first joined B&R, I have been
33 directly responsible, among other things, for development of
34 the welding program QA procedures at STP.
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41 Q. 10 Mr. Wilson, what is your position and what are
42 your current responsibilities?
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44 A. 10 (LDW): This information is set forth in A.2 and
45 A.3 of my testimony regarding allegations of harassment and
46 intimidation of QC Inspe tors.
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5 Q. 11 Mr. Sullivan, what is your position and what are
6 your current responsibilities?
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9 A. 11 (MS): I am a Principal Consultant for NUTECH
10 and am responsible for advising clients on welding and
11 metallurgical construction problems. Since May 1980, I have
12 been NUTECH's Project Engineer on the STP Welding Task
13 Force, managing the activities of several NUTECH welding
14 engineers at the STP site and at NUTECH's home office. I
15 also directed the work performed at STP by Southwest Research
16 Institute (SWRI), a consulting firm under subcontract to
17 NUTECH that performed and interpreted nondestructive examina-
18 tions during the Task Force investigation following the
19 NRC's Order to Show Cause.
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29 Q. 12 Dr. Hauser, what is your position and what are
30 your current responsibilities?
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33 A. 12 (DH): I am a Senior Research Scientist at
34 Battelle, and am currently the Program Manager for the
35 Battelle evaluation of the inaccessible AWS structural welds
36 at STP.
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40 Q. 13 Mr. Saltarelli, please summarize your professional
41 qualifications.
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44 A. 13 (EAS): I received a Bachelor of Mechanical
45 Engineering degree from the University of Detroit in 1949
46 and a Master of Science degree in Mechanical Engineering
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5 from Northwestern University in 1950. I am a Registered
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7 Professional Engineer in seven States; Pennsylvania, New
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9 York, West Virginia, Michigan, Texas, California and Maryland,
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11 and am a member of the ASME and the American Nuclear Society.
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13 Prior to joining B&R, I worked for twenty-four years in the
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15 nuclear power industry, primarily in the areas of nuclear
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17 system design and analyses with respect to plant safety and
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19 plant operations.

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21 From 1956 to 1967, I was employed at the Bettis Atomic
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23 Power Laboratory, Westinghouse Electric Corporation in
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25 Pittsburgh, Pennsylvania. I began my career at Bettis as a
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27 Senior Engineer in fluid systems design for Navy nuclear
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29 power plants and was promoted to various management positions
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31 including Bettis Chief Test Engineer at the Mare Island
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33 Naval Shipyard, Vallejo, California, in which I was respon-
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35 sible for the technical direction of testing and initial
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37 startup of reactor plants for nuclear submarines. My design
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39 experience at Bettis encompassed total responsibility for
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41 nuclear fluid systems for Navy nuclear plants as well as the
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43 design, system construction, and technical direction of the
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45 decontamination of the Shippingport Atomic Power Plant. I
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47 also directed the program to accomplish decontamination of
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49 the Navy nuclear submarines.
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5 From May 1967 to April 1980, I was employed by NUS
6 Corporation where I began as the Manager of power plant
7 engineering and was promoted to positions of increasing
8 management responsibility including Vice-President, Technical
9 Director; Vice-President, Engineering Division; and Group
10 Vice-President, Engineering and Operating Services. While
11 serving in these positions, I provided consulting services
12 to foreign clients in Japan, Taiwan, Sweden, Germany, and
13 Brazil. In addition, I was associated with the STP since
14 its inception, participating in the development of the
15 Preliminary Safety Analysis Report (PSAR) and managing the
16 organization that designed several of the nuclear interface
17 systems. I joined B&R in April 1980 and assumed my present
18 position as Senior Vice-President and Chief Engineer of the
19 B&R Power Group.
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23 Q. 14 Mr. Muscente, please summarize your professional
24 qualifications.
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26 A. 14 (MDM): I received a Bachelor of Science degree
27 in Metallurgical Engineering at the University of Pittsburgh
28 in 1958. I am a Registered Professional Engineer in California
29 and a member of the American Welding Society (AWS) and the
30 ASME.
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33 Prior to joining B&R, I worked for twenty-two years in
34 the nuclear power industry, primarily in the areas of design,
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5 fabrication, and construction of nuclear power plant systems
6 and components. I spent eight years working on the design
7 and construction of nuclear powered submarines, and twelve
8 years working for General Electric Company as the Manager of
9 Field Welding Engineering at nuclear power plants in India
10 and Switzerland, and as the Manager of Materials Engineering
11 and QA at nuclear power plants in Switzerland, Spain, and
12 Italy. I joined B&R in July 1980 and assumed my present
13 position.
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21 Q. 15 Mr. Molleda, please summarize your professional
22 qualifications.
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25 A. 15 (JRM): I was graduated from the University of
26 Texas at Austin in 1972 with a Bachelor of Science degree in
27 Mechanical Engineering. That year I joined the City Public
28 Service Board (CPSB) as an engineer in the Generation Design
29 Division. I was involved in various engineering assignments
30 concerning the design and construction of fossil fueled
31 power plants. As a result of CPSB's interest in nuclear
32 power, in 1975 I was assigned to Florida Power & Light's St.
33 Lucie Nuclear Power Station as a startup engineer. There I
34 wrote and performed preoperation tests on the plant's nuclear
35 and balance of plant systems. In 1976 I was assigned to
36 HL&P to work on the STP, where I reviewed equipment specifi-
37 cations and system designs. In 1977 I joined HL&P as a
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5 Senior Engineer in the Nuclear Engineering Division. I
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7 headed a team of six engineers who performed reviews of STP
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9 nuclear systems and design documents generated by Westing-
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11 house and Brown & Root (B&R). In 1979 I was promoted to my
12
13 present position.

14 I am a Registered Professional Engineer in the State of
15
16 Texas and a member of the American Nuclear Society.

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18 Q. 16 Mr. Purdy, please summarize your professional
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20 qualifications.

21 A. 16 (GRP): Prior to joining B&R, I spent ^{seventeen} ~~twenty-one~~
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23 years working in the nuclear power industry, eighteen of
24
25 which were spent in the United States Naval Nuclear Power
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27 Program. I worked primarily in the area of construction,
28
29 operation, and maintenance of nuclear power plants. I also
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31 spent approximately one year with Bechtel Power Corporation
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33 as a mechanical Quality Control (QC) engineer. I joined B&R
34
35 in April 1979 as the supervisor of the mechanical QE program
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37 for the Power Group. In October of that year, I was promoted
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39 to my present position, in which I have been responsible
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41 for, among other things, the development of QA procedures
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43 regarding welder and inspector training at STP.

44 Q. 17 Mr. Wilson, please summarize your professional
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46 qualifications.
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A. 17 That information is set forth in A. 2 of my testimony regarding allegations of harassment and intimidation of QC Inspectors.

Q. 18 Mr. Sullivan, please summarize your professional qualifications.

A. 18 (MS): In 1970, I received a Bachelor of Science degree in Mechanical Engineering from California State Polytechnic University in Pomona, California. I received a Masters degree in Metallurgical Engineering from Lehigh University in 1974. Prior to joining NUTECH, I spent approximately five years at General Electric Company, including three years in GE's Fast Breeder Reactor Department as the project leader for welding process development, and two years with GE's Nuclear Energy Group developing automatic welding equipment and test programs to simulate installation or modification of components in Boiling Water Reactors. I joined NUTECH in 1979 as a Senior Consultant and was promoted to my present position as ^{Principal} ~~NUTECH's~~ Principal Consultant in September 1980.

Q. 19 Dr. Hauser, please summarize your professional qualifications.

A. 19 (DH): I received a B.S. in Metallurgical Engineering from Rensselaer Polytechnic Institute in 1962, an M.S. in Metallurgical Engineering from Syracuse University

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5 in 1965, and a Ph.D. in Metallurgical Engineering from Ohio
6 State University in 1973. I have been employed by Battelle
7 for approximately 17 years, during which time I have been
8 involved in a variety of materials-joining research projects.
9 These projects have involved arc, electron beam, and solid-state
10 welding of a wide variety of metals and alloys. I have
11 investigated repair-welding practices for cast and wrought
12 alloys and assisted in designing and setting up large-scale
13 welding operations. Other projects have related to gas
14 turbines, pressure-vessel steel, and railroad components.
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23 I have been the Battelle Program Manager of a project
24 to develop a remote mechanized repair system for nuclear
25 reactor piping. This includes developing equipment and
26 procedures and qualifying personnel for pipe severing, joint
27 preparation, counterboring and welding.
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32 I have also been the Battelle Program Manager of an
33 investigation involving laboratory development of experimental
34 arc welding equipment and procedures including the develop-
35 ment an all solid-state microprocessor controlled automatic
36 welding system.
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41 I have conducted studies of repair-welding practices
42 for cast and wrought heat-resistant alloys, such as HK-40
43 and Incoloy 800 used in the petrochemical industry. I have
44 also been involved in the development of improved repair
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5 procedures for nickel and cobalt base superalloys in gas
6 turbines. In the course of this work, experimental repairs
7 were made with IN-738 alloy blades.
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10 I have been the Battelle Chief Investigator of a program
11 to design and fabricate small-diameter rocket-motor cases
12 from 18Ni(350) maraging steel. A significant part of this
13 program was directed toward the development of gas tungsten-arc
14 and electron-beam welding procedures. In another program, I
15 assisted in the development of fabrication procedures for
16 H-11 high-strength steel components. I have also helped
17 develop electron-beam welding procedures for M-50 tool steel
18 spheres, and have received a patent for a specialized tech-
19 nique invented during the program.
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28 I have also investigated the effects of welding processes,
29 welding procedures, post-weld heat treatment and base-plate
30 composition on 3.5-inch-thick SA508 Class 2 steel in connec-
31 tion the welding and multiple repairs of a nuclear reactor
32 pressure vessel.
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38 Finally, I have investigated the effects of delta
39 ferrite content of E308-16 stainless steel weld metal,
40 including testing of ultimate and yield strengths, creep
41 rupture, elongation, reduction in area and elastic modulus
42 over the temperature range of 70-1200F.
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47 Q. 20 Panel, what is the purpose of this testimony?
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5 A. 20 (Panel): The purpose of this testimony is to
6 describe the welding program for the South Texas Project.
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8 This description will include a discussion of the welding
9 program requirements; the status of the welding program
10 prior to the NRC Order to Show Cause; the results of the
11 Welding Task Force activities performed in response to
12 Item 3(a) of the NRC Order to Show Cause; the recent improve-
13 ments implemented in the welding program; the status of the
14 welding reexamination, repair and restart programs; and the
15 engineering evaluation of the previously made inaccessible
16 welds.
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25 Q. 21 What NRC requirements and industry Codes govern
26 the safety-related welding program at STP?
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28 A. 21 (Panel): The STP welding program is governed by
29 the requirements of 10 CFR Part 50, Appendix B with respect
30 to welding procedures, QA and nondestructive examination
31 (NDE) of welds. Additionally, at STP, the ASME Boiler and
32 Pressure Vessel Code governs pressure-retaining piping, pipe
33 components and supports, and the AWS Structural Welding Code
34 governs heavy structural steel and supplementary steel such
35 as electrical cable tray and pipe supports. (For purposes
36 of this testimony, the terms "AWS weld" and "ASME weld" will
37 include only those welds on the piping, supports, and steel
38 listed above.) These Codes set forth requirements for such
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5 things as welder qualifications, verification of the adequacy
6 of welding procedure specifications, NDE acceptance criteria
7 for completed welds, and appropriate NDE methods for particular
8 types of welds. The ASME Code also requires that an independent
9 third party, the Authorized Nuclear Inspector (ANI), approve
10 all elements of the ASME welding and NDE Programs, and that
11 this ANI oversee the implementation of these programs.
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18 Finally, several NRC Regulatory Guides provide require-
19 ments to supplement those contained in the AWS and ASME
20 Codes. These requirements, which apply primarily to mater-
21 ials, welding and NDE methods, set forth minimum standards
22 to be followed in particular situations such as limited
23 access welding.
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28 Q. 22 Mr. Saltarelli, Mr. Muscente, Mr. Wilson and Mr.
29 Purdy, how have the requirements mandated by the NRC and
30 Codes been implemented at STP?
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34 A. 22 (EAS, MDM, LDW, GRP): B&R, with HL&P review and
35 approval, has developed several Construction and QA procedures
36 to implement the requirements mandated in the applicable Codes
37 and standards. In general, four types of procedures are
38 utilized to control the welding activities at STP.
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43 1. Materials Engineering Construction Procedures
44 (MECPs) require a welder to be tested in each specific
45 welding process to be used. Each welder must make a certain
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5 number of test welds which are visually examined by QC
6 Inspectors and subjected to destructive or nondestructive
7 testing. The test welds must be found acceptable before a
8 welder is permitted to perform production welding.
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12 2. MECPS also specify the sequence of operational
13 tasks in making both AWS and ASME welds and the methods by
14 which each task is to be performed. These tasks include
15 cleaning of the weld area, verifying proper weld filler
16 material, checking weld joint dimensions, joining the materials
17 at the weld joint, controlling the heat applied to a weld
18 joint and visually checking the finished weld.
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22 3. Quality Assurance Procedures (QAPs) provide that
23 during the making of the welds, QC inspection must be performed
24 at several procedurally designated "hold points", and that
25 QC personnel periodically must check such items as welding
26 equipment, welding temperature and current. A visual exami-
27 nation is performed when welds are completed, and if the
28 work is deemed satisfactory, NDE is performed and the results
29 evaluated by certified NDE Inspectors.
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33 4. QAPs also require that NDE inspectors must receive
34 a minimum amount of formal training and perform a minimum
35 number of inspections prior to being examined and certified
36 by Level III Inspectors. These procedures also identify,
37 define and illustrate acceptance criteria for each type of
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5 NDE. NDE includes, among other things, liquid penetrant
6 testing (use of red liquid dye which slightly penetrates the
7 weld surface where defects are located), magnetic particle
8 testing (application to the weld of small metal particles
9 which assume irregular patterns wherever defects are located
10 when a magnetic field is applied); and radiographic testing
11 (photographing the interior of the weld by using Gamma
12 rays).
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20 This general procedural framework has been and still is
21 in effect at STP, but the detailed procedures have been
22 revised during the course of implementation of the welding
23 program, as will be explained later in this testimony.
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27 To monitor the overall implementation of the NRC and
28 Code requirements and the STP welding procedures, B&R conducts
29 regular audits of the welding program. These audits are
30 conducted approximately twice per year; once at the site and
31 once in Houston.
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36 (LDW): Establishment of the Materials Engineering,
37 Construction and QA Procedures, training methods, and welding
38 material specifications is the primary responsibility of
39 B&R. HL&P QA reviews and approves these procedures to
40 assure that the QA requirements are properly reflected.
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45 One aspect of the welding program in which we were
46 involved early in the Project was the establishment of the
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5 specific welding procedures for the aluminum-bronze pipe in
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7 the Essential Cooling Water (ECW) system. Aluminum-bronze
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9 is an unusual material and industry has very little experience
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11 in welding large diameter pipe made of this material. As a
12
13 result of investigations we performed, HL&P added a require-
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15 ment to the inspection procedures that the ECW welds be spot
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17 radiographed on a random selection basis to track welder
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19 performance, even though the ASME Code does not require any
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21 radiographic examinations.

22 HL&P has performed documented surveillance on a monthly
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24 basis covering all aspects of welding, including both weld
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26 making and NDE activities. In total, we have performed ~~374~~ ^{over 650}
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28 formal inspections. We also have attended B&R training
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30 classes for welding and inspection in order to evaluate the
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32 instruction given.

33 Q. 23 Mr Purdy, what was the status of welding at STP
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35 at the time of issuance of the NRC Investigation Report
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37 79-19 and the NRC Order to Show Cause?

38 A. 23 (GRP): At the time of issuance of the NRC
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40 Investigation Report 79-19 and the NRC Order to Show Cause,
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42 there was no safety-related welding being performed at the
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44 site due to the issuance of a Stop Work Order on April 1,
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46 1980 by the B&R Power Group QA Manager. Prior to the Stop
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48 Work, approximately thirty-five percent of the total AWS
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5 heavy structural steel welding, approximately two percent of
6 the total AWS supplementary steel welding and less than one
7 percent of the total ASME welding had been performed at
8 Unit 1. Less than one percent of the total AWS and ASME
9 welding had been performed at Unit 2.
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14 Q. 24 Please explain why safety-related welding at STP
15 was stopped.
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18 A. 24 (GRP): Problems revealed as a result of two
19 audits and a special investigation conducted in late 1979
20 and early 1980 indicated that the STP welding procedures
21 were not being fully and properly implemented. While the
22 welding program, as set forth in those procedures, was
23 generally in compliance with applicable Codes and standards,
24 QC Inspectors were not always identifying procedural deficiencies
25 during the welding process, and NDE Inspectors were not
26 always identifying deficiencies in the completed welds.
27 This failure to implement adequately all Project procedures
28 resulted in a level of welding quality at STP which was less
29 than that mandated by the program. In order to concentrate
30 all efforts on resolving the problems, to assess the implications
31 of the problems that had been occurring and to
32 prevent recurrence of those problems, the B&R Power Group QA
33 Manager issued a Stop Work Order on safety-related welding
34 on April 11, 1980
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5 Q. 25 Please describe the specific problems which
6 formed the basis for the decision to stop work.
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9 A. 25 (GRP): In late 1979 and early January 1980,
10 during the course of an NRC audit of the STP QA Program, NRC
11 investigators verbally indicated to HL&P that they had
12 discovered some problems with radiography, particularly in
13 the areas of radiographic quality and interpretation. In
14 response to these NRC concerns, a review was performed of
15 existing production weld radiographs. The results of this
16 review indicated that some of the film quality did not
17 satisfy procedural requirements, that defect indications
18 sometimes went undetected, and that indications observed by
19 radiographic interpreters were often not recorded on the
20 appropriate forms. As a result of these findings, all NDE
21 conducted at the Site was suspended in January 1980 except
22 for that which was conducted under the direct supervision of
23 the NDE Level III Inspectors. This temporary suspension of
24 almost all site NDE provided an opportunity to ensure that
25 no site NDE would be performed until NDE personnel were
26 properly retrained and certified.
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41 In March 1980, a scheduled Materials Engineering audit
42 of the welding program was completed, and several problems
43 were identified. Specifically, the Procedure Qualification
44 Records did not always contain enough information to indicate
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5 proper qualification of Weld Procedure Specifications, the
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7 QA Program of a subcontractor that performed certain types
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9 of NDE for the Houston Materials Engineering Laboratory had
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11 not been properly qualified, and the QA Program of the
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13 calibration facility used by the Materials Engineering
14
15 Laboratory had not been properly qualified.

16 As a result of the findings in the Materials Engineering
17
18 audit, a special follow-up audit of the welding program at
19
20 STP was conducted in early April 1980. This audit indicated
21
22 that although welders were trained and qualified in accordance
23
24 with the requirements of the ASME Code, some did not possess
25
26 enough "on-the-job" practical knowledge to assure performance
27
28 of high quality field welding, that the QC Inspector assigned
29
30 to monitor welder qualification testing was not properly
31
32 certified to inspect welding operations, and that several
33
34 welding construction procedures did not comply with applicable
35
36 specification requirements.

37 Q. 26 Mr. Muscente and Mr. Purdy, what conditions did
38
39 B&R and HL&P set for the lifting of the Stop Work Order?

40 A. 26 (MDM, GRP): B&R and HL&P jointly agreed to take
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42 the following corrective actions prior to lifting the Stop
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44 Work Order: 1) confirm the qualification of STP safety-related
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46 welding procedures; 2) review construction procedures against
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48 ASME Code requirements and revise if necessary; 3) review
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5 procedures to ensure that weld acceptance criteria have been
6 approved by Level III QA personnel; 4) ensure that all
7 welder qualifications have been inspected by certified QC
8 Inspectors; 5) improve adherence to procedures for weld
9 filler material control; and 6) develop a Materials Engineer-
10 ing Procedure for the control of weld procedure qualifications.
11 HL&P informed the NRC's Region IV of these planned corrective
12 actions on April 15, 1980, and the Region IV Director confirmed
13 his understanding of the actions on April 17, 1980.
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21 Work on these six items subsequently was integrated
22 into a comprehensive restart program for safety-related
23 welding which will be discussed later in this testimony.
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27 Items 1, 2, 3, 4, and 6 were satisfactorily closed out by
28 NRC Inspection Report 80-38 dated January 30, 1981. Item 5
29 was satisfactorily closed out by NRC Inspection Report 81-03
30 dated February 11, 1981.
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34 Q. 27 What findings concerning the STP welding program
35 were contained in the NRC Inspection Report 79-19?
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38 A. 27 (MDM, GRP): Less than three weeks after STP
39 welding was stopped, the NRC issued Inspection Report 79-19
40 which identified the following items of noncompliance with
41 respect to the STP welding and NDE programs: 1) B&R Weld
42 Filler Material Specification did not contain the latest
43 Document Change Notices (DCN's); 2) STP construction procedures
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5 failed to incorporate requirements for welding protection
6 against adverse environmental conditions; 3) the quality of
7 several radiographs was such that proper interpretation was
8 not possible; 4) linear indications contained in several
9 radiographs were not recorded on interpretation sheets; 5)
10 the evaluation of certain liquid penetrant indications was
11 not in compliance with the ASME Code; and 6) radiographic
12 evaluation of some welder qualification tests did not comply
13 with the ASME Code in that the penetrometer (radiographic
14 image quality indicator) was placed on the side of the test
15 pipe close to the radiographic film ("film side") rather
16 than close to the radiation source ("source side").
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27 Q. 28 What actions were taken to resolve these items
28 of noncompliance?
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30 A. 28 (MDM, GRP): All of the items of noncompliance
31 listed in Inspection Report 79-19 were satisfactorily closed
32 out by the NRC within a few months after the Report was
33 issued. First, the Weld Filler Material Specification and
34 all other outdated documents were brought up to date by
35 incorporating the latest revisions.
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41 Second, STP welding procedures were revised to include
42 requirements for protection against rain, snow, wind and
43 airborne particles. Compliance with the revised procedures
44 was stressed both in welder training sessions and in the
45 field.
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5 Third, a QAP setting forth methods for radiographic film
6 processing was developed. In addition, the QAP with respect
7 to radiographic film examination was revised to require the
8 recording of all observed film conditions on interpretation
9 sheets. These procedures were implemented just after the
10 NRC completed its audit, and compliance was closely monitored
11 by QA/QC personnel.
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17 Fourth, all NDE personnel who conducted liquid penetrant
18 testing were given additional training in inspection tech-
19 niques and procedures. While this retraining was taking
20 place, all such testing was suspended at the STP site unless
21 under the direct supervision of the NDE Level III Inspector.
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27 Finally, source side penetrameters were required to be
28 used when feasible in both welder qualification tests and
29 field welding. Radiography personnel were retrained and
30 recertified according to the correct procedures and were
31 lectured as to the need to follow applicable project require-
32 ments. In addition, a test was set up to compare the qualifi-
33 cation results actually obtained with the results which
34 would have been obtained using source side penetrameters.
35 The test indicated no significant difference in results and
36 supported the acceptability of the welder qualification
37 tests.
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47 Q. 29 Mr. Saltarelli, what action was taken in response
48 to the NRC's Order to Show Cause?
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5 A. 29 (EAS): Upon issuance of the Show Cause Order on
6
7 April 30, 1980, B&R and HL&P formed a special Task Force to
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9 determine whether the safety-related welding completed at
10
11 STP as of April 11, 1980 was performed in compliance with
12
13 Code and Project requirements. The Task Force was also
14
15 given the responsibility of identifying any repair work that
16
17 might be required and establishing a schedule for completion
18
19 of such work.

20 Q. 30 M. Saltarelli and Mr. Sullivan, how was the
21
22 Task Force organized and who were its members?

23 A. 30 (EAS, MS): The Task Force was separated into a
24
25 Review Team and an Independent Review Committee. The Review
26
27 Team, which formulated the investigation plan and conducted
28
29 the investigations, was chaired by the B&R Engineering
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31 Project Manager for STP. Its members included B&R engineers
32
33 and technicians from the Materials Engineering, Construction
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35 and QA Departments and engineers from HL&P and NUTECH.
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37 NUTECH retained additional specialists in nondestructive
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39 examination from Southwest Research Institute to assist in
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41 reviewing the radiography, visual and liquid penetrant
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43 examinations.

44 The Independent Review Committee consisted of two
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46 NUTECH engineers knowledgeable about the ASME Code and
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5 nuclear plant construction, and one SWRI engineer knowledge-
6 able about NDE at nuclear power plants. This Committee
7 reviewed and approved the Review Team investigation plan,
8 monitored the investigation to ensure that the plan was
9 properly implemented, provided technical assistance and
10 assisted the Task Force in formulating recommendations for
11 further investigation and corrective action.
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17 Q. 31 Mr. Molleda, how did HL&P participate in the
18 Task Force?
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21 A. 31 (JRM): At the time that the Show Cause Order
22 was issued, the Project was in the process of reevaluating
23 the welding program. A Stop Work Order had been issued on
24 safety related welding on the Project, and I was involved in
25 the evaluation of the alternatives for correcting the welding
26 problems that had been identified. I was also designated by
27 HL&P to keep abreast of the work of the welding Task Force.
28 I reviewed the progress of the Task Force efforts to assure
29 that the NRC welding concerns were adequately addressed,
30 that a comprehensive investigation was performed and that
31 the results were properly reported to the NRC.
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41 I assigned Mr. Daniel Martinez, HL&P's cognizant Engineer
42 for ASME Code welding, to work on the Task Force. Mr.
43 Martinez worked full time for about two months to complete
44 the work of the Task Force subgroup that investigated appli-
45 cable Codes and standards that affected the welding program.
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5 During the field activities of the Task Force, I visited the
6 site weekly to review the progress of the Task Force and to
7 discuss the status of the various subtasks that it was
8 performing. Additionally, I met with the Task Force leader
9 in Houston to discuss the overall efforts of the Task Force,
10 received weekly updates on the status of the Task Force
11 efforts and reviewed the documents that defined and estab-
12 lished the proposed course of action. Ultimately my group
13 in HL&P Engineering reviewed and commented on the Task Force
14 reports discussing their examination of the welding program.

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23 Q. 32 Mr. Saltarelli and Mr. Sullivan, what was the
24 scope of the Task Force investigation?

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27 A. 32 (EAS, MS): The Task Force defined the scope of
28 its review to encompass examination of randomly selected
29 safety-related ASME piping welds and AWS structural welds
30 made by B&R from the start of construction until the time
31 safety-related welding was stopped on April 11, 1980. All
32 STP welding ^{specifications} procedures and documentation were also examined.
33 The Task Force members developed a plan to evaluate four
34 specific areas of the welding program: (1) the safety-related
35 AWS welding program; (2) the ASME welding program including
36 welder qualifications; (3) the Nondestructive Examination
37 program; and (4) Code commitments as identified in the
38 engineering specifications and implementing procedures.
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5 Q. 33 Mr. Saltarelli, Mr. Sullivan and Mr. Molleda,
6 please summarize the conclusions contained in the Task Force
7 Interim Report issued July 28, 1980.
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10 A. 33 (EAS, MS, JRM): The Task Force Interim Report,
11 which formed the basis for HL&P's response to the NRC's
12 Order to Show Cause, was issued after completion of approxi-
13 mately 75 percent of the investigation previously described.
14 The Report indicated that much of the documentation ~~and most~~ ^{was}
15 ~~of the procedures were~~ in compliance with Code and Project
16 requirements. However, deficiencies were identified in ~~the~~
17 ^{some of the construction procedures, some of the}
18 AWS and ASME welds as well as in the performance of NDE. To
19 correct these deficiencies, the Task Force recommended
20 repair of specific deficient welds and further investigation
21 to identify possible additional deficiencies. The subsequent
22 reexamination, repair, and restart programs, described later
23 in this testimony, were developed by B&R and HL&P after
24 careful consideration of the findings in this Report.
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28 Q. 34 Mr. Sullivan, please describe the Task Force
29 investigations performed after issuance of the Interim
30 Report.
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33 A. 34 (MS): The Task Force completed its investigations
34 with some restructuring of its originally planned activities.
35 The Task Force continued its review of ASME documentation
36 and procedures but revised and increased the scope of its
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5 inspection program for ASME welds by examining additional
6 welds made prior to the Stop Work Order of April 11, 1980.
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8 The Task Force completed its investigations and issued its
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10 Final Report in April 1981. This Final Report superseded
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12 the Interim Report.
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14 Q. 35 Mr. Saltarelli and Mr. Muscente, what actions
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16 were taken in response to the recommendations contained in
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18 the Task Force Final Report?

19 A. 35 (EAS, MDM): All significant Task Force recommen-
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21 dations with respect to procedural changes were implemented
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23 as part of the corrective actions required prior to initiating
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25 the welding restart program. Moreover, all of the Task
26
27 Force recommendations with respect to reexamination and
28
29 repair of accessible ASME and AWS welds and evaluation of
30
31 inaccessible welds are being implemented.

32 Q. 36 Mr. Sullivan, please summarize the conclusions
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34 contained in the Task Force Final Report with respect to AWS
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36 welds.

37 A. 36 (MS): The Task Force visually examined a random
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39 sample of seventy-nine safety-related AWS welds selected
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41 from all areas of the plant in accordance with accepted
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43 sampling procedures. This examination revealed sixty-one
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45 welds with nonconformances such as undersized welds, improper
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47 contour, overlap, undercut, and arc strikes.
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5 The Task Force therefore recommended that all accessible
6 safety-related structural welds be reexamined, that all such
7 welds not in compliance with the AWS Code be repaired and
8 that the adequacy of all inaccessible AWS welds be determined
9 based on the types of nonconformances found in the reexamina-
10 tion of the accessible welds. In addition, it was recommended
11 that all AWS welders and inspectors be retrained to the
12 requirements of the AWS Code and applicable STP procedures.
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19 Q. 37 Please summarize the conclusions contained in
20 the Task Force Final Report with respect to the AWS construc-
21 tion procedures and weld documentation.
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24 A. 37 (MS): The AWS welding procedure specifications
25 were reviewed and found to be substantially in compliance
26 with Code requirements. AWS construction procedures were
27 also found to be substantially in compliance with Code
28 requirements except for two discrepancies with respect to
29 the frequency of Code-required examinations and tests.
30 Corrective action was recommended.
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37 The AWS shop and field erection weld documentation
38 system was found to be generally in compliance with the Code,
39 although inspected welds could not always be traced to a
40 specific inspector or inspection report. In addition, it
41 was not always possible to verify that only qualified welders
42 were making welds, or that qualified welders were always
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5 welding within their qualifications. Although this detailed
6 information is not required by the Code or Project procedures,
7 the Task Force recommended that the AWS documentation system
8 be modified to ensure that all inspected welds are traceable
9 to an inspector and to an inspection report. It was also
10 recommended that each welder and welding procedure specifi-
11 cation be identified for each weld to facilitate tracking of
12 *verify that only*
13 *qualified welders were used.*
14 ~~welder performance.~~

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19 Q. 38 Please summarize the conclusions contained in
20 the Task Force Final Report with respect to the ASME welds.

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23 A. 38 (MS): All radiographs of completed and accepted
24 ASME welds were reviewed by certified NDE Level III Examiners
25 in radiography. Twenty-five percent of the radiographed
26 welds which previously had been accepted were considered
27 unacceptable because of radiographic discrepancies with
28 technique, film quality or interpretation of indications.
29 Approximately fifteen percent of the welds had radiographs
30 with rejectable indications requiring repair.

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38 In addition to the review of all radiographed ASME
39 welds, the Task Force repeated Code-required visual examina-
40 tion and liquid penetrant testing on a random sample of ASME
41 welds that originally were accepted on the basis of these
42 types of NDE. The review of twelve welds from the Essential
43 Cooling Water (ECW) system revealed arc strikes, weld
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5 spatter and other minor surface imperfections. This review
6 was deemed to be inconclusive, however, due to the small
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8 sample population (only twenty-six welds accessible) and the
9 nonrandom sample distribution. The review of a random
10 sample of ninety-three of approximately four hundred ASME
11 welds in the non-ECW system revealed that thirteen of
12 forty-three socket welds and one of fifty groove welds had
13 penetrant test noncompliances. Two additional groove welds
14 had visual noncompliances.
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21 Based on this information, the Task Force recommended
22 that the following actions be taken: (1) all accessible
23 ASME welds with known deficiencies should be repaired; (2)
24 all other accessible ASME welds should be visually reexamined,
25 liquid penetrant tested and repaired if necessary; and (3)
26 data from the reexamination should be used in the evaluation
27 of the adequacy of the inaccessible ASME welds.
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34 Q. 39 Please summarize the conclusions contained in
35 the Task Force Final Report with respect to ASME documentation.
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38 A. 39 (MS): Several types of documentation such as
39 weld data cards and weld material requisitions were examined
40 for approximately thirteen hundred ASME welds. The results
41 indicated that the documentation for ASME pipe welds generally
42 meets the ASME Code requirements, although a few minor
43 discrepancies such as inaccurate data entries were found.
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5 The Task Force recommended that these be corrected and that
6 the documentation review be improved.
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9 The Task Force review of weld filler material documenta-
10 tion including purchase orders, filler material specifications
11 and certified material test reports indicated that all weld
12 filler material was supplied by properly approved vendors
13 and that the specific material used complied with Code
14 requirements. The Task Force also found the ASME construction
15 procedures and welding procedure specifications to be substan-
16 tially in compliance with the Code. Minor discrepancies
17 were noted and corrections recommended.
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25 Q. 40 Please summarize the conclusions contained in
26 the Task Force Final Report with respect to welder
27 qualifications.
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30 A. 40 (MS): The Task Force evaluated welder performance
31 test records and weld data cards to verify welder qualification
32 tests and to determine whether welders were qualified to
33 perform the production welding already completed. The infor-
34 mation on the weld data cards supported the adequacy of the
35 qualifications and except for one minor discrepancy, was
36 found to meet Code and Project requirements. The welder
37 qualification test records revealed two problems:
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45 (1) film side penetrameter placement for some of the tests;
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47 and (2) the use of ASME acceptance criteria for both ASME
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5 and AWS welder qualifications. The Task Force recommended
6 that the possible effects of the first problem be investigated,
7 but found the second not serious enough to require further
8 investigation.
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12 Q. 41 Please summarize the conclusions contained in
13 the Task Force Final Report with respect to the NDE Program.
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16 A. 41 (MS): The Task Force compared the NDE procedures
17 for radiography, magnetic particle, liquid penetrant and
18 visual testing with applicable Code requirements. All
19 procedures were found to be substantially in compliance with
20 the Code, although the Task Force recommended several revisions
21 to correct minor discrepancies.
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27 The Task Force review of the qualification files for
28 NDE Inspectors identified various types of irregularities
29 in the qualification of twenty-one of the seventy personnel,
30 including uncertified personnel performing NDE, an inspector
31 who signed as a higher level and expiration of an eye exam
32 certification. In addition, the review determined that
33 documentation regarding nine of the twenty-one inspectors
34 showed insufficient training and/or experience in performing
35 examinations. The Task Force concluded, however, that
36 program improvements implemented since the Stop Work Order
37 of April 11, 1980 were sufficient to ensure proper control
38 of the NDE Inspector certification processes.
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The Task Force reviewed the NDE certification examinations and training courses and found them to be appropriate for each certification level. Recommendations to improve the overall certification program included updating NDE qualification examinations by replacing old questions, providing a Level III review of all inspector qualifications and reexamining all inspections performed by unqualified inspectors.

Q. 42 Please summarize the conclusions contained in the last section of the Task Force Final Report with respect to the identification of Code commitments in specifications and procedures.

A. 42 (MS): The Task Force reviewed Engineering specifications and implementing Construction/QA procedures in order to determine whether applicable Codes and standards were adequately identified and whether the same commitments had been made in all documents. The Task Force found minor inconsistencies in the identification of the applicable edition and addendum of the relevant Codes, and found an occasional failure to indicate revision numbers in certain procedures and specifications. These inconsistencies were not found to have had any detrimental effect on weld quality, but the Task Force recommended that the inconsistencies be

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5 corrected and that Engineering specifications and construc-
6 tion QA procedures be revised to reflect the most recent
7 project commitments.
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10 Q. 43 Mr. Purdy, Mr. Wilson and Mr. Muscente, who was
11 responsible for revising and approving the STP Construction
12 and QA procedures so that the Stop Work Order could be
13 lifted and the welding restart program initiated?
14

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16 A. 43 (GRP, LDW, MDM): The revision of the STP welding
17 procedures was a joint undertaking by B&R, HL&P, and third-
18 party consultants. B&R's Chief Welding Engineer and B&R
19 personnel from Materials Engineering and QA, including QE,
20 proposed a number of changes to the welding procedures.
21 These changes were then reviewed and commented upon by B&R
22 Construction and Level III Inspectors from B&R and HL&P.
23 Further review was provided by the Task Force and by an
24 independent Level III Inspector retained by B&R in July 1980
25 to oversee the welding restart activities. Final revisions
26 were agreed upon and the new procedures were approved by all
27 affected B&R and HL&P disciplines.
28

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30 Q. 44 Please describe the revisions made to the STP
31 Construction and QA procedures.
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34 A. 44 (MDM, LDW, GRP): QAPs and MECPs, including
35 Welder Performance Qualifications, Category I Structural
36 Steel (AWS) Safety-Related Welding, ASME Safety-Related
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5 Piping and Support Welding, and Weld Filler Material Control,
6 were revised in several respects. Words and definitions
7 were simplified to increase clarity and facilitate ease of
8 understanding. The structure of the procedures was reorga-
9 nized so that all related items for each affected craft were
10 grouped together and superfluous procedures eliminated.
11 This reorganization eliminated inconsistent references among
12 procedures for different crafts. Finally, all Code and
13 specification requirements were incorporated directly into
14 the text of the procedures so that the procedures were
15 "self-contained" without reference to outside materials.
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25 Q. 45 Mr. Wilson, has the HL&P program for welding
26 changed as a result of the B&R audits in late 1979-early
27 1980, the NRC's investigation during the same period and the
28 NRC's Show Cause Order?
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32 A. 45 (LDW): Yes. Numerous improvements in our
33 program resulted from the intensive reexamination of the
34 welding and QA programs which began in early 1980. HL&P QA
35 has increased its involvement in the consideration of noncon-
36 formances concerning welding and NDE. The NCR's are trended
37 by our QA Systems group members who notify me of any significant
38 trends. In addition, my group reviews and approves the
39 disposition of all welding or NDE NCR's and Corrective
40 Action Requests. We can and have asked for HL&P engineering
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5 assistance in reviewing specific proposed dispositions.
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7 This approval process assures that proposed resolutions meet
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9 Project quality requirements. This involvement with NCR's
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11 and the trending also increases our ability to recognize and
12
13 address any significant programmatic deficiencies.

14 We also work with the B&R QE and QA organizations in
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16 evaluating programmatic deficiencies and proposing solutions.
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18 This process has been greatly enhanced by our moving into
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20 the offices occupied by our counterparts at B&R.

21 Another significant change has been the creation of an
22
23 HL&P QC group to perform most of the HL&P field inspections.
24
25 By relieving my QA personnel of the time-consuming hardware
26
27 inspection process, we are better able to analyze the overall
28
29 operation of the QA/QC program. The HL&P QC Inspectors also
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31 are available to do special inspections or verifications at
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33 the request of my QA group.

34 While the QC personnel do most HL&P inspections, my
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36 group witnesses special inspections of particularly critical
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38 or difficult work. These inspections are not planned, but
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40 rather, are performed whenever we believe the need exists.
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42 A recent example was the reinspection of three aluminum-bronze
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44 pipe welds which confirmed that the original inspections
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46 were performed properly.
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5 Under the previous QA program, HL&P QA reviewed radio-
6 graphs on a monthly surveillance basis. This random review
7 proved insufficient in scope and frequency to detect the
8 problems with film quality and interpretation which were
9 noted by the NRC. We are committed to ensuring that all
10 future radiography meets Project requirements. We currently
11 have an HL&P certified Level III NDE Inspector review 100
12 percent of the radiographs and test reports in addition to
13 B&R's Level III Inspector. This effort represents an addi-
14 tional level of review that completely duplicates B&R's
15 efforts. This 100 percent review will continue until a long
16 term trend of high reliability is attained. We also witness
17 the performance of other NDE tests in the field on a random
18 basis in order to check their compliance with procedural
19 requirements.
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32 Another major change has been the use of implementation
33 reviews, in lieu of checklists, as the primary tool for
34 evaluating B&R's QA/QC performance. The checklists covered
35 a great many items, but in restricted detail. Because it
36 was time consuming to review each of the large number of
37 checklist items, HL&P did not conduct an in-depth examination
38 of any single area. In contrast, the implementation review
39 can be tailored to fit particular circumstances and expanded
40 to any depth. It is, in essence, an indepth review of
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5 adherence to program requirements. The checklist system
6 normally detected occasional procedural deficiencies, but it
7 was very difficult to detect systematic or programmatic
8 problems and underlying causes. The implementation review
9 allows us to examine a particular activity from start to
10 finish, in detail and in-depth. This type of examination is
11 much more likely to provide us with a good evaluation of the
12 QA program being investigated.
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19 Another area of change has been in our personnel. We
20 have enlarged the staff, but more importantly, we are con-
21 tinually upgrading the quality of our staff. One of our new
22 employees is a former Authorized Nuclear Inspector and
23 another is an expert in NDE who is certified as a Level III
24 Inspector of radiography. Each person working in the section
25 is given a series of tests to determine technically strong
26 and weak areas. We then schedule training on both a quarterly
27 and yearly basis to enhance skills and improve weak areas on
28 an individual-by-individual basis. In addition, all HL&P QA
29 personnel must pass required tests and participate in an
30 internship program to familiarize them with the STP QA
31 program before conducting any implementation reviews.
32 Salaries and relocation benefits also have been increased in
33 order to attract more experienced personnel and we are using
34 a personnel search firm to find prospective employees.
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5 Q. 46 Mr. Saltarelli, Mr. Muscente and Mr. Purdy, have
6 additional organizational or programmatic improvements been
7 made to the STP welding program? If so, please describe
8 them.
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12 A. 46 (EAS, MDM, GRP): Several additional improvements
13 have been made to the STP welding program. First, Mr. Muscente
14 was hired to provide management oversight of the entire
15 welding program in the newly-created position of STP Welding
16 Program Manager. His responsibilities include maintaining
17 proper coordination among the Engineering, Construction, and
18 QA elements of the welding program and assuring that welding
19 program requirements are satisfactorily implemented.
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27 Mr. Muscente prepared an STP Welding Program Description
28 which defines the responsibilities and interrelated functions
29 of the various welding-related organizations including
30 Construction, Engineering, and QA. This document has been
31 issued to all affected B&R and HL&P personnel on the project,
32 and should help ensure that each employee understands his
33 responsibilities and is capable of performing his tasks
34 properly.
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42 To assure that welders are properly trained and qualified,
43 the welder training program has been divided into five
44 separate programs based on experience and quality of perfor-
45 mance. Separate training programs are given to experienced
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5 and inexperienced new hires, and to employed welders who are
6 performing well, having occasional difficulties or having
7 difficulties with particular processes. As a result of
8 these distinct types of training, the overall program has
9 been tailored to each individual welder's needs.
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14 To attract more experienced new welders and keep quali-
15 fied welders at STP, a welder incentive program has been
16 adopted. This program offers increased hourly salaries for
17 certain classes of welders with specific qualifications and
18 performance records. A bonus is also offered to those who
19 meet all requirements for a period of six months.
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24 To assure that welder proficiency is maintained at a
25 high level and that welding problems are quickly discovered,
26 systems for tracking welder proficiency and repair rates
27 have been developed. The Project Welding Engineering Depart-
28 ment now keeps records of the number of welds made by each
29 welder and the number of weld repairs. Welding Engineering
30 also decides, based on these records, whether additional
31 training is necessary.
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40 Six experienced welding supervisors and four qualified
41 welding engineers were newly hired or transferred to the STP
42 site. These additional personnel should help improve the
43 overall quality of the welding and welding supervision at
44 STP.
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5 Responsibility for controlling certain welding activities
6 has been redefined. For example, to prevent the use of
7 incorrect weld material, specific responsibility for controlling
8 and issuing weld material has been assigned to one person
9 who keeps records as to the material being utilized, the
10 users of the material, and where the welding was occurring.
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16 The NDE certification examination questions have been
17 rewritten to apply more directly to specific NDE activities
18 at STP. These revisions should allow more effective evalu-
19 ation of potential NDE Inspectors, and should improve the
20 quality of those Inspectors finally certified.
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25 Finally, to improve the attitude of the welders, welding
26 supervisors and other welding personnel, the "zero defects"
27 concept has been initiated. In addition, the importance of
28 quality workmanship and adherence to project requirements
29 repeatedly has been emphasized in informal meetings and
30 training sessions. These meetings will continue until STP
31 construction is completed.
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38 Q. 47 Mr. Saltarelli, Mr. Purdy, Mr. Wilson and Mr.
39 Muscente, have revised procedures and programmatic changes
40 been effective?
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43 A. 47 (EAS, GRP, LDW, MDM): Yes. The new procedures
44 and programmatic changes have clarified the division of
45 responsibility among the different disciplines, resulting in
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5 fewer impediments to getting the work done in an orderly
6 manner. The welding records are more accurate, resulting in
7 a smoother, more efficient flow of documentation. Finally,
8 the welder training program is more thorough and supervision
9 and inspection are more rigorous, resulting in higher quality
10 welds, as will be explained in more detail below.
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16 Q. 48 Mr. Saltarelli and Mr. Muscente, in addition to
17 the procedural and programmatic revisions, what actions were
18 taken with respect to weld deficiencies?
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21 A. 48 (EAS, IDM): As a result of the Task Force
22 conclusions with respect to weld deficiencies, B&R and HL&P
23 senior management decided in September 1980 that reexamina-
24 tion of all accessible safety-related AWS and ASME welds and
25 repair, where required, was the most conservative course to
26 follow. This reexamination and repair program is more
27 extensive than that recommended by the Task Force, however,
28 because it will encompass radiography of 100 percent of the
29 accessible ASME welds in the ECW system, requiring that
30 those ECW welds buried under backfill be unearthed. This
31 program is being conducted pursuant to a detailed reexamina-
32 tion and repair plan submitted by HL&P to the NRC's Region
33 IV on September 10, 1980.
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45 Q. 49 When were the reexamination, repair and restart
46 programs for AWS and ASME welding implemented?
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5 A. 49 (EAS, MDM): In October 1980, the NRC's Region
6 IV authorized that reexamination and repair of AWS welds, as
7 well as a limited restart of new AWS welding, could commence
8 on October 6, 1980. Similar authorization was given for
9 ASME reexamination, repair and limited restart on November
10 24, 1980. These authorizations were based on the following
11 findings: (1) management systems and special control proce-
12 dures were established; (2) personnel training was completed;
13 (3) adequate staffing existed to perform and manage the
14 work; (4) all commitments regarding safety-related welding
15 made in the Response to the NRC Order to Show Cause were
16 fulfilled; and (5) all corrective actions for previously
17 identified noncompliances related to AWS and ASME welding
18 were completed.
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31 In late October 1980, the NRC authorized an expansion
32 of AWS production welding activities through December 1980
33 in accordance with a previously submitted twelve-week work
34 plan. A similar expansion of ASME production welding in
35 accordance with a ten-week work plan was authorized in
36 January 1981. Reexamination and repair activities for AWS
37 and ASME welds were to continue as originally planned.
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43 The AWS twelve-week work plan was successfully completed
44 as scheduled, and the NRC Region IV authorized resumption of
45 AWS welding on a normal production basis in January 1981.
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5 ASME welding is proceeding according to a new twelve-week
6
7 work plan, after which B&R and HL&P will propose a resumption
8
9 of normal production basis ASME welding.

10
11 Q. 50 Mr. Wilson, what has been HL&P involvement in
12
13 the development of the welding reexamination, repair and
14
15 restart programs?

16 A. 50 (LDW): As noted earlier, we were extensively
17
18 involved in the procedure revisions which necessarily preceded
19
20 initiation of these programs. We also reviewed and commented
21
22 upon the specific plans developed by B&R. After the AWS and
23
24 ASME programs began, we conducted an extensive implementa-
25
26 tion review to assure adherence to program requirements.
27
28 During this review, we checked to be sure that the relevant
29
30 Project procedures and welding restart program commitments
31
32 were being implemented. We found that the B&R personnel
33
34 generally understood the new procedures and were properly
35
36 implementing them. We did uncover a few minor problems
37
38 which are currently being resolved.

39 Q. 51 Mr. Saltarelli and Mr. Muscente, please summarize
40
41 the results of the ASME and AWS reexamination and repair
42
43 programs.

44 A. 51 (EAS, MDM): To date, approximately half of
45
46 accessible AWS welds made prior to the Stop Work Order have
47
48 been reexamined. Only six percent of these welds contained
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5 deficiencies directly related to weld strength such as
6 undercut and undersized welds, while fifty-four percent
7 contained deficiencies related to workmanship standards such
8 as arc strikes or weld spatter, which are easily corrected
9 by grinding or brushing the weld surface. All deficiencies
10 have been repaired, inspected and accepted.
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16 Approximately half of the accessible non-ECW ASME welds
17 made prior to the Stop Work Order have been reexamined, and
18 eight percent contained deficiencies. In addition, fifteen
19 percent of the accessible ECW pipe welds have been reexamined
20 by both visual and liquid penetrant methods, as required by
21 the ASME Code, and by radiography, which is not Code required.
22 Surface testing showed deficiencies in one percent of the
23 welds, while radiographs of the same welds showed indications
24 of deficiencies in eighty-three percent of the welds. All
25 deficiencies have been repaired, and the repairs inspected
26 and accepted.
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36 Because virtually all of the ECW welds were found to be
37 acceptable pursuant to the Code-required testing, it is our
38 judgment that the welds would be suitable for their intended
39 service even without repair of the deficiencies identified
40 by radiography. Nevertheless, B&R and HL&P have committed
41 to radiographing 100 percent of the ECW welds and repairing
42 all deficiencies. Thus, when the reexamination and repair
43 program is completed, the welds will have been examined and
44 found acceptable under the strictest of standards.
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5 Q. 52 Mr. Saltarelli, Mr. Muscente and Mr. Wilson,
6 please summarize the results of the ASME and AWS restart
7 programs.
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10 A. 52 (EAS, MDM, LDW): Since the restart of AWS
11 welding, the reject rate has been maintained at less than
12 one percent. This means that one percent of the completed
13 welds inspected by QC personnel have been rejected as not
14 complying with Project procedures and have had to be repaired.
15 The reject rate for ASME non-ECW class 3 pipe welds made
16 since January 5, 1981 has been maintained at about two
17 percent; six percent for radiographed ASME class 2 pipe
18 welds; and twenty-two percent for radiographed butt welds in
19 aluminum-bronze ECW piping which is due to the difficulty of
20 welding on this type of material. All of these reject rates
21 represent significant reductions in the rates achieved prior
22 to implementation of the welding program improvements,
23 particularly the rate for aluminum-bronze ECW piping which
24 formerly was approximately sixty percent.
25

26
27 In addition to these relatively low reject rates,
28 reports issued by the independent third-party Level III
29 Inspector surveying the AWS and ASME welding restart programs
30 indicate that the procedures, personnel training, and manage-
31 ment systems associated with the welding are being properly
32 implemented to assure that welds will satisfy applicable
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5 Code requirements and procedures. Results of QC inspections
6 indicate that all quality requirements are being met and
7
8 HL&P's Level III Inspector has noted considerable improvement
9
10 in the performance of radiographic testing. Finally, NRC
11
12 inspections conducted subsequent to the restart activities
13
14 have found no items of noncompliance relative to AWS or ASME
15
16 welding activities.

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18 Q. 53 How would you evaluate the results of the reexami-
19
20 nation, repair, and restart programs?

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22 A. 53 (EAS, MDM, LDW): The high percentage of acceptable
23
24 AWS and ASME welds made under the restart programs and the
25
26 favorable inspections by both QC personnel, the independent
27
28 Level III Inspector and the NRC indicate that the corrective
29
30 actions taken by B&R and HL&P to improve the welding program
31
32 are sound and are being implemented satisfactorily. There-
33
34 fore, we are completely confident that these "new" welds
35
36 meet all applicable Code and Project requirements. We are
37
38 also confident that in the future, the STF welding program
39
40 will continue to be fully implemented so that weld deficien-
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42 cies will be identified by QC personnel and repaired as
43
44 necessary.

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46 The accessible AWS and ASME welds made prior to the
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48 Stop Work Order are being reexamined, repaired when necessary
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5 and inspected by personnel who have been retrained, requali-
6 fied, and/or recertified pursuant to STP's revised procedures.
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8 Because the restart program is proceeding so successfully
9 pursuant to the new procedures, we are confident that the
10 reexamination and repair program will proceed equally well,
11 and that when the program is completed in late 1981, the
12 "old" welds will meet applicable Code and Project requirements.
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18 Q. 54 Mr. Muscente and Mr. Molleda, in addition to the
19 reexamination and repair work performed on accessible welds
20 made prior to April 1980, what action was taken regarding
21 inaccessible welds?
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25 A. 54 (MDM, JRM): Consistent with the Task Force
26 recommendations, B&R and HL&P determined that an engineering
27 analysis should be made of all inaccessible ASME and Category
28 I structural steel (AWS) welds made prior to April 11, 1980
29 to determine what kinds of deficiencies are likely to exist
30 in these welds and what effect such deficiencies may have on
31 the structural integrity of the welds. For purposes of this
32 analysis, inaccessible welds are defined as those embedded
33 in concrete or buried under concrete structures. Approxi-
34 mately 500 AWS welds, or 1.5 percent of the approximately
35 35,000 AWS welds made as of April 11, 1980 are inaccessible.
36 Approximately fifty ASME welds, or 2.9 percent of the approxi-
37 mately 1700 ASME welds made prior to April 11, 1980, are
38 inaccessible.
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5 Q. 55 Mr. Muscente and Mr. Molleda, who was chosen to
6 perform the evaluation of inaccessible AWS welds, and when
7 were they chosen?
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10 A. 55 (MDM, JRM): In February 1981, B&R, with HL&P
11 approval, retained Battelle to perform the engineering
12 evaluation of the inaccessible welds. Battelle is a research
13 and development firm with expertise in welding analyses,
14 metallurgy and NDE. B&R, with HL&P approval, also retained
15 Professor Roy B. McCauley, a noted expert in the field of
16 metallurgy, welding engineering, testing, and evaluation to
17 assist Battelle and make independent conclusions about the
18 conditions of the welds. Professor McCauley's resume is
19 attached hereto as Attachment No. 1.
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29 Q. 56 Mr. Molleda, how has HL&P been involved in the
30 evaluation of inaccessible welds?
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32 A. 56 (JRM): HL&P reviewed and approved the plan for
33 the study and concurred in the selection of consultants for
34 the work. We have met with Dr. Hauser and with Professor
35 McCauley to discuss the program and have accompanied them in
36 visits to the STP site to examine and select representative
37 welds for laboratory testing. As the program progresses, we
38 intend to continue our involvement in the work activities
39 being performed by B&R and the consultants by participating
40 in meetings, reviewing and commenting on reports and records,
41 and participating in discussions with B&R engineers.
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5 Q. 57 Dr. Hauser, please explain the staffing and
6 organization of the evaluation team.
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9 A. 57 (DH): Battelle has designed an evaluation
10 program and since March has been analyzing the accessible
11 welds in order to develop information for use in evaluating
12 the inaccessible welds. Battelle is providing approximately
13 thirteen scientists, welding experts, and mathematicians,
14 plus support staff to conduct this program. Professor
15 McCauley has advised Battelle in designing and implementing
16 the evaluation program. He will continue to review Battelle's
17 work until completion, at which time he will review the
18 final results of Battelle's engineering analyses, advise B&R
19 and HL&P as to the condition of the inaccessible AWS welds,
20 and recommend any corrective action that may be required.
21 B&R and HL&P have and will continue to coordinate and direct
22 all evaluation activities, provide data to Battelle from the
23 reexamination and repair program, and review and approve all
24 program decisions.
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38 Q. 58 Please describe the scope of the evaluation of
39 inaccessible AWS welds and how the work is organized.
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42 A. 58 (DH): Battelle and Professor McCauley were
43 charged with assessing the structural integrity of the
44 inaccessible AWS welds at STP. With Professor McCauley's
45 assistance, Battelle determined that this goal could be
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5 achieved by reviewing and thoroughly analyzing the data
6 generated from the ongoing STP reexamination and repair
7 program for accessible AWS welds. Evaluation of this data
8 will continue until Battelle decides, based on statistical
9 and engineering judgement, that an acceptable data base
10 exists from which to establish final conclusions. Battelle
11 is also reviewing the original STP design drawings of acces-
12 sible and inaccessible welded connections, reviewing pertinent
13 literature about the significance of various types of weld
14 deficiencies on structural integrity, and examining and
15 testing representative samples of existing AWS welds contain-
16 ing deficiencies.
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20 Using this information, Battelle is conducting a program
21 comprising three tasks: (1) a statistical analysis to
22 determine the type, characteristics, size and frequency of
23 deficiencies that may exist in the inaccessible welds; (2) a
24 stress analysis, incorporating the statistical results, to
25 determine the actual load-carrying capacity of the inacces-
26 sible welds and the allowable loads which can be applied to
27 welds with certain combinations of weld deficiencies, for
28 comparison with the STP design loads; and (3) a metallurgical
29 analysis of sample welds and weld deficiencies to provide
30 additional information for the statistical and stress analyses.
31 All of these tasks are being performed concurrently.
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4 Q. 59 What stress analysis methods did Battelle select,
5 and why are they considered reasonable?
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8 A. 59 (DH): The stress analyses of AWS welded connec-
9 tions will be performed using accepted design stress and
10 elementary fracture mechanics techniques. Some stress
11 analyses may be performed using a sophisticated computer
12 method of finite element analysis. All of these methods
13 have been utilized frequently in analyses of nuclear systems
14 and have yielded conservative results. Battelle therefore
15 considers their use reasonable in the STP evaluation.
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23 Q. 60 Is it your judgement that the various types AWS
24 Code deficiencies have different effects on the strength or
25 performance of welds?
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28 A. 60 (DH): Yes. The presence of a deficiency in a
29 weld does not necessarily mean that the weld will be unable
30 to perform its intended service. Indeed, the presence of
31 certain types of deficiencies will have little or no effect
32 on the performance of the weld. For example, when a weld is
33 moderately concave or convex, or contains weld spatter or
34 small amounts of porosity, there is little or no likelihood
35 that the weld strength will be reduced.
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43 The material being welded can also influence the effect
44 of deficiencies on the structural integrity of the welds.
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46 The material used at STP is a low hardenability carbon steel
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5 which is not as susceptible to brittleness or to cracking as
6 many other types of steel. Thus, deficiencies like arc
7 strikes and spatter are likely to have an insignificant
8 effect on the structural integrity of the STP welds. Moreover,
9 a material like A-36 steel generally is very ductile; i.e.,
10 it is able to absorb strain without breaking or cracking.
11 Welds made of this material can therefore withstand deficiencies
12 that concentrate strain, such as undercut, surface roughness
13 and overlap, with little or no strength reduction.
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21 Q. 61 Has Battelle previously performed evaluations
22 similar to the STP inaccessible AWS weld evaluation? If so,
23 please describe them.
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27 A. 61 (DH): Battelle has performed numerous analyses
28 which are similar to the statistical, stress, and metallur-
29 gical analyses being performed at STP. For example, Battelle
30 has conducted a metallurgical failure analysis of a stainless
31 steel joint from a nuclear power plant, has statistically
32 analyzed the effects of weld deficiencies in Navy nuclear
33 piping to determine the actual cyclic load-carrying capacity
34 of the welds, and has compared the results of the analysis
35 with Navy design specifications.
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44 Q. 62 Is it your judgement that the methods being used
45 to perform the inaccessible AWS weld evaluation at STP are
46 reasonable and sound?
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5 A. 62 (DH): Yes. As I previously described, Battelle
6 is using sophisticated computer techniques in conjunction
7 with analytical methods which are frequently used in the
8 design and evaluation of nuclear systems. In addition, the
9 information being generated by the STP reexamination and
10 repair program is detailed and thorough. Finally, Professor
11 McCauley and Battelle analysts are highly qualified and
12 experienced in their respective fields. This combination of
13 factors undoubtedly will produce a reliable assessment of
14 the condition of the inaccessible AWS welds at STP.
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23 Q. 63 What is the status of the inaccessible AWS weld
24 evaluation program?
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27 A. 63 (DH): The evaluation program should be completed
28 and a Final Report issued in late 1981 or early 1982.
29

30 Q. 64 Mr. Muscente, who will perform the evaluation of
31 inaccessible ASME welds and how will the evaluation team be
32 organized?
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36 A. 64 (MDM): In early May 1981, B&P, with HL&P approval,
37 plans to identify an outside firm with special expertise to
38 perform an evaluation of the inaccessible ASME welds made
39 prior to April 11, 1980 to determine whether they are suit-
40 able for their intended service. The subcontractor will
41 develop an evaluation plan and will perform all analyses.
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5 B&R and LL&P will coordinate and direct all evaluation
6 activities, provide data to the subcontractor, and review
7 and approve all program decisions.
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10 Q. 65 Please describe generally how the evaluation
11 will be performed.
12

13 A. 65 (MDM): I anticipate that the evaluation will
14 encompass three principal tasks, although these may change
15 depending upon the recommendations of the subcontractor.
16

17 These tasks are:
18

19 1. A determination of the condition of the welds based
20 on a review of the available radiographs and the data obtained
21 from the reexamination and repair program;
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23 2. A review of original STP design specifications and
24 operational criteria relative to the temperature, pressure,
25 and thermal cycles which the ECW and non-ECW systems must
26 withstand; and
27

28 3. An evaluation, based on data from the first and
29 second tasks, as to whether the welds are suitable for their
30 intended service under actual operating conditions at STP.
31

32 Q. 66 What is the expected schedule for the inaccessible
33 ASME weld evaluation?
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35 A. 66 (MDM): The evaluation should commence in May 1981
36 and should be completed in late 1981, at which time the
37 subcontractor will issue a Final Report.
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CAREER SUMMARY

Attachment No. 1

ROY BARNARD McCAULEY

Occupation: Director, Center for Welding Research
Professor Departments of Welding Engineering
and Metallurgical Engineering

Welding Engineering Laboratories
The Ohio State University
190 West 19th Avenue
Columbus, Ohio 43210

Phone: 614/422-3241

Specilization: Fabrication Metallurgist

- (1) Welding Engineering Education
- (2) Quality Performance Audits
- (3) Welding Metallurgy
- (4) Discontinuity Studies
- (5) Testing and Evaluation

Degrees, Institutions, Date:

B.A. - Cornell College - 1940
M.S. - Illinois Institute of Technology - 1943

Teaching Experience:

Assistant in Metallurgy, 1940-43 - Illinois Institute of Technology
Instructor in Metallurgy, 1943-47 - " " " "
Acting Chairman, Met. Engr. 1944-46 - " " " "
Assistant Professor, Met. Engr. 1947-50 - " " " "
Instructor, Welding Engr., 1950-54 - The Ohio State University
Assoc. Prof. & Chm., Welding Engr., 1954-56 - " " "
Research Supervisor - Engineering Experiment Station, 1954-60
Assistant to the Dean of Engineering, 1957-59
Prof. Welding Engr., 1956-Date - The Ohio State University
Chairman Welding Engr., 1956-79 - " " " "
Director, Welding Research - 1960-79 - " " " "
Building Representative - Welding Engr. Labs, 1969-79
Professor, Metallurgical Engineering, 1972-date, The Ohio State
University

Full Time Industrial Experience:

Columbia Tool Steel Company - 1938-39

Part Time Industrial Experience:

Vice President, McCauley Alloy Co. (Chicago, IL) 1941-42
Consultant Manufacturing Metallurgy and Quality Assurance, 1943-date
Registered Professional Engineer, State of Illinois, 1946-date
State of Ohio, 1966-date
Licensed Radioisotope Radiographer, Health Office, A.E.C. 1952-66

Honorary Affiliations:

Cornell Men's Senate Key
The Society of the Sigma Xi
Tau Beta Pi
Phi Lambda Upsilon
Pi Tau Sigma
Sigma Gamma Epsilon

Principal Publications: (see separate sheets)

Contributor to:

American Society for Metals Handbook
Society for Nondestructive Testing Handbook
Society of Tool Engineers Handbook
Lincoln Electric Company Procedure Handbook

Other Career Summaries:

Who's Who in America
Who's Who in the Midwest
Who Knows -- and What
Who's Who in American Education
The Blue Book
Leaders in American Science
Honorarium Americana
Engineers of Distinction
Who's Who in Europe
American Men & Women of Science

Scientific and Professional Society Affiliations:

Member - American Society for Nondestructive Testing, 1942-date
Handbook Committee - 1957-65; 1977-date
Mehl Honor Lecture - 1965
Member - American Society for Metals
Education Committee - 1947
Seminar Committee - 1948
Handbook Committee No. 8 - 1957-58
National Handbook Committee - 1961-63
Handbook Chapter Chairman - 1964-71
Member - American Society for Engineering Education, 1940-77
Chairman, Curriculum Committee, Illinois-Wisconsin-
Indiana Section - 1944-48
Research Relations with Industry - 1962-date
Member - American Society of Mechanical Engineers
Nuclear Survey - 1970-date
Member - American Foundryman's Association, 1944-50
Handbook Committee, 1946-48

Member - American Welding Society, 1956-date
 Technical Representative, Columbus Section, 1952-54
 Director, Columbus Section, 1954
 Secretary, Columbus Section, 1954-55
 Vice Chairman, Columbus Section, 1955-56
 Chairman, Columbus Section, 1956-57
 Executive Committee, Columbus Section, 1957-58
 Vice Chairman, National Educational Activities Comm. 1956-58
 Chairman, National Educational Advisory Council, 1956-58
 National Nominating Committee, 1958-59
 Meritorious Certificate Award, 1959
 National Membership Committee, 1957-60
 Director-at-Large, 1960-63
 Adams Memorial Membership, 1960
 Vice President, 1963-66
 Chairman, Publication & Promotion Council, 1963
 Chairman, Technical Council, 1964
 Chairman, Districts Council, 1965
 President, 1966
 Chairman, Administrative Council, 1966
 Chairman, National Nomination Committee, 1967
 Board of Directors, 1967-70
 Chairman, Executive & Finance Committee, 1968
 Member Educational Activities Committee, 1969-76
 Pipeline Materials Task Force-Welding Research Council, 1973-date
 Chairman, Committee on Higher Education, 1977-date
 Samuel W. Miller Gold Medal 1978
 Member - International Institute of Welding, 1960-date
 Expert, American Council, New York City, 1961
 Expert, American Council, Oslo, Norway, 1962
 Expert, American Council, Helsinki, Finland, 1963
 Chairman, Commission on Education, Prague, Czechoslovakia, 1964
 Chairman, Commission on Education, Paris, France, 1965
 Chairman, Commission on Education, Delft, Holland, 1966
 Chairman, Commission on Education, London, England, 1967
 Chairman, Colloquium on Education, London, England, 1967
 Chairman, Commission on Education, Warsaw, Poland, 1968
 Chairman, Commission on Education, Kyoto, Japan, 1969
 Chairman, Commission on Education, Lausanne, Switzerland, 1970
 Member Subcommittee 5F Defects in Welds, 1970-date
 Chairman, Commission on Education, Stockholm, Sweden, 1971
 Chairman, Commission on Education, Toronto, Canada, 1972
 Chairman, Commission on Education, Dresseldorf, Germany, 1973
 Chairman, Commission on Education, Budapest, Hungary, 1974
 Chairman, Commission on Education, Sidney, Australia, 1976
 Subcommittee Chairman, Destructive Testing, 5-D, 1977-date
 Chairman, Commission on Education, Copenhagen, Denmark, 1977
 Chairman, Commission on Education, Dublin, Ireland, 1978
 Chairman, Commission on Education, Bratislava, Czechoslovakia, 1979
 Chairman, Commission on Education, Lisbon, Portugal, 1980
 Member - International Platform Association, 1974-76
 1976-date Smithsonian Associates, National Member
 1974-date Organizational Member American Council, IIW
 1977-date USA Technical Advisory Group, ISO/TC44-SC5, Committee
 on Mechanical Testing of Welds

Married: Audrey Paulsen McCauley, October 10, 1941

Children: Roy Barnard McCauley, III, September 20, 1943
Paul Thomas McCauley, August 23, 1946
Robert William McCauley, May 21, 1952
Andrew John McCauley, October, 1955

Special Activities:

Church School Teacher, Maple Grove Methodist Church, Columbus, Ohio
Member, Worthington Garden Club
Board of Trustees, Wesley Foundation, The Ohio State University
Board of Advisers, Franklin County Agricultural Extension Service
Faculty Associate - Blackburn House, The Ohio State University

Other Honors:

1959 National Meritorious Certificate Award, American Welding Society
1960 Adams Memorial Membership Award, American Welding Society
1964-date Chairman, Commission on Education, International Institute of
Welding
1965 Robert F. Mehl Lecture, American Society of Nondestructive Testing
1966 Silver Certificate, American Society for Metals
1966 President, American Welding Society
1967 Life Membership, American Welding Society
1972 R. D. Thomas International Achievement Award, American Welding
Society
1974-date Chairman, Subcommittee on Destructive Testing, International
Institute of Welding
1975 Distinguished Service Award, American Welding Society
1978 Samuel Wylie Miller Gold Metal, American Welding Society
1979 Silver Plaque - International Institute of Welding
1979 Member, Ohio State University Welding Engineering Alumni Club
1980 Silver Certificate American Welding Society

Professional Recognition:

1946-date, Registered Professional Engineer, State of Illinois, #5560
1966-date, Registered Professional Engineer, State of Ohio, #31314
1975-for life, Certified Manufacturing Engineer, Society of Mfg. Engrs.

LIST OF CONSULTANTS

1960 - date

Loy B. McCauley

1959-1962	Republic Steel Company
1960-1961	Dravo Corporation
1960-1962	Columbus & Southern Ohio Electric
1961-1962	Robert W. Hunt Company
1961-1962	U. S. Army Engineers - Washington, D.C.
1962-1963	Dayton Light & Power
1963-1964	Capitol Manufacturing Company
1962-1964	Svendrup Parcel & Associates
1963-1964	United Air Products
1963-1964	Picklands Mather Corp.
1961-1964	Allis Chalmers Manufacturing Company
1963-1964	Colonial Pipeline Corp.
1964-1965	North American Aviation, Division Space and Information
1960-date	U. S. Air Force - Arnold Air Force Base
1964-1971	U. S. Corps of Engineers, Tulsa District
1964-1980	Union Carbide, Nuclear Division
1964-1971	Whirlpool Corp. - Research Laboratories
1965-1972	U. S. Navy - Ordnance
1967-1971	Bethlehem Steel Corp.
1967-date	National Board of Boiler & Pressure Vessel Inspectors
1969-date	American Society of Mechanical Engineers
1969-1970	Harischfeger Corp.
1971-1972	C. E. Morris Company
1971-1972	Detroit Edison, Inc.
1971-1976	Travelers Insurance
1972-1974	Consolidated Edison Company of New York, Inc.
1972-1974	Bishopric Products
1972-1974	Sun Shipbuilding
1972-date	Battelle Memorial Institute
1972-1973	Zurich Insurance
1974-1976	Aerojet Nuclear Company
1974-date	U. S. Corps of Engineers, Huntington District
1974-date	Allegheny Power Service Corp.
1974-date	Zimpro Corp.
1974-date	Aladdin Industries
1975-1977	Electric Mutual Liability Insurance Company
1975-1977	Triodyne, Inc.
1976-date	Technical Audits Associates
1976-1977	National Bureau of Standards
1977-1978	Consolidated Paper Company
1977-date	Boeing Airplane Company
1977-1980	General Motors Company

Short-Courses for Industrial Engineering Personnel.

The Ohio State University
University of Minnesota
Dravo Corporation
Allis Chalmers Manufacturing Co.
Erie Mining Company
Jeffrey Manufacturing Corp.
Union Carbide Corporation, Nuclear Division
Oak Ridge Nuclear Research Institute
Bettis Atomic Division, Westinghouse Electric Co.
Morgan Engineering Corp.
U. S. Army Engineers
U. S. Air Force
Humble Oil Company
Associated Welding Societies of Yugoslavia
American Welding Society, School of Welding Technology
North American Aviation Corp., Division of Space and Information
National Board of Boiler & Pressure Vessel Inspectors
Aladdin Industries
Aluminum Company of America
Union Carbide Corp., Plastics and Chemicals Division
Nuclear Regulatory Authority

ARTICLES

Roy B. McCauley

Causes and Cures of Defects in Magnesium Castings, Metal Progress, May 1944.

Causes and Cures of Defects in Heat Treating Magnesium Castings, Metal Progress, June 1944.

A Rapid Metallographic Polishing Method, Materials and Methods, June 1946.

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R. B. McCauley - ...

Semi-Automatic Arc Welding: A Basic Cost Cutting Tool, Part 2, Factory,
July 1963, p. 92-100.

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No. WADD-TR-60-520 (7381) (EES 912), February 1964.

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R. B. McCauley - Articles -

Arc Strikes on High Strength, The Welding Journal, December 1975,
pp. 879-884.

Report of the Dusseldorf (Germany) Meetings of the Commission XIV Welding
Instruction, Welding in the World, Vol. 12, No. 5/6 (1975), pp.152-156

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Report of the Budapest (Hungary) Meetings of the Commission XIV Welding
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Report of the Tel Aviv (Israel) Meetings of the Commission XIV Welding
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Report of the Copenhagen (Denmark) Meetings of the Commission XIV Welding
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Report of the Dublin (Ireland) Meetings of the Commission XIV Welding Instruction,
Welding in the World, Vol. 16, No. 7/8 (1978) pp. 152-155.

THESES DIRECTED BY
PROF. ROY B. McCAULEY

1. Walter Rex Edwards 1953
Correlation between observed and predicted effects of heat input on the physical and metallurgical properties of the heat-affected zone for bead-on-plate welds.
2. Richard E. Kutchera 1953
Mechanisms of embrittlement in titanium alloys.
3. John F. Rudy 1953
The effects of the macro-metallurgical structure of a spot weld on its physical properties.
4. Gordon E. Cossaboom 1954
An investigation of the correlation of weldability and hardenability of steels by use of charpy v-notch impact specimens.
5. David R. Mitchell 1954
A study of the weldability of certain Alpha-Beta titanium alloys.
6. Kenneth J. Irwin 1955
An analysis of the correlation between variable microstructure and energy impact values.
7. Paul W. Turner 1955
Data on the weldability of certain Alpha-Beta titanium alloys.
8. Jack E. Cook 1957
A quantitative evaluation of residual stress relief in pipe weldments.
9. George K. Hickox 1959
A study of strength factors on induction brazed butt joints.
10. Robert K. Fink 1960
Studies in the mechanics of brittle fracture in steel.
11. William H. Hill 1961
A study of residual stress and cracking in preheated welds of a thin ultra high strength steel.
12. John Deen Bramolett 1963
Arc physics - CO₂ fineweld consumable electrode welding.

13. Joe D. Nunnikhoven 1963
A method of measuring the reflection of a rudy laser
light beam from a metal surface.
14. James Willard Bradley. 1963
The effects of porosity on high-strength
steel welds.
15. Ronald P. Hudec. 1965
Measurement of residual stress in a variable
restraint weld specimen by x-ray diffraction.
16. Joseph E. Stari. 1965
Incomplete penetration in low-carbon martinsitic
stainless steel weldments.
17. Lawrence M. Friedman 1965
Influence of metallurgical and related
characteristics on resistance spot welding
of galvanized steel.
18. Robert D. Amspoker 1965
The effect of selected heat inputs and arc
atmospheres hydrogen percentages on gas tungsten
arc welding on 18% nickel maraging steel.
19. Donald Harvey Orts 1967
The effects of zinc coating in resistance spot
welding galvanized steel.
20. Ronald J. Shore. 1968
Effects of porosity on high strength
aluminum 7039 welds.
21. Ching Hua Chien. 1971
Arc strikes and their influence on pipe
material properties.
22. James C. Yeh. 1971
Ultrasonic longitudinal mode welding
of aluminum wire.
23. Kenneth Coryell. 1973
Weldability considerations for ASTM A633 high-
strength low-alloy pipeline steel.
24. Michael L. Killian 1974
Hyperbaric gas tungsten-arc welding.
25. Carlos Nolasco 1974
Welded HAZ toughness characterization of the
line pipe ASTM-A-633 steel.

26. Thomas A. Nevitt 1975
Application of hypertaric gas tungsten arc
welding to high strength low alloy steels.
27. Boris Anzulovic. 1976
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28. Scott A. Anderson. 1979
The influences of hyperbaric plasma arc welding
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23-2

1 JUDGE BECHHOEFER: Mr. Gutterman.

2 MR. GUTTERMAN: Mr. Chairman, yesterday
3 Applicants distributed to the Board and the parties a
4 20-page document entitled, "Revisions to Review of
5 Safety-Related Welding at South Texas Project Electric
6 Generating Station, April 1981," and I request that
7 that document be marked for identification as
8 Applicants' Exhibit 7(a), since it's a revision to
9 Applicants' Exhibit 7.

10 (Applicants' Exhibit No. 7(a)
11 was marked for identification.)

12 BY MR. GUTTERMAN:

13 Q Mr. Sullivan, do you have a copy of the
14 document that I've just described and requested be
15 marked as Exhibit 7(a)?

16 BY WITNESS SULLIVAN:

17 A I don't have a loose copy.

18 (Document handed to witness.)

19 Now I do.

20 Q Is that document, Applicants' Exhibit 7(a),
21 the revisions to the Task Force final report that you
22 described a few minutes ago?

23 BY WITNESS SULLIVAN:

24 A Yes, sir.

25 Q Are you familiar with the contents of

23-3 1 Applicants' Exhibit 7(a)?

2 BY WITNESS SULLIVAN:

3 A Yes, sir.

4 Q Are the contents of Applicants' Exhibit 7,
5 as revised by Applicants' Exhibit -- I'm sorry.

6 I should ask you, are you familiar with the
7 contents of Applicants' Exhibit 7, which is entitled,
8 "Review of Safety-Related Welding at South Texas Project
9 Electric Generating Station, Final Report, April 1981"?

10 BY WITNESS SULLIVAN:

11 A Yes, sir.

12 Q Are the contents of Applicants' Exhibit 7,
13 as revised by Applicants' Exhibit 7(a), true and
14 correct, to the best of your information, knowledge and
15 belief?

16 BY WITNESS SULLIVAN:

17 A Yes, sir.

18 MR. GUTTERMAN: I move that Applicants'
19 Exhibit 7(a) be admitted into evidence.

20 JUDGE BECHHOEFER: Any objections?

21 MR. GAY: No objections.

22 MR. SINKIN: The only problem I'm having,
23 Your Honor, is the document on its face, Applicants'
24 Exhibit 7(a), says, "Revised, 5-22-81," which would be --

25 JUDGE BECHHOEFER: The Board noted the

23-4 1 same date and I was --

2 MR. SINKIN: -- two months ago. That
3 revision, then, is only 20 days after the date of the
4 original exhibit.

5 I'm wondering is this actually an update
6 to date, or is this a document as of 5-22-81?

7 MR. GUTTERMAN: I should clarify that I
8 only received it a few days ago. Had I received it
9 earlier, I would have distributed it earlier.

10 Perhaps it would be best if the witnesses
11 described the process by which it was generated. My
12 understanding is it actually was made a revision to the
13 final report more recently than 5-22-81.

14 I think the 5-22 date was the date that the
15 revision was proposed by Mr. Sullivan and that it went
16 through a series of reviews by Brown & Root and then
17 HL&P, and that's why it's taken so long to be made an
18 official revision to the final report.

19 I expect that it's going to be sent to NRC
20 formally, either today or tomorrow.

21 MR. SINKIN: Given all that, I guess we
22 have no objections, Your Honor.

23 MR. GUTIERREZ: The Staff has no objections.

24 JUDGE BECHHOEFER: Okay. Applicants'
25 Exhibit 7(a) will be admitted.

23-5

1 (Applicants' Exhibit No. 7(a)

2 was received inevidence.)

3 MR. AXELRAD: Mr. Chairman, we have the
4 Xeroxed copies of the notes that we talked about before,
5 and we will pass these out.

6 I will point out again, as Mr. Gutterman
7 did previously, these do not include anything that
8 Mr. Wilson or Dr. Hauser said, because they were not
9 speaking from notes.

10 Obviously, these notes are being passed out
11 just for the convenience of the parties. The individuals,
12 while they were testifying, were not necessarily reading
13 verbatim from the notes.

14 The numbers are accurate, but the statements
15 may not be, so obviously, people should not be relying
16 on the specific language here, but just the figures.

17 MR. GAY: Mr. Chair an, I have a request to
18 make.

19 I had planned a handful of questions for
20 this panel, and it's getting close to 6:00 o'clock.

21 What I would request is that I go ahead and
22 ask the handful of questions that I had prepared to ask
23 this panel, and let us go ahead and take our adjournment
24 at 6:00 o'clock this evening, and let me come back in the
25 morning and limit my cross-examinator to the modifications

23-6 1 that have been made in the testimony this evening.

2 In other words, limit my cross in the
3 morning to this handful of corrections or modifications
4 that we've been handed.

5 JUDGE BECHHOEFER: We had intended to go
6 until 7:00 tonight, but the procedure concerning your
7 cross-examination is exactly what we outlined, that you
8 would be allowed to ask questions tomorrow on the
9 new information.

10 So we would -- You could proceed with
11 your other questions.

12 MR. SINKIN: Before Mr. Gay does proceed,
13 I have just been handed a series of pages by the
14 Applicant, numbered 1 through 6.

15 I'm wondering if they could just tell me
16 what I have just received in terms of who said what?

17 JUDGE BECHHOEFER: Would it be useful to
18 correlate these with the pages in the testimony to which
19 they relate? I think the witnesses did that, but in
20 terms of following it now, it would be useful, I think.

21 MR. GUTTERMAN: Okay. Perhaps I can do that.

22 JUDGE BECHHOEFER: Yes.

23 MR. GUTTERMAN: The first page, the one
24 labeled "1" asking about the final report revisions
25 refers to Question 36 -- well, let's see, pages 29

23-7 1 through 36 of the testimony, the questions on those
2 pages regarding the Task Force final report.

3 That was answered by Mr. Sullivan.

4 On page No. 2, those were questions
5 relating to the answer Mr. Sullivan gave, both
6 answered by Mr. Muscente.

7 JUDGE LAMB: Where is that?

8 JUDGE BECHHOEFER: Where are they located?

9 MR. GUTTERMAN: There is no page in the
10 testimony to cross-reference to, because they were
11 questions that were raised by the answer Mr. Sullivan
12 gave regarding the revisions to the final report, a
13 followup to that answer. There is nothing like that in
14 the testimony.

15 Page 3 is a question that was directed at --
16 and answered by Mr. Muscente.

17 It was related to the testimony of
18 Mr. Muscente at pages 46 and 47 of the prefilled
19 testimony.

20 Page 4 has two questions on it. The
21 first one was answered by Mr. Muscente, and it relates
22 to Answer 54 at page 50 of the testimony.

23 The second question on page 4 was answered
24 by Mr. Saltarelli, and it relates to Questions 64 through
25 66 at pages 56 and 57 of the testimony.

23-8

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Page 5 was answered by Mr. Muscente, and it's related to answer to Question 49 at pages 44 through 46 of the prefiled testimony.

Page 6 was also answered by Mr. Muscente, and it's an update of the answer to Question 52 at pages 49 and 49 of the testimony.

That completes that.

JUDGE BECHHOEFER: Mr. Gay, do you wish to proceed?

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CROSS-EXAMINATION

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BY MR. GAY:

Q Mr. Sullivan, I will begin with you by referring you to the revisions that you were handed yesterday, and ask you a couple of questions regarding those.

On the first page, the first paragraph notes that welding procedure specifications are found to be substantially in compliance with the Code, although there were a number of minor discrepancies.

BY WITNESS SULLIVAN:

A I'm sorry, what changes are you talking about?

Q I'm looking at the first page of the revisions that we were handed yesterday.

BY WITNESS SULLIVAN:

A Okay.

Q Is there any change in that first paragraph from the original?

BY WITNESS SULLIVAN:

A The changes are indicated by the change bars on the right-hand side.

Q Okay.

BY WITNESS SULLIVAN:

A Do you have --

Q My question would be, what are the minor discrepancies that were found? What are you referencing there?

1 BY WITNESS SULLIVAN:

2 A. Those are clearly stated in the final report.
3 Shall I go to the final report for you?

4 Q. Well, if you can recall it from memory, it would
5 be much more efficient, but if you need to go to the final
6 report, do so.

7 BY WITNESS SULLIVAN:

8 A. As I recall, one of the problems was in a
9 nonessential variable. In several of the procedures -- in
10 fact, these are -- these nonessential variable problems recurred
11 in many of the procedures, and one of them I will use as an
12 example is the procedure didn't say anything about whether
13 peening was allowed or not allowed.

14 The subject of peening was covered in a construction
15 procedure, so, in that sense, there was no confusion over
16 whether peening was the proper thing to do or not; but, in
17 any event, it was a minor noncompliance because it is a
18 nonessential variable to the Code procedure.

19 Q. The final sentence of that first paragraph says
20 that there were five welding procedure specifications that
21 were not properly written or qualified to ensure compliance
22 with the Code. Could you tell me, first, how long those
23 procedures were in effect?

24 BY WITNESS SULLIVAN:

25 A. Offhand, I can't tell you the dates when the

1 procedures first came into effect.

2 Q Well, when was it noticed that they were not
3 properly written or qualified?

4 BY WITNESS SULLIVAN:

5 A That was in the second review that took place
6 after the final report was issued.

7 Q After the final report?

8 BY WITNESS SULLIVAN:

9 A But the procedures were, could have been used at
10 South Texas in the period before the show cause investigation.

11 Q Do you have an opinion, Mr. Sullivan, as to
12 whether or not the improperly written qualified procedures
13 affected the number of nonconformances in the welds that were
14 discovered by the task force?

15 BY WITNESS SULLIVAN:

16 A I don't think they did. The reason is because
17 the only problems with those procedures was in the way that
18 they may affect the base metal properties of some carbon
19 steel welds if they had been used on these welds. And that's
20 something that wouldn't have been subject to visual inspection
21 or radiography.

22 Q The second page of the revisions, Mr. Sullivan,
23 could you tell me what the changes were from the original
24 report?

25 //

1 BY WITNESS SULLIVAN:

2 A. Well, once again, the change bars indicate the
3 changes.

4 Q I realize that, but can you briefly tell me what
5 particular item is a matter of change in the original report?

6 BY WITNESS SULLIVAN:

7 A. The third paragraph on that page, the second
8 line from the bottom of the third paragraph, and the other
9 pertained to additional inspection requirements applicable if
10 cracks were discovered during visual examination. That's a
11 comment that the task force made in the original review, and
12 it was found and it still is found in the Appendix F of the
13 final report.

14 Q The final line of that page, the -- where it
15 notes "Two potentially significant noncompliances were also
16 discovered ..." was that after the final report was written?

17 (No response.)

18 Q I'm talking about the time --

19 BY WITNESS SULLIVAN:

20 A. No, sir, those were in the final report.

21 Q My final question on that page is in the
22 second line from the bottom, when you mention "... minor
23 noncompliances were disclosed," can you tell me what the
24 minor noncompliances refers to?

25 //

1 BY WITNESS SULLIVAN:

2 A. I would like to refer to the final report if I
3 could.

4 Q. Okay. Would you tell me where in the final
5 report.

6 (Witness reviews documents.)

7 BY WITNESS SULLIVAN:

8 A. Page 323.

9 Q. Thank you, Mr. Sullivan.

10 Mr. Salteralli --

11 BY WITNESS SALTARELLI:

12 A. Yes?

13 Q. What is your background with regard to welding?

14 BY WITNESS SALTARELLI:

15 A. Let me say that, to clarify the record, I'm not
16 a metallurgist and I'm not a welding engineer. I have some
17 twenty-five years experience in the nuclear power program,
18 which goes back to the -- I might say in 1956, in the Navy
19 Nuclear Program. I think it's fair to say that everything that
20 exists in the welding program, or, for that matter of fact,
21 most of the quality assurance requirements associated with
22 any of these programs originated from the Navy Nuclear Program.

23 Appendix B was developed somewhere about 1971,
24 so when I was with the Bettis Atomic Power Laboratory, the work
25 I did was related to the design, testing, and construction of

1 nuclear powered submarines, as well as surface ships, and in
2 that program, I was exposed to many, many welding problems,
3 not from the point of view as a welding expert, but from the
4 point of view of the programmatic actions required with setting
5 up good quality assurance programs and whether it was in
6 welding or any of the other technologies involved.

7 Q Am I correct in assuming that you're on this
8 panel and were on the task force because of your leadership
9 role within Brown & Root?

10 BY WITNESS SALTARELLI:

11 A Yes, sir. In my role as the senior officer
12 working on that project, originally from the engineering point
13 of view, I served on an overall committee that monitored the
14 performance. We had weekly meetings with the client and with
15 the task force. We took the results of what they found in
16 their examinations, and we gave the programmatic direction
17 of how the program was to go.

18 Q Mr. Saltarelli, I would like to refer you to
19 Page 29 of the direct testimony and to some comments made by
20 Mr. Sullivan in answer to Question No. 36, wherein he describes
21 that of the random sampling of seventy-nine safety-related
22 AWS welds, sixty-one welds were found to have nonconformances.

23 Can you tell me, Mr. Saltarelli, what your
24 reaction was, as a leader within Brown & Root to the discovery
25 identified by Mr. Sullivan in that paragraph?

1 BY WITNESS SALTARELLI:

2 A I think that our reaction to that was that that
3 was obviously an unacceptable condition on the basis of those
4 tests, and we recognized this fact.

5 Q There has been a great deal of discussion,
6 Mr. Saltarelli, in this proceeding as a reaction to the
7 show cause order that a need for modification by Brown & Root
8 or HL&P was the recognition of a "doer philosophy." Obviously,
9 that recognition came after this particular incident, after
10 these welds were made; but would you agree with me that
11 this kind of example described by Mr. Sullivan here would not
12 exemplify functioning doer philosophy?

13 BY WITNESS SALTARELLI:

14 A I guess I'm having a tough time understanding what
15 you mean by a doer philosophy. Would you explain that, please?

16 Q Well, I think that, as I understand it, it's that
17 the Applicant or the facility should hold the doer of the work
18 responsible so that it's done right the first time. Does that
19 give you enough insight to doer philosophy?

20 BY WITNESS SALTARELLI:

21 A I don't know whether -- I guess I don't know
22 how to answer that.

23 I would point to a statistic here which I
24 consider as indicative of a problem. Now, how you would tie
25 that back to a philosophy of the licensee, I guess I am not

1 of doing.

2 My judgment -- I'm evaluating a welding program. I don't
3 know how to relate that.

4 Q Well, that's fine. I just wanted to lay that
5 as a foundation question before getting to what you, as a leader,
6 have done within Brown & Root to take corrective action. And
7 let me ask you, have you held any individuals directly respon-
8 sible for the problem that is identified by Mr. Sullivan on that
9 page?

10 BY WITNESS SALTARELLI:

11 A Well, yes. In terms of the -- in terms of the
12 corrective action taken resulting from the nonconformances and
13 high degree of nonconformances that occurred in the welding
14 program, we took a lot of corrective action, in terms of
15 establishing requirements, changing our people, retraining,
16 better supervision, and things of that nature, which is
17 reflected in our current results that we're having now.

18 Q Did you replace any of the supervisors within
19 the AWS welding procedures? Did you require any changes in
20 the personnel who had a leadership responsibility for overseeing
21 that work?

22 BY WITNESS SALTARELLI:

23 A Are you talking from the technical side or from
24 the --

25 Q More from the construction side.

1 BY WITNESS SALTARELLI:

2 A -- from the construction side?

3 We had a tremendous change in the organization
4 at the STP site in the construction organization, yes.

5 Q Can you highlight some of the changes that
6 you made that were directly related to this welding problem?

7 BY WITNESS SALTARELLI:

8 A Oh, I think that probably one of the greatest
9 changes that was made is the result of the general experience
10 with the welding program. As a matter of fact, Mr. Muscente
11 joined as the project welding engineer, reporting directly
12 to the project manager and assumed the responsibility for the
13 development of a total welding program.

14 And working with the welding engineer at the
15 site, he supervised the development of welding procedures,
16 the development of training programs, and things of that nature.
17 So, he was put in a position of single responsibility for
18 the whole welding program which had not existed prior to this
19 time. So, he had total access to the top management organization,
20 that we had one person to go to that we were able to evaluate
21 the progress we had been making.

22 Q There may have been other management changes, but
23 let me ask you first if I understand what you just said. The
24 position that Mr. Muscente now occupies is a new position?

25 //

1 BY WITNESS SALTARELLI:

2 A. Yes, it is.

3 Q. And so there --

4 BY WITNESS SALTARELLI:

5 A. It did not exist prior to the show cause.

6 THE REPORTER: I'm sorry, I did not hear you.

7 WITNESS SALTARELLI: Did not exist prior to show cause
8 order.

9 THE REPORTER: Thank you.

10 Q. Who would have been the individual in a role
11 comparable to Mr. Muscente's before he was brought on board?

12 BY WITNESS SALTARELLI:

13 A. I'm not sure. I mean, there was a combination
14 of people. I guess we still had a welding engineer at the
15 site, a construction organization. We did not have a person
16 on the project staff up to that point.

17 Q. Can you tell me who the welding engineer would
18 have been?

19 BY WITNESS SALTARELLI:

20 A. I believe it was Fred Miller; is that correct?
21 He was there at that point, yes.

22 Q. Were there any other supervisors, managers,
23 of the welding at South Texas Project?

24 BY WITNESS SALTARELLI:

25 A. Well, within the construction organization

24-11 1 itself, yes.

2 There were people that were in charge of
3 supervising welding.

4 Q Can you give me the position, first, and
5 then a name to attach to the position?

6 BY WITNESS SALTARELLI:

7 A I m not sure I can do that offhand. Perhaps,
8 maybe, Mr. Purdy can help me out.

9 Are you familiar with that organization?

10 And maybe Mr. Muscente. I'm not familiar
11 with the details of how it was organized prior to
12 that time.

13 BY WITNESS MUSCENTE:

14 A I can tell you how it was organized in
15 July of 1980 when I arrived.

16 Q Okay, Mr. Muscente.

17 BY WITNESS MUSCENTE:

18 A Okay. At that time there was a welding
19 coordinator in the construction organization reporting
20 to the construction superintendent.

21 He has responsibility -- this was Mr. Barnes,
22 was that welding coordinator, and he had responsibility
23 for the supervision of all the construction welders.

24 This means he had supervisors working
25 for him in the different areas of the plant who the

24-12

1 welders reported directly to.

2 It was Mr. Barnes' responsibility for
3 assigning welders to different locations within the
4 job, and supervising their day-to-day tasks through
5 his next level of supervision.

6 That was the organization that existed
7 when I got there in July of 1980.

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1 Q Mr. Muscente, is Mr. Barnes still on your
2 staff?

3 BY WITNESS MUSCENTE:

4 A No, he was not on my staff at that time,
5 either. He was on the construction organization.

6 Q Okay.

7 BY WITNESS MUSCENTE:

8 A He is still at South Texas, working for
9 the construction superintendent.

10 Q Has Mr. Barnes' position remained the
11 same?

12 BY WITNESS MUSCENTE:

13 A I don't know. I can't answer that right
14 now.

15 Q Mr. Muscente, how have you changed the
16 organization since coming on board?

17 BY WITNESS MUSCENTE:

18 A Let me ask, which organization? There are
19 a lot of organizations.

20 Q That's a very good question.

21 Why don't I get a broader picture from
22 Mr. Saltarelli as to the different levels --

23 BY WITNESS MUSCENTE:

24 A Of the project?

25 Q -- of the project that affect welding, how

25-2 1 these decisions are made?

2 We're talking about the management levels.

3 BY WITNESS SALTARELLI:

4 A Yes. On the project, as I said,
5 Mr. Muscente was on the project manager's staff; and
6 as a result, he was the person who was in charge of
7 the over-all welding program.

8 Now, the people working in welding down
9 at the site are actually a part of the construction
10 organization, and they report through the construction
11 supervision.

12 The purpose of having Mr. Muscente on the
13 project staff is because, then, he monitors what's
14 going on in all the welding organization, and he
15 also is the one that monitors the qualifications of
16 people, how everything is all set up from the point of
17 view of being able to report directly back to the
18 project manager of any potential problems that may
19 exist in the welding area.

20 So as far as people reporting directly to
21 him, the welding staff does not.

22 They report through the construction
23 supervision.

24 Q So as I understand it, Mr. Saltarelli, does
25 Mr. Muscente report directly to you?

25-3 1 BY WITNESS SALTARELLI:

2 A At this time, yes, as far as the project
3 is concerned. Yes.

4 Q And so he is the essential change that
5 has been made since the Show Cause Order; you have
6 put a step in there between construction and yourself?

7 Would construction report to you,
8 Mr. Muscente?

9 BY WITNESS MUSCENTE:

10 A No.

11 Q Okay.

12 As construction goes up the ladder,
13 Mr. Saltarelli, is there anyone in construction that
14 reports to you?

15 BY WITNESS SALTARELLI:

16 A In my role as the project general manager,
17 all STP people, whether they are in construction or
18 engineering report to me.

19 They all do, with the exception of quality
20 assurance.

21 Q Okay. So there is no one directly
22 connected with the welding construction problem that
23 will report directly to you?

24 All that information would be channeled up
25 the construction chain of command? There's not any

25-4 1 one person that has designated responsibility for
2 reporting welding matters to you?

3 BY WITNESS SALTARELLI:

4 A I can't -- Let me try to clarify
5 something.

6 There are some thousand people in the
7 engineering staff. There are some couple of thousand
8 people in the construction staff.

9 It would be very difficult to have
10 people reporting directly to me down in the lower ranks.

11 On a project of this size, one has to
12 pyramid it to a certain degree.

13 Now, obviously, I believe the concern you
14 have as to whether I am aware of what problems are
15 there and what I can do in terms of corrective action;
16 and I do that through Mr. Muscente in welding, who has
17 a free hand to interface with all these other people,
18 in addition to having our normal meetings with the
19 staff itself in terms of construction.

20 Of course, over and above all this is
21 quality assurance, who is acting independently to
22 control the welding program.

23 So I can assure you, Mr. Gay, I'm never
24 without knowledge.

25 Q I understand that Mr. Muscente has the

25-5 1 responsibility now to review qualifications.

2 Let me ask Mr. Muscente what further
3 action you can take with regard to what Mr. Saltarelli
4 referred to as interfacing with construction?

5 BY WITNESS MUSCENTE:

6 A Well, first of all, I sit in the staff
7 meeting that Mr. Saltarelli has weekly, which includes
8 the construction personnel, also, as part of his
9 staff.

10 It is a coordinating function that I
11 perform between construction -- these are the people
12 that are actually doing the welding, through the
13 project welding engineering staff, and with the
14 quality assurance organizations and with the
15 engineering.

16 It's a coordination function, and I just
17 primarily -- Primarily, I am that interface between
18 all those organizations with relation to welding.

19 Q Back to the issue of qualifications,
20 Mr. Muscente, I take it that you were establishing
21 certain standards and that you review people's
22 resumes or you review whether or not they have met
23 certain qualifications to become a certain grade of
24 welder; is that true?

25 //

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1 BY WITNESS MUSCENTE:

2 A. No. No, that's done by the construction
3 superintendent, or the welding coordinator who works
4 for the construction superintendent.

5 He receives the resumes, but welders don't
6 usually submit resumes.

7 Welders usually show up and ask for a job.

8 Q. What is your role in terms of reviewing
9 qualifications?

10 BY WITNESS MUSCENTE:

11 A. The role that I'm associated with in the
12 qualification of the welder is that all welders when
13 they arrive at the job site and they ask for a job,
14 they have to present to the personnel people down
15 there whatever their previous qualifications in the
16 area of welding are.

17 Now, that falls into a broad range of
18 categories. They may never have welded in their life
19 and they want to learn how to weld.

20 For example, when that occurs, and Brown &
21 Root is willing to hire this individual and provide him
22 with training --in other words, teach him to be a
23 welder -- he goes into a school at the job site where
24 it's the very first fundamentals in welding.

25 In other words, he's taught the basics of

25-7 1 welding at that time.

2 That's coordinated through the project
3 welding engineer's staff, the complete training of
4 this individual.

5 There is a procedure established as to how
6 many hours of training he shall receive and what tests
7 he has to pass in order to move along in this training
8 program before he can be released to weld on production
9 welding.

10 Now, if a welder comes in that has
11 considerable experience and he can prove that by
12 presenting his records of qualification, which most
13 welders have, he can present that, and we can move
14 him right to a qualification test, which is part of
15 his employment contingency, if you want to say it
16 that way.

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1 Q Have you limited yourself, Mr. Muscente, to
2 evaluating qualifications of individuals coming in
3 to Brown & Root or into the South Texas Project, or
4 have you gone back and reviewed the qualifications of
5 all those personnel that existed prior to your
6 arrival?

7 BY WITNESS MUSCENTE:

8 A All the welders that were on the job site
9 in July 1980 have been requalified.

10 Q Did you find an occasion where you had to
11 terminate some people as a result of the review of the
12 qualifications?

13 BY WITNESS MUSCENTE:

14 A I don't have any personal knowledge of
15 them having to terminate a welder.

16 I don't have any personal knowledge of
17 that, no.

18 Q Mr. Saltarelli, were there any management
19 level individuals who found their areas of
20 responsibility shifted as a result of the problems
21 that arose in welding?

22 BY WITNESS SALTARELLI:

23 A I don't know anybody specifically as a
24 result of welding.

25 I think what is fair to say is that as a

26-2 1 result of our over-all reorganization of many areas,
2 as a result of response to our own internal investigation
3 of the whole project, we made substantial organizational
4 changes on a management level in some rather key
5 positions.

6 Q Were there any changes in personnel that
7 you recall were made as a result of the problems in
8 welding? Welding as the only consideration, not the
9 over all --

10 BY WITNESS MUSCENTE:

11 A I can't say that any people were terminated,
12 but what I can say were that there were welding,
13 construction welding people hired at that time in
14 supervisory levels, and transferred from other
15 Brown & Root jobs we had elsewhere in the country,
16 other construction jobs.

17 These were both in the project welding
18 engineer's staff and on the staff of the construction
19 welding coordinator.

20 Those were people that were added. I don't
21 know of any case where people were terminated.

22 MR. GAY: Pass the witness.

23 JUDGE BECHHOEFER: Okay, subject to the
24 reservation --

25 MR. GAY: Subject to the reservation that

26-3

1 I will cross tomorrow morning on the modifications.

2 (Bench conference.)

3 JUDGE BECHHOEFER: Mr. Sinkin, do you
4 want to start?

5 MR. SINKIN: What I'd really like to
6 do, Your Honor, is take about a three-minute break.

7 JUDGE BECHHOEFER: Okay.

8 (Recess taken.)

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1 JUDGE BECHHOEFER: Back on the record.

2 Mr. Sinkin.

3 MR. SINKIN: Yes, Mr. Chairman. Thank you.

4 CROSS-EXAMINATION

5 BY MR. SINKIN:

6 Q I'd like to begin with a response that came out
7 a moment ago, and go back to Mr. Fred Miller, whom you
8 stated was -- I believe Mr. Muscente stated was a welding
9 engineer.

10 Describe to me again what were the responsi-
11 bilities of his position?

12 BY WITNESS MUSCENTE:

13 A The construction organization -- let me start
14 with the construction organization, and let me summarize a
15 little bit about it.

16 Within the structural -- within the construction
17 organization there are people that are responsible for the
18 actual construction work, the actual welding, in other words
19 the doing of the welding.

20 Some time prior to when I arrived at the site
21 Brown & Root had started -- had initiated a -- set up a
22 supervisory level of welders, welding supervisors, and this
23 was Mr. Barnes that I was telling you about who's the
24 construction welding coordinator, and they set a level of
25 supervisors under Mr. Barnes who had groups of welders

27-2

1 assigned to them, and each one of these supervisors are
2 assigned to different areas within the plant. The purpose
3 there is to service the pipefitters or the steel erectors,
4 whatever, with the proper welders with the proper qualifi-
5 cations and to provide the day-to-day supervision of these
6 groups of welders.

7 That was an organization that was being put in
8 place prior to when I arrived on the job.

9 Now, Fred Miller and his organization -- I'll
10 try to explain that. He's also part of the construction
11 organization. He's the project welding engineer. His
12 responsibilities include training and qualifying of welders,
13 establishing welding procedures that are needed, and he
14 interfaces with the materials engineering lab in Houston to
15 get these welding procedures qualified.

16 He has a staff of welding engineers divided into
17 different areas of the construction site. Each one is
18 responsible for different areas within the construction site.
19 These welding engineers work very closely with the welding
20 supervisors.

21 Under the welding engineers in each of these
22 areas there is also a group of welding technicians. These
23 welding technicians work very closely with the welders. In
24 other words, they spend a considerable amount of time working
25 with the welder, assuring that the welder is using the proper

27-3

1 procedure, the welder is following the procedure, using the
2 right parameters, such as amperage and voltage, he assures
3 that the welders are pre-heating when required, and just
4 generally assisting the welder and the welding supervisor
5 to assure that the welds are performed in accordance with
6 the project requirements.

7 This is all of Fred Miller's organization, which
8 is a welding engineering support of the welding, the
9 construction welding organization.

10 Q Perhaps it would be possible before tomorrow, and
11 I have in mind maybe you could sit down with just a piece of
12 paper and draw some boxes, if maybe by tomorrow we could have
13 from you the kind of little box charts of authority and who's
14 where, that might help us keep in mind how the pieces fit
15 together in the welding program.

16 I think I've gotten an idea from you now.

17 Essentially, Mr. Miller's organization is a
18 parallel organization to the welding construction organization,
19 interfacing with it at various levels, assisting it, making
20 sure things are being done right?

21 BY WITNESS MUSCENTE:

22 A Right. Interfacing on this side with the
23 construction people, and interfacing on the other side with
24 the quality assurance and quality control people.

25 Q Well, that was going to be my next question.

27-4

1 When I hear you saying that the welding
2 technicians work with the welders to assure things are done
3 right, I'm thinking about where does quality control come in
4 to be sure things are done right and how does their function
5 differ from the welding technician function.

6 BY WITNESS MUSCENTE:

7 A. The arrangement is set up right now down there,
8 the welding technician at that level, to assure that when
9 that weld is completed and finished and ready to turn over --

10 Q. Excuse me. Could you put the mike a little
11 closer; I can't hear you very well.

12 BY WITNESS MUSCENTE:

13 A. The organization is set up so that the welding
14 technician at the level of the welder, it's his responsibility
15 to assure that all the welding up to that point has been
16 properly performed, that the weld condition at that
17 particular time when it's finished and he assures that
18 everything is correct and has been done correct, before that
19 weld is handed over to QC for their final inspection.

20 They really are the first level of inspection,
21 if you'd say.

22 Q. So in a sense the welding program has a component
23 that the concrete program does not have? As I understand the
24 concrete program, the construction supervision and the people
25 building the forms work together, they make the form and then

27-5
1 the form when completed is turned over to QC. There isn't
2 a technical assistance component in the concrete program
3 as there seems to be in the welding program.

4 Would that be an accurate characterization?

5 BY WITNESS SALTARELLI:

6 A. They have the construction engineers on site,
7 or the construction engineering organization who monitor
8 this. They have civil engineers who monitor this and --

9 Q. And they serve --

10 BY WITNESS SALTARELLI:

11 A. Excuse me.

12 Q. Excuse me.

13 BY WITNESS SALTARELLI:

14 A. I was just going to say that I think what
15 Mr. Muscente is saying is that what this technician level,
16 what they're doing is they are working with the welder to
17 make things turn out right.

18 Now, they officially have no quality assurance
19 qualification to buy off a weld, so to speak. What they're
20 doing is they're making sure it's done right and everything
21 is performed so that when the quality assurance does make
22 their inspection, then it stands a very high probability of
23 being performed.

24 That's another way to upgrade the welder also.

25 Q. Is Mr. Fred Miller still in that position?

27-6

1 BY WITNESS MUSCENTE:

2 A Yes. He's the project welding engineer at STP,
3 right.

4 Q Do you know when he entered that position?

5 BY WITNESS MUSCENTE:

6 A I don't know the exact month, but it was in
7 early 1980. I think January, but I'm not sure.

8 Q Did Mr. Miller come to STP from another Brown &
9 Root project?

10 BY WITNESS MUSCENTE:

11 A Yes.

12 Q What project was that?

13 BY WITNESS MUSCENTE:

14 A Comanche Peak.

15 Q Did he have a similar position at Comanche Peak?

16 BY WITNESS MUSCENTE:

17 A He was not the project -- he was not the chief
18 welding engineer. He was one of the welding engineers there.

19 Q Did Brown & Root experience a number of problems
20 in the welding program at Comanche Peak while Mr. Miller
21 was there?

22 BY WITNESS MUSCENTE:

23 A Would you repeat the question?

24 Q Did Brown & Root experience a number of welding
25 problems at Comanche Peak while Mr. Miller was there as a

27-7
✓
1 welding engineer?

2 BY WITNESS MUSCENTE:

3 A. I don't know the answer.

4 Q. Is any member of the panel aware of welding
5 problems at Comanche Peak?

6 MR. GUTTERMAN: I'll object to that, Mr. Chairman.
7 That's irrelevant. We're having a hearing about South Texas,
8 not Comanche Peak.

9 MR. SINKIN: The line of questioning, Mr. Chairman,
10 is a person who is brought into a position of authority as a
11 welding engineer at the South Texas Nuclear Project who comes
12 there from another Crown & Root project where he was a
13 welding engineer, and whether that project, Comanche Peak,
14 had serious welding problems might go to the bringing in of
15 Mr. Miller from that project to this project whether that
16 was a good idea or not.

17 MR. GUTTERMAN: Mr. Chairman, that's very
18 speculative. There's no connection. Even if there were
19 welding problems at Comanche Peak, there's nothing tying
20 Mr. Miller with them or reflecting in any way on Mr. Miller's
21 competence to do his job. The question is totally irrelevant.

22 MR. GUTIERREZ: Mr. Chairman --

23 JUDGE BECHHOEFER: I think we'll sustain that
24 objection. It's too far removed.

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BY MR. SINKIN:

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Q Do you know the circumstances, does anyone

3

on the panel know the circumstances under which Mr. Miller

4

was brought to the South Texas Nuclear Project?

5

BY WITNESS MUSCENTE:

6

A I don't know any of the details, no.

7

BY WITNESS PURDY:

8

A I may be able to give you some assistance

9

in that area.

10

In latter '79 Mr. U. D. Douglas was brought

11

down from Comanche Peak, to serve as site Project Manager.

12

At that particular time he asked Fred Miller to come down

13

in the Project Welding Engineering position to assist

14

him.

15

Q Mr. Sullivan, I would like to turn to the

16

revisions that were issued last night, to us anyway, and

17

let me just get clear in my mind, you wrote these

18

revisions?

19

BY WITNESS SULLIVAN:

20

A Yes. I was party to those revisions. There

21

were two other Engineers who assisted in the review and

22

wrote the revisions.

23

Q And you actually had completed writing them

24

on the 22nd of May of this year?

25

28-2 1 BY WITNESS SULLIVAN:

2 A Yes.

3 Q So that the changes from these revisions,
4 actually the changes from Applicant's Exhibit 7 to these
5 revisicns, would have taken place -- Let me back up and
6 ask an earlier question.

7 The cover letter on Applicant's Exhibit 7 is
8 dated May 1st, the Final Report cover page says "April
9 1981" without a particular day in April. Do you know
10 what day in April that the large report was completed?
11 If you can come close, mid April, early April?

12 BY WITNESS SULLIVAN:

13 A I think it was the early part of the month,
14 although I really don't recall.

15 Q The question I really wanted to ask was,
16 then from whatever date in April that this report was
17 complete, until May 22nd, that would have been the time
18 in which any of these changes were made, the time in
19 which the -- For example, let's do a specific.

20 On Page vii of the revisions, you have a
21 revision to that -- Now, I am having a bit of a problem.

22 If you would go to the second paragraph
23 under Safety-Related Structural Welds, the paragraph
24 starting "The Construction procedures..." Do you see
25 that paragraph?

1 BY WITNESS SULLIVAN:

2 A. (Nods head.)

3 Q. What is the corresponding page in the large
4 report?

5 BY WITNESS SULLIVAN:

6 A. That would be starting on Page 318.

7 Q. 318?

8 BY WITNESS SULLIVAN:

9 A. Am I understanding the question properly?

10 Q. Perhaps not. I am looking for the precise
11 paragraph that is in the revision in the earlier report.
12 I believe on Page vii of the earlier report is that same
13 paragraph.

14 BY WITNESS SULLIVAN:

15 A. Yes. I'm sorry. I was directing you to the
16 section on the review of the construction procedures.

17 Q. I see. Well, turning to Page vii of
18 Applicant's Exhibit 7, and comparing it to the revision,
19 when you have those two together, let me know.

20 BY WITNESS SULLIVAN:

21 A. I'm not going to be able to do that directly,
22 because I have the revisions entered into my copy of the
23 Final Report.

24 Q. Okay. Will you also need, then, a set of
25 the revisions that were handed to us to compare?

29-4

1 BY WITNESS SULLIVAN:

2 A. No. I have that.

3 Q. You have that. All right.

4 Looking at the second paragraph on Page vii
5 of the Original Report, and comparing that to the third
6 paragraph on Page vii of the Revision.

7 BY WITNESS SULLIVAN:

8 A. Yes.

9 Q. We are now looking at the same two paragraphs,
10 are we not?

11 BY WITNESS SULLIVAN:

12 A. Yes.

13 Q. All right. In the Revisions in the second
14 line of that paragraph it has been changed to three from
15 the original two.

16 BY WITNESS SULLIVAN:

17 A. That is correct.

18 Q. And you have added that the other non-
19 compliance pertained to additional inspection requirements
20 applicable if cracks were discovered during visual
21 examination.

22 BY WITNESS SULLIVAN:

23 A. Yes.

24 Q. Does that mean that between the time this
25 report was written originally, and the time the revisions

29-5
1 were written that a construction procedure was found to
2 be inadequate that had not been previously found to be
3 inadequate?

4 BY WITNESS SULLIVAN:

5 A No, sir. That comment had been made, and it
6 is contained in Appendix F of the original Final Report.

7 Q So that all that you did was to take the
8 statement from Appendix F and move it up to the front
9 part of the report?

10 BY WITNESS SULLIVAN:

11 A Yes, sir.

12 Q Okay. Now I am beginning to understand.

13 There was another question I had, Mr. Sullivan,
14 on the revisions.

15 MR. GUTTERMAN: Perhaps, Mr. Sinkin, it might
16 help if I point out that the notes we handed out describe
17 essentially what the changes were that lead to the
18 revisions, and that might help shorten your questions a
19 little bit.

20 MR. SINKIN: Yes.

21 BY MR. SINKIN:

22 Q A WPS is an actual specification for how
23 something is to be done; is that correct?

24 BY WITNESS SULLIVAN:

25 A Yes. It is called a Welding Procedure

29-6

1 Specification.

2 Q Turning to Page 2-41(b), I am not sure if
3 this was addressed in your opening remarks, not having
4 really had a chance to review them in depth. I don't
5 believe it was.

6 I am trying to get whether 2-41(b) means
7 that that page is to be inserted after 2-41 of the
8 Original Report.

9 BY WITNESS SULLIVAN:

10 A Did you say 2-41(b)?

11 Q In the revisions there is a page that has
12 at the bottom 2-41(b).

13 BY WITNESS SULLIVAN:

14 A Oh.

15 Q You may actually need a set of what was
16 given to us last night for this to make sense.

17 BY WITNESS MUSCENT:

18 A He has that.

19 Q Oh, he does have it. Okay. Good.

20 BY WITNESS SULLIVAN:

21 A The reason you have 2-41(a), (b), (c) and
22 (d) was to avoid having to renumber the rest of that 2
23 dash section.

24 Q All right. But my question really would be
25 at this point, those pages would then appear --

29-7
1 BY WITNESS SULLIVAN:

2 A After 2-41

3 Q -- after 2-41?

4 BY WITNESS SULLIVAN:

5 A Yes. Correct.

6 Q Okay. Now, on 2-41(b), I am having a little
7 trouble with the terminology. WPS says to me here is a
8 specification that is to be followed.

9 And then under the section on All Position
10 Qualification, on 2-41(b), it says "Most of the impact
11 tested WPS' were qualified in the 6G pipe position."

12 BY WITNESS SULLIVAN:

13 A Yes.

14 Q If you can help me a little bit, I don't
15 understand how you impact as to specification.

16 BY WITNESS SULLIVAN:

17 A The specification is written to weld
18 impact tested material, so you test the coupon in order
19 to qualify a WPS to weld on impact tested base material.

20 Q Okay. So you write the WPS. You perform a
21 weld as per that WPS. You impact test that weld, and if
22 that weld holds, or fails at the proper level, then you
23 accept the WPS?

24 BY WITNESS SULLIVAN:

25 A That is correct.

29-8

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Q Does this relate at all to the training of welders, and how you train welders?

BY WITNESS SULLIVAN:

A No, sir. The qualifications are all done by Brown & Root up in Houston, not by the site personnel. So this does not have anything to do with the qualification of welders. It is only qualification of procedures.

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29-1 1 Q It's only the qualification of the
ge 2 specifications?

3 BY WITNESS SULLIVAN:

4 A Yes.

5 Q Excluding from your answer cadwelding as
6 a separate kind of welding, when did welding begin
7 at the South Texas Nuclear Project?

8 BY WITNESS MUSCENTE:

9 A Are you asking --

10 Q Anybody.

11 BY WITNESS MUSCENTE:

12 A I don't have any knowledge.

13 BY WITNESS PURDY:

14 A I'm not really sure, but I believe that
15 I would have seen documents that would have dated
16 commencement of welding somewhere around the middle
17 of 1977.

18 Q The middle of 1977?

19 BY WITNESS PURDY:

20 A Somewhere in that vicinity, yes, sir.

21 Q All right.

22 Turning to page 15 of the prepared
23 testimony, my question is when the panel was answering
24 Question 22, at line 29, was the period that the panel
25 had in mind the period since welding began at the

29-2

1 South Texas Nuclear Project?

2 (Witnesses review documents.)

3 Q Anyone at all that would care to answer.

4 BY WITNESS MUSCENTE:

5 A I'm not quite sure exactly what you're
6 asking.

7 Q All right. Let me try it again.

8 The question asked of Messrs. Saltarelli,
9 Muscente, Wilson and Purdy is how have the requirements
10 mandated by the NRC and Codes been implemented at
11 STP; and you then proceed with laying out how they
12 were implemented.

13 BY WITNESS SALTARELLI:

14 A That's not a time-dependent question. I
15 think that's a general question referring to how we
16 respond to the NRC regulations and the applicable code.

17 That has nothing to do with -- that's a
18 general requirement, I believe.

19 Q Well, for example, materials engineering
20 construction procedures, MECP's.

21 BY WITNESS SALTARELLI:

22 A Yes.

23 Q Were they used since the beginning of
24 welding at STNP?

25 //

29-3

1 BY WITNESS PURDY:

2 A Yes, they were.

3 BY WITNESS SALTARELLI:

4 A Yes, it would be this or in some form.
5 There would have to be that type of construction
6 procedure, yes.

7 Q What you're saying is, it was probably
8 used in some form, not necessarily the form --

9 BY WITNESS SALTARELLI:

10 A I don't --

11 Q -- staying the same?

12 BY WITNESS SALTARELLI:

13 A -- necessarily the exact title, but there
14 would be a prepared welding procedure or a construction
15 procedure which would cover welding.

16 Yes, that's a mandatory requirement in
17 the NRC regulations; and, therefore, it was done.

18 Q My problem is I had the feeling that that's
19 what was going on here, so it's a little difficult to
20 tell from the answer when each requirement under each
21 section was actually implemented.

22 Would it be your testimony that the
23 requirements -- that each detail under each of the
24 four major items listed in Answer 22 was a requirement
25 that was implemented since the beginning?

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29-4 1 Would that accurately characterize the
2 answer?

3 BY WITNESS SALTARELLI:

4 A. I'm not sure in terms of these specific
5 documents.

6 Let me clarify it and say that there are
7 requirements at the NRC and in codes and the application
8 of the codes, and these have to -- before you can
9 begin welding or any activity of this type, that's
10 audited by the NRC, as well as by our own auditor.

11 Unless those are in order, you cannot
12 begin the activity. The program is audited.

13 MR. SINKIN: Mr. Chairman, I'm at a
14 point where I'm about to go into a different area of
15 questioning, and it's going to take some time.

16 I notice that we are at 7:00 o'clock,
17 and quite frankly, I'm rather tired. I wouldn't
18 mind at all adjourning for the evening.

19 JUDGE BECHHOEFER: The Board thinks that
20 would be suitable. It is approximately 7:00, so we
21 will be back -- Anything before we adjourn then?

22 MR. AXELRAD: From the standpoint of our
23 preparation for tomorrow, could the Board give us
24 some indication on the basis of the cross-examination
25 plans it has received from the parties as to when

29-5

1 it is likely that our next panel will be required
2 tomorrow?

3 (Bench conference.)

4 JUDGE BECHHOEFER: Sometime after lunch.
5 I can't tell you exactly when.

6 MR. AXELRAD: Okay. We will have them
7 available right after lunch.

8 Thank you, Mr. Chairman.

9 JUDGE BECHHOEFER: We'll adjourn until
10 9:00.

11 (Whereupon, at 7:00 p.m., the hearing was
12 adjourned, to reconvene at 9:00 a.m., Thursday,
13 July 23, 1981, at the same place.)

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This is to certify that the attached proceedings before the
NUCLEAR REGULATORY COMMISSION

in the matter of: HOUSTON LIGHTING & POWER COMPANY
SOUTH TEXAS NUCLEAR PROJECT UNITS 1&2

DATE of proceedings: 22 July 1981

DOCKET Number: 50-498 OL; 50-499 OL

PLACE of proceedings: Houston, Texas

were held as herein appears, and that this is the original
transcript thereof for the file of the Commission.

Lagailda Barnes
Official Reporter (Typed)

Lagailda Barnes
Official Reporter (Signature)