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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

'84 SEP 13 P1:38

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

TEXAS UTILITIES GENERATING  
COMPANY, et al.

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

Docket Nos. 50-445-X  
and 50-446-X/oc

CASE'S PROPOSED FINDINGS OF FACT ON WELDING ISSUES

Pursuant to the Board's Order, CASE (Citizens Association for Sound Energy), is filing these Proposed Findings of Fact on Welding Issues, for overnight delivery to Judge McCollom, Applicants, and NRC Staff on Monday, 9/10/84. (See discussion contained in General Discussion herein.)

Respectfully submitted,

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## GENERAL DISCUSSION

CASE has been unable to adequately complete our welding findings due to the work load currently being experienced. Although we have had several volunteers helping prepare summaries to assist CASE's primary representative, Mrs. Ellis, in the preparation of these findings (and she has also been working on them), there is simply no one else in CASE except Mrs. Ellis who has the background to know how to combine the findings into a cohesive overall picture for the Board. Similarly, and at the same time, she has found it necessary to devote her time to assisting Mr. Walsh in preparing CASE's answer to the Applicants' Motion for Summary Disposition on Richmond inserts, which CASE and Mr. Walsh consider to be one of the most important of CASE's design issues. It is due to be mailed Monday, 9/10/84.

We ask that the Board include in its consideration of the welding findings CASE's 7/28/83 Answer to Applicants' 7/15/83 Summary of the Record Regarding Weave and Downhill Welding, which contains many of the arguments we would have made in our Proposed Findings had we had more time. Further, we ask that the Board allow CASE to supplement our Proposed Findings, and as soon as Mrs. Ellis completes and mails CASE's Richmond insert answer, she will file an official and proper Motion to that effect.

In addition, there are some further comments CASE would like to make at this time for the Board's consideration. Henry Stiner testified in these operating license hearings because of the manner in which the Nuclear Regulatory Commission (NRC) handled the concerns brought to the NRC by him and his wife, Darlene Stiner, who was still employed at the plant as a QC

inspector at the time (Tr. 4203-4204; see also Tr. 4205-4247), and because of the deep concerns both he and his wife felt concerning the manner in which Comanche Peak was being constructed and inspected. These concerns had been great enough for Mr. and Mrs. Stiner to bring them to the NRC months before they decided to testify in these proceedings, at great personal risk, including the potential (now materialized) that Mrs. Stiner would also lose her job as the only breadwinner in the family (Tr. 4247-4254 and 4198). (Although Mr. Stiner has now found employment, it was many months before he was able to do so, and his pay check now is far, far less than what Mrs. Stiner alone would make working at a nuclear power plant.) (See further additional information which is being covered in the intimidation portion of these proceedings.)

Henry Stiner's wife Darlene testified under subpoena, and was the only witness, out of several which CASE and Mr. Stiner requested be subpoenaed, which the Board allowed us to subpoena in support of Mr. Stiner's allegations, although when he initially asked to be allowed to testify, it had been Mr. Stiner's and CASE's understanding that we would be allowed to subpoena additional supporting witnesses. (It should be noted that this was the same situation with CASE Witness Mark Walsh; CASE was allowed to subpoena only one witness, Jack Doyle, to support Mr. Walsh's allegations, although it had been Mr. Walsh's and CASE's understanding that we would be allowed to call additional supporting witnesses. One must assume that, had it not been for the fact that Mr. Doyle had extensive documentation to support his assertions (a situation which is very unusual, since most

employees do not have, and do not have access to, such documentation once they leave a plant), the Walsh/Doyle allegations would have been swept under the rug long ago and the NRC Staff would have been successful in closing them out in September 1982.) It should also be noted that at least one of the witnesses, Roy Combs, who later decided to voluntarily testify as a CASE witness (regarding the handling of whistleblowers' by NRC Region IV), and who could and would have supported Henry and Darlene Stiner's allegations regarding welding issues, was laid off right after having been identified as a CASE witness (as were the other two CASE witnesses who were so identified, Freddy Ray Harrell and Lester Smith). This was one of the primary reasons Henry Stiner decided not to ask that additional witnesses be subpoenaed in support of his allegations in the Intimidation hearings (although the current Licensing Board had stated that they would allow it).

Throughout the testimony of Mr. and Mrs. Stiner, one will notice that they attempt to explain the safety significance of their allegations. This is because it is a well-known fact (as anyone who has ever brought concerns to the NRC or who has ever intervened in NRC proceedings can attest to) that the NRC always wants to know the safety significance of any allegations, along with specific hanger numbers, locations, times, dates, names, etc. (see Tr. 4249; see also transcript of the meeting between Dennis Culton and the NRC, which was transcribed by CASE's Mrs. Ellis and which should have been attached to the 7/25/84 deposition of Dennis Culton or admitted into evidence by now; the writer does not know the status of this document at the

present time and has not had time to check the NRC Staff's transcript of the meeting against the tape recording of the meeting). This having to convince the NRC and the Licensing Board that there is safety significance of witnesses' concerns is a burden not shared by Applicants' or NRC Staff's witnesses. And when one reviews the record, it will be noted that it was often because of his attempts to explain the safety significance of his allegations that Mr. Stiner got into matters which were outside his area of expertise, thereby opening him up to further attacks by Applicants' and NRC Staff's counsel.

One of the issues which has been raised repeatedly in these proceedings is that of credibility. CASE's welding witnesses, in particular, have been subjected to brutal attacks on their personal integrity and credibility -- attacks to which neither the Applicants' nor NRC Staff's witnesses have been subjected. In fact, testifying in the operating license hearings themselves should probably have been at the top of the list in the intimidation portion of these proceedings. There is no doubt that the Intervenor's witnesses have been subjected to far more detailed and excruciating such intimidation than have the Applicants' or the NRC Staff's witnesses. The record speaks for itself in this regard. (It is interesting, but of no comfort to CASE or our harassed witnesses, to note that Applicants, in their zeal to discredit CASE's witnesses, somehow seem to overlook the fact that the more they succeed, the more they prove that they themselves have failed to adequately check out the qualifications and training of the people whom the Applicants themselves hired to build Comanche Peak.)

Further, the Applicants have at their fingertips the job resumes, counseling reports, termination records, and other work records, etc., of the Intervenor's witnesses, in addition to any other background information which is obtainable from colleges, universities, law enforcement agencies, etc. This gives Applicants a built-in advantage not shared by the Intervenor, which does not have access to the job resumes or work records of Applicants' witnesses unless Applicants choose to provide them (and this Intervenor was, in fact, prevented by the Licensing Board from even minimally pursuing questioning of Applicants' witnesses along this line in the welding proceedings, even though Applicants were supposed to have provided resumes and background information on each of their witnesses in advance of the hearings in response to a long-standing discovery request). It should be noted that Applicants' response to CASE's requests and our witnesses' requests for the employee files of CASE's witnesses to be sent, not to CASE, but just to those witnesses, was another form of intimidation in the form of an implied threat to make them public.

Further, the Intervenor does not have the personnel, time, or financial resources to be able to independently obtain information regarding the background and education of each of Applicants' witnesses. And, although we believe that we should have been allowed to pursue the resumes and background of Applicants' witnesses in more detail than we were allowed to, CASE is not inclined to attempt to personally destroy Applicants' or NRC Staff's witnesses. We have a strong and abiding belief that the truth about the manner in which Comanche Peak has been constructed and designed will come out, one way or another, if necessary in the form of an accident after the Board has granted Applicants an operating license.

The Board will recall the off-the-record discussions between the Board, CASE's representatives, the NRC Staff counsel and Witness Robert Taylor, and Applicants' counsel during the March 1984 hearings regarding the documentation and discussions between Mr. Taylor and the QC inspector to whom Mr. Stiner reported the gouge in the pipe for which Henry Stiner stated he believed he was fired (Tr. 10965-10966). It was CASE's concern at that time that Mr. Taylor had done his own investigation of sorts into this matter and had ascertained from discussions he had with the QC inspector (Sue Ann Neumeyer, nee Stogdill) information which supported Henry Stiner's description of the events regarding the gouge in the pipe, as well as supportive documentation, that he had had this information and the document for several months but had not brought it forward to the Board or parties previously -- even though (or perhaps because?) his doing so would have added credibility to the testimony of Henry Stiner. At that time CASE did not know whether or not Ms. Neumeyer would testify in the hearings; she was one of the witnesses Mr. Stiner chose not to ask the Board to subpoena rather than force her to do something which might subject her to the kind of harassment and intimidation suffered by other CASE witnesses. Had Ms. Neumeyer not testified, it appears that the statements made by Ms. Neumeyer to NRC then-Senior Resident Inspector - Construction Taylor would never have been part of the record in these proceedings, and her statements which added credibility and weight to Mr. Stiner's testimony would never have come to light (see Taylor Tr. 53534-53538). As it turned out, Ms. Neumeyer did testify in the intimidation portion of these hearings, and her testimony supports basically everything Henry Stiner said about the incident, except that she could not definitely state that she knew of her own personal



knowledge that he was indeed fired because of the incident (see Neumeyer Tr. 59694-59827), although certainly the timing and circumstances were such that it is apparent that the reasons for Henry Stiner's termination were pretextual (see CASE's Preliminary Proposed Findings of Fact on the Issue of Harassment and Intimidation, at pages 45-49). (The document regarding the gouge in the pipe is NDERA No. 2899, dated 7/10/81, was a non-destructive examination report of a gouge in a pipe 1-1/4" long by 1/4" wide by 1/8" deep, signed by Sue Ann Stogdill (now Neumeyer) and was stipulated to by the parties at Tr. 11014-11018.)

In these proceedings, CASE has seen its two courageous welding witnesses put everything on the line and run the gauntlet, not once but several times -- in most cases without the benefit of counsel. One must ask the question: Why would anyone subject themselves to the intense personal scrutiny, harassment, and intimidation which is an integral (and apparently an acceptable) part of the hearings process for any Intervenor's witness? The answer must be obvious -- that, even though there are inconsistencies in their testimony which cannot be explained as due to the fact that it has been almost three years since Mr. and Mrs. Stiner made their original allegations to the NRC, the concerns raised by the Stiners regarding illegal and unsafe welding practices and the intimidation of a QC inspector are valid concerns about which the Licensing Board should also be very concerned. CASE submits that, despite the inconsistencies (or perhaps in part because of them, when compared to the obviously carefully orchestrated and planned testimony of Applicants' witnesses), the Board must hear the ring of truth in the testimony of the Stiners.

WEAVE WELDING (OR WEAVE BEAD WELDING)

CASE Witness Henry A. Stiner testified in the the September 1982 hearings (see prefiled direct testimony of CASE Witness Henry A. Stiner (and attachments), admitted at Tr. 4202, bound in and marked with transcript pages 4203-4254). He testified again during the March 1984 hearings, and in the recent Intimidation hearings.

CASE Witness Henry Stiner testified that the welding procedures for C-10 and A-10 codes are 11032, 11065, and 10046, and that procedure CPM-6.9 states that weave welding is not to be used at Comanche Peak (Tr. 4210).

He stated that Mike Adcox (sic -- should be Adcock), his first welding instructor, told him while he was in the welding training center in November of 1979 that he was not to weave weld (Tr. 4211). He also stated that around January 1980 or so, when he was given the CPM-6.9 procedure class, he was instructed by the instructor (whose name he could not recall) that weave welding was not allowed on the jobsite (Tr. 4211).

Mr. Stiner also testified to the following: The second time he was employed in June of 1981, after he was tested and certified, he was told to practice welding on an I-beam for a while before he worked in the field. Kenneth Golden, the testing instructor at the Welding Qualification & Testing Center (WQTC), came into his booth and told him that he was running stringer bead passes on the I-beam and he wanted him (Mr. Stiner) to cap it with a 5/16" weave bead pass instead of running a stringer bead. Mr. Golden got mad at him (Mr. Stiner) because Mr. Stiner told him he didn't think weave welding was allowed on the jobsite. Mr. Golden told him, (quoting from Mr. Stiner's testimony) "that's the way you're going to have to do it because we've been having trouble with I-beams. So I did it the way he said." (Tr. 4211.)

Mr. Stiner also testified (Tr. 4211-4212):

"When I was in the field, I was told by Fred Coleman, my foreman, that rather than run a bunch of little stringer beads to weave it in to build a floor since it was impossible to run stringer bead root passes because of the size of the fit-up gap. At that time he also told me that it didn't make any difference what was under the cap -- to just put anything in there that you could get in there (which sometimes consisted of breaking the flux off of the rods, whcih he showed me how to do, and sticking a welding rod up in there to run over to get your filler material in there) -- because what we can't see, QC can't see. I was also instructed by him not to let QC see me doing any of that. I knew it was not right, but I did it because he told me directly to do it that way and I was afraid I would get fired if I didn't."

He further testified that from that point on, to the best of his recollection, he was not really told to weave weld. From then on he was instructed to repair weave welds that other welders had made; he was told not to grind all of the base metal out but just to grind off the surface and cap it so it would appear to be a sound weld. (Tr. 4212.) He stated that he was told to do this by every foreman he ever worked for -- Fred Coleman, Larry Thompson, another one who was only there a short time and whose name Mr. Stiner could not remember, and Billy Cartrette (his foremen during his first term of employment at Comanche Peak); and Jimmy Green (his foreman during his second term of employment); and a couple of other ones whose crew he was on for just a short time, whose names he did not remember. (Tr. 4212.) Mr. Stiner further testified that when he asked Fred Coleman if he would get fired if he was caught doing that, Mr. Coleman replied, probably not but don't let QC or the NRC see you doing it. (Tr. 4212.) Mr. Stiner asked Mr. Coleman what if the NRC comes up and asks me about a particular procedure? Mr. Coleman told him to just tell them you'll get your foreman and come get me. (Tr. 4212-4213.)

Mr. Stiner testified that he told the NRC not only that numerous examples of weave welds on pipe supports could be found in the South Yard Tunnel, but also in the Auxiliary Building, the North Yard Tunnel, the North Pump Room, the Reactor 1 Demineralized Water Tank Room, and every place he had ever worked, "weave welds, porosity, undercut and overlap could be found . . . unless the surfaces of the welds were ground off and the welds were capped (as the I&E Report states)." (Tr. 4213) /1/.

He further testified that (Tr. 4220-4221):

"I told him (the NRC investigator) that nearly every hanger in the South Yard Tunnel was cut down at some time or another to be repaired. . . They had to be repaired because of bad welds, incorrect hanger-to-pipe clearance, the pipes themselves were not in the right locations and weren't straight (they sort of snaked around up and down). A lot of the new ones they put in had weave welds on them because of the push to get the hangers reinstalled. I personally witnessed Hal Goodson, Doug Frankum, Charlie Scruggs, Ken Wiford, James Calicutt, and two

/1/ see also NRC Region IV Inspection Report (I&E Report) 81-12, NRC Staff Exhibit 178, especially pages 4 and 5 of Report, Allegation No. 1;

and CASE Exhibit 666C, attachment to Henry Stiner's prefiled testimony, the "sanitized" back-up notes of the NRC investigator, Mr. Donald Driskill, especially pages:

- 666C-2, Individual A;
- 666C-10 and 11, Individuals A, G, D, C, F, and E;
- 666C-14, Individual B (believed to be Darlene Stiner, wife of Henry Stiner, see Tr. 4208/11-13 and 4215/24-26);
- 666C-16, Individual B;
- 666C-2, Individual D;
- 666C-23, Individual E;
- 666C-24, Individual C;
- 666C-25, Individual F;
- 666C-26, Individual G;
- 666C-7, then-NRC Resident Reactor Inspector, Robert Taylor (it should be noted that the notes regarding Mr. Taylor appears to confirm that "As Ind. A stated some could have been ground or capped and it would be impossible to tell.");
- 666C-20 and 666C-33, notes of unknown origin.

other gold hats whose names I don't personally know, tell my gold hat, Ronnie Johnson, that if he didn't have a particular line bought off down there by 5:30 that afternoon, him and his whole crew would be kicking their hats out the gate (be fired); there was profanity, hollering, and cussing by these gold hats to my supervisor. Because of this, all of us welders had the feeling that they were trying to shaft Ronnie Johnson, so we did what we were told to do -- we ground off the surface of a lot of weave welds, we welded up on hangers with rods that were checked out in other people's names, and anything it took to cover everything up and get it all bought off, because we were afraid for our jobs. It was an impossible task to do properly, and it wasn't done properly. But it was done."

Mr. Stiner testified that he believed the names he had given to the NRC investigators were Roy McCombs (sic -- should be Roy Combs), Al Marcoot, and I believe Fred Coleman, but that he wasn't certain and didn't remember any other names at the time his testimony was prepared. (Tr. 4213.)

He testified that the reason he knew about the weave welds was (Tr. 4213):

"Because one particular fellow who was put into the field, by the name of Armond (I'm not sure of the spelling), continually made bad welds; I had to follow him around and repair his bad welds. I also heard other welders constantly complain about having to work and rework other people's bad welds all the time and put our symbols on them."

(The Armond, to whom Mr. Stiner referred in the preceding, was later identified as Armund Braumuller.)

In regard to what was told the NRC investigators about weave welds, Mr. Stiner stated that (Tr. 4213-4214):

"The South Yard Tunnel was one area where I identified a specific hanger. There were also other specific hangers which I identified by the location; they should have been able to follow my directions and find the specific hangers I told them about. Darlene also offered to take them down and show them the specific hangers."

". . . I told the investigators that I myself had repaired numerous welds that had been weaved. One in particular was done by the welder Armond -- I repaired welds of his in the South Yard Tunnel -- this was the basis of my allegation of weave welds in the South Yard Tunnel.

It's not clear at all in the I&E Report that I had told them that I personally had done weave welding under direct orders from my supervisors. Also, my wife Darlene told them the same thing."

(See also discussion at Tr. 4214/13-21 regarding discrepancies within the I&E Report itself.)

Mr. Stiner testified that a visual examination of the pipe supports would not have proved whether or not weave welding had occurred, because if the face of the weld were ground off and capped using the proper stringer bead cap, it would be impossible to determine whether or not there had been weave welding. He stated that probably the only method to determine whether or not weave welding had occurred would be radiography, and that he was not sure that would even reveal the pattern of the weld. He stated that in his opinion the existence of weave welds was both an indication that the existing weld is weaker and that there had been a failure to follow procedures. (Tr. 4214-4215.)

Mr. Stiner further testified that (Tr. 4215):

"And the investigators missed the main point of what I was trying to get across -- that there's no procedure set up to make sure that QC can be certain repairs of weave welding are done correctly. The only thing QC inspectors check (at least usually) is the final completed repaired weld. There should be QC hold points set up where the inspectors check to be sure that the weld has been properly ground out before continuing the repair, then a hold point to check during the repair to be sure stringer beads were being used, and then the final hold point to check the final repaired weld. That's the only way to be certain the repair has been done right. The way it's being done now, it makes it easy to just grind off the surface and cap it with the proper stringer bead. That way QC never knows whether it's been repaired right or not. It makes the QC inspection of the repair a big joke." (Emphases added.)

At Tr. 4215/21-4219/18, Mr. Stiner discusses the Inspection and Enforcement (I&E) Report (NRC Staff Exhibit 178) and the "sanitized" back-up

notes of the NRC investigator regarding it (CASE Exhibit 666C, attached to Mr. Stiner's prefiled testimony; Tr. 4205/12-14). (In his discussion, he refers to CASE Exhibit 666D, which was prepared by CASE, under Mr. Stiner's direction, to attempt to coordinate the I&E Report with the back-up notes. Tr. 4205/15-24.) CASE urges that the Board read this entire portion of Mr. Stiner's testimony (as well as the discussion regarding the other allegations). We believe that this is especially important because of the inconsistencies within the I&E Report itself and especially between the I&E Report and the back-up notes; (as stated by Mr. Stiner, Tr. 4208):

" . . . The notes were in some cases unreadable, some were not labeled as to even a letter designation, there were many omissions of allegations, and some of the information contained in the I&E Report did not match the investigator's own notes and in some cases, his notes even appear to contradict his own I&E Report."

For example, on page 5 of the I&E Report (the seventh page of Staff Exhibit 178), regarding the discussion of "Examination of South Yard Tunnel Hanger Welds" (which is the area Mr. Stiner was discussing where he stated he had identified a specific hanger), Mr. Stiner quotes the I&E Report and states (Tr. 4214):

"It says in that paragraph that 'It was noted that all of the welds on these pipe supports were the approved stringer bead type welds and no evidence of grinding was apparent.'" (Emphases by Mr. Stiner.)  
 "Then in the very next sentence it is stated 'Some welds did exhibit evidence of grinding, but had weld characteristics which made it possible to identify the type weld used as stringer beads.'" (Emphasis by Mr. Stiner.)

At Tr. 4215, Mr. Stiner states that throughout the "sanitized" notes, many of the comments made by Darlene are shown under Individual A (Mr. Stiner) and that "They're sort of all mixed in with what I said to the

investigator. And part of what Individual B, whom I believe to be my wife Darlene, told the investigators, is not even included in the final report."

He discusses at Tr. 4216 and 4217 two instances (one of which was attributed erroneously to Mr. Stiner) where Mrs. Stiner confirmed that weave welding had occurred. He also states:

"And on 666D-8, it says that Individual B (Darlene) 'recalled one occasion when a weave weld was noted during an inspection, but was subsequently ground out and correctly rewelded when the appropriate supervisors were notified.' Darlene gave them at least one specific hanger number in the Auxiliary Building at elevation 790. This is even shown in the investigator's own notes toward the bottom of 666D-8. And she never said it was 'subsequently ground out and correctly rewelded when the appropriate supervisors were notified.' She said she was told by her supervisor to sign it off and that she couldn't prove it was weave welded. She also told them that weave welding was done often." (Emphasis by Mr. Stiner.) (See also comparison between NRC Staff Exhibit 178, page 5 of Report, and CASE Exhibit 666C-16, Individual B.)

Other specific examples where the back-up notes contain information supportive of Mr. and Mrs. Stiner's allegations but not reflected in the I&E Report itself are discussed by Mr. Stiner at Tr. 4217-4219.

Darlene Stiner (the wife of Henry Stiner, a former welder herself at Comanche, who, at the time she initially testified was still employed at Comanche Peak as a Quality Control (QC) Inspector) also testified in these proceedings in September 1982 (See CASE Exhibit 667, admitted into the record at Tr. 4124 and bound in as Tr. pages 4125-4198.) She testified again in the February and March 1984 hearings. In addition, she testified in the recent Intimidation hearings.

She testified regarding weave welding (Tr. 4147-4148):

"First of all, let me say that weave welding is not allowed at CPSES. When I was in welding training school, Mike Adcock, my instructor, told me that welding in a weaving motion is not allowed. . .

"As a QC inspector, I was aware of the fact that weave welding was not allowed because of my welding training. It also stated in CPM 6.9



Appendix D that bead width over 4 cord (sic) wire diameters wide is not allowed. Depending on the size of the weld you are using, if you are using 1/8" rod, that's 1/2", in other words, four times whatever size rod you're using is the maximum bead width allowed."

And at Tr. 4148, she stated that she and her husband told the NRC investigators about weave welds which were on tube steel, "which was not supposed to have weave welding on it," and that she told them specifically about weave welding which "exceeded the limits that the procedure allowed," (emphasis added) which had been done on Hanger # TWX-039714A35R on elevation 790 in the Auxiliary Building by Armond (later identified as Armond Braumuller). She told the welder to stop work on the hanger and asked that the hanger be cut down, but a few days later when she was called back to finally inspect the same hanger, she found that the welds' faces had been ground off and she could not see the weave-pattern face; there were no QC hold points on the repair of those welds. Mrs. Stiner, based on her experience as a welder, did not believe that a sufficient number of weld rods had been used to have properly repaired the weave welds; however, she was ordered by her Foreman, Harry Williams, to buy the hanger off. She was told some time later that her NCR on this had been voided (see detailed discussion at Tr. 4149-4153; it should be noted that Mrs. Stiner also discusses throughout her testimony the inconsistencies between what she and her husband told the NRC investigators and what was written in the I&E Report and the "sanitized" back-up notes for the Report).

Mrs. Stiner also testified that weave welds have been used at Comanche Peak on both Q (safety-related) and non-Q (non-safety-related) components (Tr. 4152); that once the face of the weld has been ground off and recapped,

there is no way that an inspector can tell if the weld has been repaired properly by gouging it down to the bare metal (Tr. 4152); and that she told the NRC investigators that (although she did not have the specifics) weave welding was used in other instances, and that it was a common practice (Tr. 4153).

Applicants have attempted to muddy the waters by giving the impression that Mr. and Mrs. Stiner did not know what they were talking about. However, it is clear from the preceding that Mrs. Stiner did understand when she initially testified that a bead width of over 4 core wire diameters wide is not allowed -- her concern was that it had always been her understanding (and Henry Stiner's also) that the technique of weave welding was not permitted at Comanche Peak (see 2/7/84 Prefiled Testimony of CASE Witnesses Henry and Darlene Stiner, bound in following Tr. 10,333, pages 5 and 6).

Applicants stated that:

"The weave welding which is the subject of the Stiners' concerns is governed by Brown & Root welding procedures (Applicants' Exhibit 141 at 30; Applicant's Exhibit 141N-V). These procedures permit a maximum bead width of 4 core wire diameters. A weld which is made with a width of 4 core wire diameters will require some transverse oscillation of the weld electrode and is, therefore, a weave weld which is permitted by the Brown & Root procedures. (Tr. 4420-22, 44323-33 (sic).) Thus, the determining factor is whether the degree of transverse oscillation employed in welding is significant by the terms of applicable codes (Tr. 4429, 4643)." (Applicants' 2/25/84 Proposed Findings of Fact in the Form of a Partial Initial Decision, item 229, page 124, emphasis added.)

However, Applicants' own documents clearly demonstrate that they have attempted to deceive the Board with all their talk about weave welding up to four core wire diameter being allowed at Comanche Peak. For instance, in Applicants' Prefiled Testimony for the September 1982 hearings, Applicants' Exhibit 141, Applicants' Witness Brandt at page 30, states:

"Q93. Is weave welding permitted by Brown & Root welding procedures for component supports?

"A93. (Brandt) Yes. Weave welding up to four times the core diameter of the weld rod being utilized is permitted by Brown & Root welding procedures. Examples of welding procedures which specifically permit the use of weave welding are attached as Attachments N through V."

But of even more importance is what Mr. Brandt does not state, but which is clearly documented in the record -- the fact that stringer bead welding and weave bead welding are techniques of welding.

Further, on the first page of the Welding Procedure Specifications (the same Attachments N through V referred to by Mr. Brandt in his testimony quoted above), submitted in the September 1982 hearings attached to the testimony of Applicants' witness Brandt, there is a section on the right-hand side, just below half-way down entitled "TECHNIQUE." On the next line under that is "Stringer or Weave Bead." In no instance is the TECHNIQUE which is to be used shown as "Weave Bead"; in each and every instance where a technique is specified, it is shown to be Stringer. This is further confirmed on the second page of the Welding Procedure Specifications, under Instructions at the bottom of the page (usually under items 4, 5, and 6); in all instances where it is addressed (which is most of them), it is stated: "All welding shall utilize stringer beads."

And when Applicants finally brought forward some of the welding procedures (which was not done until the March 1984 hearings) to which Mr. and Mrs. Stiner welded (WPS 11032, 10046, 11065, see page 2 of 2/7/84 Prefiled Direct Testimony of CASE Witnesses Darlene Stiner and Henry Stiner, accepted into evidence and bound in following Tr. 10,333), those procedures provided by Applicants showed the following:

Welding Procedure No. WPS-11032, Rev. 5, 6, and 7 (Applicants' Exhibits 189, 190, and 186, respectively, admitted at Tr. 11259, 11259, and 11239, respectively) -- under "TECHNIQUE" where Stringer or Weave Bead are listed as the two options, it is stated that "Stringer" is the method to be used. This is further confirmed on the second page of the Welding Procedure, each of which states "6. All welding shall utilize stringer beads."

Weld Procedure No. 10046, Rev. 5 and ~~4~~ (Applicants' Exhibits 187 and 188, respectively, admitted at Tr. 11242 and 11259, respectively) has prequalified welding parameters, and a welding technique is not specifically stated.

Applicants also submitted into evidence Welding Procedure No. WPS-18014, Rev. 3 and 4 (Applicants' Exhibits 191 and 192, respectively, both admitted at Tr. 11316), which also specify the use of the Stringer Bead Technique.

Clearly, Applicants have again attempted to sell the Board oranges when the subject all along has been apples. Even if the Board were to accept Applicants statements that only Charpy impact tested material is of concern, the fact remains that Applicants have deliberately attempted to mislead the Board by representing that weave welding (even under four core wire diameter) is allowed at Comanche Peak, when in fact the very procedures which Applicants' Witness Brandt attached to his September 1982 prefiled testimony and which Applicants submitted in March 1984 very clearly state that the only acceptable technique is specified to be stringer bead welding -- not weave bead welding as Applicants have claimed. This fact calls into question the other testimony of Applicants as well, including their representation that only Charpy impact tested material is of concern.

In addition, both Mr. and Mrs. Stiner testified (page 6 of 2/7/84 Prefiled Direct Testimony):

"A: (Mr. Stiner): But even if weave beading over four-core-wire diameter is permitted at Comanche Peak, there is still a problem because weave beading over four-core-wire diameter is also done. I've seen it done many times and I've done it myself.

"A: (Mrs. Stiner): That's right. It's a common practice at Comanche Peak.

"Q: Mrs. Stiner, have you seen it done yourself?

"A: (Mrs. Stiner): Yes, I have, and I've also done it myself when I was a welder."

And at page 8, Mr. Stiner testified:

"Also, on several occasions, I was instructed to repair hangers where the weld was in excess of four-core-wire diameter where the parent metal was heated so hot that the parent metal for four or five inches out from the weld was blue tempered, causing brittleness."

Even Applicants' Witness Brandt testified that, if the term weave welding is interpreted to include those welds in excess of four core wire diameters, then the Brown & Root welding procedures to not permit weave welding (Tr. 4412, 4420).

(For information regarding the effect of such excessive heat input, see Attachment B to 2/7/84 Prefiled Direct Testimony of CASE Witness Henry and Darlene Stiner, pages 23 through 28, especially page 28, Brittleness.)

The importance of the use of illegal weave welding at Comanche Peak is increased in view of the fact that former NRC Resident Inspector - Construction, Robert Taylor, testified that he estimated that 75% of the welds at Comanche Peak have been ground down, about 10 to 15% of them to the point where it can no longer even be told whether stringer or weave beads were used (NRC Staff Witness Taylor, Tr. 12156/16-12157/7).

It is also important because visual inspection cannot detect slag or cracks which are not on the surface, according to NRC Staff Witness Collins (Tr. 12158/14-12159/8 and 12187/2-21).

Further, as stated by CASE Witness Jack Doyle:

"At tr. 11344, at lines 2-9, Mr. Brandt states that bead width is not controlled by AWS. However, the fact is that the bead width for flat, horizontal, overhead, vertical and root passes are controlled by AWS 4.10.6 et seq. and these criteria are less than the four core wire diameter allowed in weave bead welding, with the exception of the vertical weld. (See NRC Staff Witness Collins, Tr. 12215/7 and 12216/5). The purpose of this restriction is to prevent weld cracking. (See NRC Staff Witness Smith, Tr. 12,216/7-21.) This purpose for a code restriction on bead width is of more concern with weave welding than it is for stringer bead welding due to the higher heat input. But Applicants' experts appear to be unaware of this problem since they are convinced that any fillet bead width is O.K. so long as it does not exceed four core wire diameters. (Among others, see Applicants' Witness Brandt, Tr. 11,227/9-16, 11,235/7-11, and 16-25, 11,245/17-11,246/1, and 11,250/3-10 and 24.)

"However, in all cases for fillet and groove welds (which are the vast majority of welds for supports at Comanche Peak), the code allowable is less than the 8 core wire diameter industry practice mentioned by Mr. Baker in the last sentence on page 17 of his affidavit."

(Affidavit of CASE Witness Jack Doyle, 5/14/84 CASE's Answer to Applicants' Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Welding Issues, page 9, item (2).)

NRC Staff Witness Smith confirmed that the AWS Code is a how-to code, much more specific than the requirements and oriented towards the welder, providing guidelines (Tr. 12176/13-12177/3).

Further, the design requirements of AWS, whether for qualified or prequalified procedures, must still be considered by those designing welded joints at Comanche Peak (NRC Staff Witness Smith, Tr. 12176/13-12177/3).

And, quoting Mr. Doyle (Affidavit, page 3):

"The reference in item 4 to the inapplicability of AWS to pressure boundaries is a smoke screen, since the majority of the welding of concern in the allegations is not in reference to the pressure boundary but to supports."

Mr. Doyle further stated (Affidavit page 5, answer 8):

"Applicants state:

"All welding procedures qualified by test pursuant to the ASME Code for use at CPSES follow the requirements of Section IX of the ASME Code. This includes following requirements regarding test procedures, testing of specimens, and all other aspects which could affect the procedure qualification process."

"As has been the case for several of the items listed above, the limitations for the procedure are not included with the procedure, nor are these limitations incorporated elsewhere (for example, in the design guidelines). This is a failure to consider the back-end requirements for the use of welding procedures; that is, implementation. Rather, at Comanche Peak Applicants are considering the front-end establishment of procedures as encompassing all of the requirements necessary to produce acceptable welds for the life of the plant. This failure in philosophy is best noted in the belated revision of Section XI to the PSE Guidelines in the CPSES Design Manual (see CASE Exhibit 716, attached)."

Again quoting Mr. Doyle (Affidavit pages 11 and 12, answer 18):

"Applicants state:

"Neither the AWS nor ASME Codes establish specific requirements limiting weave or oscillating pattern welding. Accordingly, there are no specific Code requirements."

"The ploy by Applicants that something is not prohibited by code is irrelevant. It might also be stated that the AISC code does not prohibit construction of joints in steel structures by the use of nails. The Code does not always include prohibitions which are obvious or known in the industry to result in less than desired end products. Merely because the code does not prohibit does not therefore mean that the code condones. The AWS Handbook, Sixth Edition, Section 4, page 63.25, lists the stringer bead as the preferred procedure (see CASE Exhibit No. 886, attached). The AWS Code, by inference (size of rods vs. size of welds), indicates that the stringer bead is the intended procedure. Beyond this, the unrestricted four core wire diameter established at CPSES allows the craft to produce weld beads which are

larger than allowed by Code, particularly when considering the welding of cable trays, for which the welding jurisdiction is AWS. (See NRC Staff Witness Collins, Tr. 12215/18 through 12216/2, weave bead welding is also restricted by this limit.) Beyond this, the crafts have assumed that the four core wire diameter parameter applies to the leg (or weld size) when in fact it refers to the face width (see NRC Staff Witnesses Gilbert and Taylor, Tr. 12,217/4 through 12,218/1.)"

(Affidavit of CASE Witness Jack Doyle, 5/14/84 CASE's Answer to Applicants' Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Welding Issues, CASE's Answer to Applicants' Statement of Material Facts As To Which There Is No Genuine Issue.)



DOWNHILL WELDING

Henry Stiner testified that he was fired (the second time he worked at Comanche Peak) for reporting a gouge in a pipe to a QC inspector, and that his foreman, Jimmy Green, told him to weld a downhill pass to fill up the gouge. Mr. Stiner stated that he told the NRC investigator about this, but that it wasn't included in the I&E Report (NRC Staff Exhibit 178); it was, however, included in the back-up notes (Tr. 4231; see also CASE Exhibit 666D-30, attachment to Henry Stiner's prefiled testimony; and Tr. 4242/23-4243/4). As Mr. Stiner testified (Tr. 4236):

"We were worked (sic -- should be working) on constructing a hanger, and when Jimmy Green, my foreman, did a final inspection on it, prior to calling QC for their final inspection, he noticed a gouge mark in the pipe, one of the pipes the hanger was holding. . .

"The gouge mark was about 4" long and 1/4" deep and 1/8" wide (the width of a grinding disc). My foreman came up and whispered to me, can't you take one of the 332 rods and make a downhill pass until you get it filled up, then grind the surface off and spray it with some of that can of red paint there, so nobody'd ever know it was there? I told him, I won't say that I won't, Jimmy, but I'd rather not. He said don't worry about it, go help Buster (another fitter), I'll get somebody else. He left, I assumed to go get somebody else. While he was gone, I called Darlene on the little intercom system and told her what was going on and she said that she was in the hanger department and could write an NCR on the pipe, but it would be better to have somebody from the piping department to do it. Then, there was a pipe welder there by the name of Alvarez and I sent him upstairs; he found Susie Newmeyer, a pipe inspector, and she came down there to look at it. By then, my foreman had already gone upstairs and Cliff Brown was with him. Susie couldn't find the gouge mark on the pipe, so I crawled up on the scaffold and was showing her, point to where it was at, when my foreman and Cliff Brown came in through the doorway where we were. They saw me, didn't say a word, just turned around and left. I believe it was on a Friday that this all took place."

(See also page 15 of 2/7/84 Prefiled Direct Testimony of CASE Witnesses Darlene Stiner and Henry Stiner (bound in following Tr. 10,333).)

Mr. Stiner further testified that he had to go to the doctor, but called in, and had a doctor's excuse. He found that when he got back to work on Wednesday he had already been terminated. (Tr. 4237.) This will be discussed further in CASE's Expected Findings of Fact regarding the Intimidation portion of the hearings, and we are only addressing it here insofar as the downhill welding aspect is concerned.

Mr. Stiner further testified that a number of downhill welds were made at CPSES because of limited access welds, not only on root and cover passes, but in the consecutive layers in between. He stated that he had observed welders making downhill welds because of limited access, and that one was Roy Combs, under orders of his foreman (he believed it was on a Class 3 hanger, because he had to weld stainless steel lugs to the pipe. He stated that he did not have the hanger number, but he knew the general location and might be able to find it. (Page 15 of 2/7/84 Prefiled Testimony).

He also testified (page 15 of 2/7/84 Prefiled Testimony):

"Joe Greene, one of the welding engineers at CPSES, told me that there was no such thing as limited access welds at CPSES. This type of attitude has set up a bad situation with the welders being instructed to get the work done fast, and the inability to get the proper work and lead angle needed to make the required bead.

"One of the problems with downhill welding is lack of deep penetration, trapped slag caused by the molten puddle falling over the slag coating, which also causes lack of fusion."

As discussed on pages 114 and 115 of Attachment <sup>*to Stiner's Testimony*</sup> B, regarding Position <sub>A</sub> and Movement of the Electrode, to the 2/7/84 Prefiled Testimony of the Stiners, on heavy plate 1/4" or more, upward welding is preferred.

Mrs. Stiner testified that it was her understanding that probably most downhill welding at Comanche Peak was done illegally or contrary to procedures "because I don't believe most of the welders had been qualified to do it." (Page 16 of 2/7/84 Prefiled Testimony of the Stiners.)

Mr. Stiner testified that downhill welding is not supposed to be used normally, but only in certain specific instances, and then the welder is supposed to be qualified or requalified to do it. (Page 17 of 2/7/84 Prefiled Testimony of the Stiners.)

Mrs. Stiner stated (page 17 of 2/7/84 Prefiled Testimony of the Stiners):

"Whenever you do a downhill weld, you don't get proper penetration -- it's sort of like skimming across the top. I have made downhill welds myself at Comanche Peak, under orders. Like if I came up on a weld that was in a particularly hard position to get to, sometimes my foreman would tell me to just go ahead and run a downhill weld over my stringer bad weld."

Both Mr. and Mrs. Stiner testified that they were not qualified for downhill welding, although they had both been told to do it anyway (page 17 of 2/7/84 Prefiled Testimony of the Stiners).

At Tr. 4243-4245, Mr. Stiner testified that there were incomplete or "counterfeit" safety-related hangers at Comanche Peak which had been made from "junk material" and on which incorrect heat numbers had been stamped so that QC would approve them. He stated that he told the NRC investigators about one particular hanger where he himself had constructed from junk material and marked the heat number on, under orders from his foreman, Jimmy Green; he also stated that "it was one of those rush-type deals where they had to have that hanger bought off that day, or someone (probably my

foreman) would have gotten chewed out. He had been chewed out on several occasions for that. That sort of thing went on a lot, the whole time I worked out there." (Tr. 4244.) He stated that later the NRC investigators came back and told him that all the hangers whose numbers had been given to them had all been taken down. (Tr. 4246.) He stated that the whole time he worked at Comanche Peak, although he couldn't recall any other specific areas, there were other hangers constructed using scrap material which had been taken down off another hanger and put in the scrap pile. He stated that once metal has been welded on and cut on with a cutting torch, it builds up a magnetic field which causes what he called "arc blow" where metal spits out on you and doesn't want to deposit correctly, which necessitated having to keep grinding it off and rewelding. He stated: "So lots of times, people will run a downhill weld instead of doing it correctly, because then you're going in the direction of the magnetic field. By reversing direction, you cut down on the arc blow effect." (Emphasis added.) He also stated that the hanger which had the gouge mark which he believes was the reason for his termination was also a counterfeit hanger. (Tr. 4247.)

Mr. Stiner testified that the effects of downhill welding are that you have slag, trapped inclusions, lack of fusion and various other undesirable weld conditions. He stated that there is a process for downhill welding, but it's not allowed on the jobsite at all. (Tr. 4247.) He stated that he believed that procedures CPM 6.9, 11032, 11065, and 10046 stated that you can't downhill weld. (Tr. 4247.)

Applicants' witness Brandt confirmed that downhill welding is not allowed by Brown & Root onsite, although CB&I does allow it on the welding of their pipe whip restraints (Tr. 4601). In addition, all but one procedure submitted by Mr. Brandt state that the welding progression is to be upward (Applicants' Exhibits 141N through 141P, and 141R through 141V, attached to Applicants' prefiled testimony Exhibit 141 for the September 1982 hearings; only 141Q states that the welding progression shall be "E6010 Downward, E7018 Upward"). Further, when Applicants finally (in March 1984) provided some of the welding procedures to which Mr. and Mrs. Stiner welded, those procedures showed the following:

Welding Procedure No. WPS-11032, Rev. 5, 6, and 7 (Applicants' Exhibits 189, 190, and 186, respectively, admitted at Tr. 11259, 11259, and 11239, respectively) -- all show as the Welding Progression "Upward" (under "POSITION", left-hand column, right below half-way down).

Weld Procedure No. 10046, Rev. 4 and 5 (Applicants' Exhibit 188 and 187, respectively, admitted at Tr. 11259 and 11242, respectively) -- both show as Progression "Upward" (right side of page, towards the top).

Applicants also submitted into evidence Welding Procedure No. WPS-18014, Rev. 3 and 4 (Applicants' Exhibits 191 and 192, respectively, both admitted at Tr. 11316), which both show the Welding Progression as "Upward" (left side of page, right below middle of page).

Applicants' Witness Baker testified that a downhill weld which was ground down and could pass a visual inspection would be considered a good weld, even though downhill welds are illegal for work at Comanche Peak performed by Brown & Root (Applicants' Witness Baker, Tr. 10071/9-19). This statement indicates that if one can circumvent the code and pass a visual inspection, then no problem existed.

This is especially important in light of the testimony of former NRC Resident Inspector - Construction Robert Taylor, who estimated that 75% of the welds at Comanche Peak have been ground down, about 10 to 15% of them to the point where it can no longer even be told whether stringer or weave beads were used (Tr. 12156/16-12157/7).

Further, NRC Staff Witness Collins testified that the biggest problem with illegal downhill welds may be found at the root of the weld, which traps slag and lacks sufficient penetration, and these cannot be evaluated by visual inspection (Tr. 12159). He also testified that visual inspection cannot detect slag or cracks which are not on the surface (Tr. 12158/14-12159/8 and 12187/2-21). In addition, he testified that it is not the tests or procedures that determine weld quality, but rather the quality of the welder (Tr. 12186/8-11).

NRC Staff Witness Collins testified that, regardless of conservatism, you must meet the code (Tr. 12177/15-21). And NRC Staff Witness Smith testified that the design requirements of AWS, whether for qualified or prequalified procedures, must still be considered by those designing welded joints at Comanche Peak (Tr. 12176/13-12177/3). Mr. Smith also confirmed that the AWS Code is a how-to code, much more specific than the requirements and oriented towards the welder, providing guidelines (Tr. 12176/13-12177/3).

As pointed out by Mr. Stiner (pages 16 and 17 of 2/7/84 Prefiled Testimony of the Stiners), the AWS code states, regarding downhill welding (see Attachment A, AWS D1.1, to Mr. Stiner's testimony):

AWS D1.1, 4.6.8:

"The progression for all passes in vertical position welding shall be upward, except that undercut may be repaired vertically downwards when preheat is in accordance with Table 4.2, but not lower than 70 degrees F (21 degrees C). However, when tubular products are welded, the progression of vertical welding may be upwards or downwards but only in the direction or directions for which the welder is qualified."

AWS D1.1, 5.16.5:

"For the qualification of a welder the following rules shall apply:

". . . 5.16.5. A change in the position of welding to one for which the welder is not already qualified shall require requalification."

AWS D1.1, 5.16.7:

"When the plate is in the vertical position, or the pipe or tubing is in the 5G or 6G position, a change in the direction of welding shall require requalification."

CASE Witness Jack Doyle testified, regarding the testimony of Applicants' Witnesses Baker, Muscente, Stevenson, and Lorentz:

"At page 18, all affidants (sic -- should be affiants) state that neither ASME nor AWS excludes the use of downhill welding, and that only their direction of travel is required (page 18). This is not completely true. AWS 4.10.7 requires vertical welds to be made with an uphill progression. There is a qualifier in section 5; however, since Comanche Peak requires qualification for downhill welding and such qualification is unavailable to those working on pipe supports and cable tray supports, Section 5 of AWS does not apply."

(Affidavit of CASE Witness Jack Doyle, CASE's 5/14/84 Answer to Applicants' Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Welding Issues, page 10, item (3).)

Mr. Doyle further stated (Affidavit page 3):

"The reference in item 4 to the inapplicability of AWS to pressure boundaries is a smoke screen, since the majority of the welding of concern in the allegations is not in reference to the pressure boundary but to supports."

In addition, Mr. Doyle stated (Affidavit page 5, answer 8):

"Applicants state:

"All welding procedures qualified by test pursuant to the ASME Code for use at CPSES follow the requirements of Section IX of the ASME Code. This includes following requirements regarding test procedures, testing of specimens, and all other aspects which could affect the procedure qualification process."

"As has been the case for several of the items listed above, the limitations for the procedure are not included with the procedure, nor are these limitations incorporated elsewhere (for example, in the design guidelines). This is a failure to consider the back-end requirements for the use of welding procedures; that is, implementation. Rather, at Comanche Peak Applicants are considering the front-end establishment of procedures as encompassing all of the requirements necessary to produce acceptable welds for the life of the plant. This failure in philosophy is best noted in the belated revision of Section XI to the PSE Guidelines in the CPSES Design Manual (see CASE Exhibit 716, attached)."

Further, Mr. Doyle stated (Affidavit at pages 12 and 13, answer 19):

"Applicants state:

"Neither the ASME nor AWS Codes exclude use of downhill or uphill welding. However, the ASME Code and the AWS Code specify that the direction of travel must be listed. At CPSES, Brown & Root welding procedures state that in all instances the direction of progression will be upward. Other contractors, in a few instances, use downward progression as specified in their welding procedures."

"This is not a fully accurate statement. The AWS Code for prequalified welding at 4.10.7 states that the weld progression for vertical welding will be uphill (see CASE Exhibit 971, attached; see also Applicants' Exhibit 141-N through 141-V; attachments to Applicants' Witness Brandt's prefiled testimony in September 1982 hearings). (Section 5 introduces a qualifier but this is for qualified welding; see CASE Exhibit 1,022, AWS 5.5.2.1, No. 10, attached.) The unqualified statement made by Applicants is therefore inaccurate."

"Beyond this, if downhill welding is not a qualified procedure at Comanche Peak, Section 5 of AWS would not apply. Therefore, progression must by code be uphill."

(Affidavit of CASE Witness Jack Doyle, CASE's 5/14/84 Answer to Applicants' Motion for Summary Disposition of Certain CASE Allegations



Regarding AWS and ASME Code Provisions Related to Welding Issues, CASE's Answer to Applicants' Statement of Material Facts As To Which There Is No Genuine Issue.)

If the facts were as stated by Henry or Darlene, would this have an adverse effect on the safety of the plant? The answer, according to Applicants' Rebuttal Panel, would always be negative. In the instance of downhill welding, see testimony of W. E. Baker (page 19 of Applicants' Rebuttal Testimony of W. E. Baker, C. T. Brandt, M. D. Muscente, F. E. Coleman, C. R. Brown, J. D. Green, J. E. Hallford, I. Pickett, A. M. Braumuller, and S. Fernandez Regarding Allegations of D. Stiner and H. Stiner Concerning Weave Welding, Welding of Misdrilled Holes, Downhill Welding, and Weld Rod Control, Applicants' Exhibit No. 177, bound in following Tr. 9976).

CASE submits that it is totally illogical to imagine that so much discussion would be contained in the AWS Code, the "how-to" code for welders, regarding this matter if it really doesn't make any difference anyway. Further, CASE submits that the bland assurances of Applicants' witnesses that they would have known about any downhill welding, or that it would have been detected by them or the welding technician or the QC inspector (see pages 18 through 20 of Applicants' Exhibit 177, Applicants' Rebuttal Testimony) is unconvincing, especially in light of Applicants' other statements indicating that it really wouldn't make any difference anyway. Given that attitude, it is obvious that there would have been little compelling reason for them to have closely monitored illegal downhill welding, and little if any assurance that it has not occurred.

PLUG WELDING (Welding of Misdrilled Holes)

In his testimony in September 1982, CASE Witness Henry Stiner discussed Allegation 2 of I&E Report 81-12 (Staff Exhibit 178) regarding what is commonly called "plug welding" (or, as it was later clarified to be more properly called, welding of misdrilled holes) at Tr. 4219-4222. As stated in the report regarding Individual A's (Mr. Stiner's) allegation in this regard:

"Individual A was interviewed and stated that holes are drilled in pipe supports and cable tray supports to facilitate bolting them in place. He stated that on occasions when it is determined that the hole was drilled in the incorrect location, it is filled in utilizing a plug weld. He stated that another hole is then drilled in the proper location on the component. Individual A stated he had the impression, based on comments made by various supervisors, that plug welding was not an accepted practice."

As stated by Mr. Stiner, the NRC investigator's report was not completely accurate, in that Mr. Stiner

"also told him in answer to his question as to what would happen if I did get caught making a plug weld that anyone who got 'caught by QC will get written up.' I also told him 'I've done this several times myself,' and that my foremen even stood around and watched for QC. I told him that I 'know some are in the North Spreader Rm' (in the Auxiliary Building)."

He also told Mr. Driskill, the NRC investigator, that:

"I have asked' several foremen 'what if QC catches me?' -- I was told 'don't get caught.' The investigator's report misses the whole point of what I was trying to tell him -- that no QC was around when these plug welds were being done, and that once the hole was 'plugged and redrilled' and 'cosmetically blended' in, it was 'impossible to tell' that it had ever been done. I also told him that the possible safety significance of that was that once the hole was filled and another hole was drilled overlapping the original hole, it's possible due to vibration, heat stress, and so on, that the Hilti bolt contained in the new hole might actually wallow out and become loose. And another safety aspect of this is the fact that the procedure (if there is one for plug welding) was not followed and the QC inspection would be unable to catch it." (Emphasis in the original, by Mr. Stiner.)

At Tr. 4221-4222, Mr. Stiner discussed differences between the I&E Report and the "sanitized" back-up notes, and points out that, although the report states that "Individuals F and G stated they had never been involved with plug welding, and both stated they understood that it was not an authorized practice," the back-up notes state (quoting Mr. Stiner) "that Individual F said 'don't allow plug welds anymore,' which would seem to mean that they had been allowed in the past." (Emphasis in the original, by Mr. Stiner.) And Mr. Stiner continues:

"Then on page 666D-15, under 'Interview of B&R QC Inspectors,' it says that 'Each stated a QC inspector is required to inspect the plug welding of holes (which is authorized by procedure) to determine if it is done properly and does not violate hilti bolt spacing requirements.' Why would supervisors tell me not to get caught by QC if there was a procedure authorizing the use of plug welding? It's my understanding that plug welding is not normally to be used and if it's used at all, it's supposed to be a last resort, and QC is always supposed to inspect it. But that's my point -- QC isn't always inspecting it. And the ones I did were Class III hangers and cable tray hangers." (Emphasis in the original, by Mr. Stiner.)

It should be noted that the cable tray hangers on which Mr. Stiner worked have never been specifically addressed by Applicants or the NRC Staff. In their discussions, they have tried to confine the issue to pipe supports.

When asked if there was anything further he'd like to say about Allegation No. 2, Mr. Stiner stated: "Only that my wife Darlene has told me she also did plug welding under orders of her supervisor when she was a welder."

Darlene Stiner also testified in the September 1982 hearings that she had provided information to the NRC investigators (I&E Report 81-12, Staff

Exhibit 178) regarding welding, that she told them that it happened all the time at Comanche Peak and was a common practice (Tr. 4154). She stated (Tr. 4154-4155):

"On the side you're welding on, you've filled the hole, but on the other side you'll have slag and coating, etc. Then when you flip it over, what you've actually got is a hole about 1/2 full. Then I would take my hammer and chip out all I could chip out. Then I'd take the other half of the rod and wash it over the other side. With the end result, you couldn't tell just by looking, but you would have all that slag trapped in the middle.

". . . These supports were designated to be installed in several areas of the plant. As a welder, I was instructed on numerous occasions to plug weld holes on Q hangers without a QC inspector being present. Again, it is the same problem as with the weave welds. There are no QC hold points during the welding process. Once this welding process is complete, there is no sure way to tell what the quality of the weld itself is.

"I never did plug welding unless I was instructed by a foreman to do it. That was fairly often. Sometimes I would plug weld one area and they would come back and make an overlapping hole which would mean that only a very thin bit of metal separated the new hole and the hole which was filled up with slag and stuff.

"Q. Are your comments made to the NRC investigators included in I&E Report 81-12 or in the 'sanitized' notes?

"A. As far as I can tell, my comments are not included. At least they are not written up under Individual B."

During the February and March 1984 hearings, Mr. and Mrs. Stiner also testified regarding plug welding (see 2/7/84 prefiled direct Testimony of CASE Witnesses Darlene Stiner and Henry Stiner, admitted into evidence and bound in following Tr. 10,333). Mr. Stiner testified (page 22):

"I was also instructed by Fred Coleman, my foreman, to make plug welds on holes drilled in the wrong place. I don't remember if I made it clear that these plug welds were made in the cable spread room; I made 20 or 30 at least. There were never any QC inspectors present before or after and my foreman would run watch for QC while we did them. I

also made plug welds in other safety-related areas in the plant. I was told to grind the plug weld down to the top of the parent metal and buff the surface so you could not tell it was there, then take a can of grey paint like they use on the metal and paint it so no one else could see it. This is what all or most of the welders do. They all know that it is not allowed by the code, but to keep their jobs and to speed up production, they do it anyway."

And Mrs. Stiner testified (pages 22 and 23):

"I feel this is a very important issue because when plug welds are done, there is slag entrapped inside the welded area. I don't personally, through personal experience, know of any way to make a plug weld without entrapment of slag. One side is welded, then flipped over to make the other side weld. When side #1 is welded, slag rolls under and gathers on the bottom of the weld. The piece is then turned over and you have to chip out the slag as best you can before finishing the weld, thus entrapping slag which is held in cracks, etc. I have made plug welds under orders many times. I have never had QC check on the plug welds I made and I also have never drawn special rods for this purpose. If I was welding on one hanger and the foreman brought a piece requiring plugging to me, he would tell me we didn't have time to draw one rod for this and to just use one of the ones I already had. I don't know where all of these plug welds are now in the plant. I did most of them on fab tables and wasn't told where they were to be used other than what class hanger it was. We ground and painted the surface so QC would not have been able to detect such a weld."

Applicants' witness Brandt testified that the type of fillet welding to which the Stiners were referring was the fillet welding of holes which are drilled in incorrect locations in structural shapes, and that type of fillet welding is permitted at Comanche Peak to repair holes which were drilled in the wrong location on structural shapes (Tr. 4691.) He further stated that the procedures require that a final visual inspection is to be performed by the QC inspector, and that any plug weld in safety-related structures which was not inspected would violate procedures (Tr. 4629). Regarding Mr. Stiner's allegation that bad welds which were required to be repaired by grinding the face of the weld off and capping with a proper weld to disguise

the underlying improper weld, Applicants testified that although such repair would not be detectable, it would be permitted so long as the weld had been ground to the point where the oscillation limit was within the four core wire diameter limitations (Tr. 4598-4599).

Applicants were ready to close out this matter (see Applicants' 2/25/83 Proposed Findings of Fact in the Form of a Partial Initial Decision, page 128, item 238, and page 142, item 263).

Applicants' witnesses testified about plug welding at pages 34 through 44 of their prefiled Rebuttal Testimony (of W. E. Baker, C. T. Brandt, M. D. Muscente, F. E. Coleman, C. R. Brown, J. D. Green, J. E. Hallford, I. Pickett, A. M. Braumuller, and S. Fernandez Regarding Allegations of D. Stiner and H. Stiner Concerning Weave Welding, Welding of Misdrilled Holes, Downhill Welding, and Weld Rod Control, admitted into evidence and bound into the record following Tr. 9976, in February 23, 1984). Mr. Baker testified that Applicants' personnel from welding engineering conducted tests in an attempt to make unacceptable welds, and that those highly skilled welders under his supervision couldn't make an unacceptable weld even though they tried! (Page 37.) There was nothing in the Applicants' prefiled testimony to indicate that any illegal plug welding had ever been done at Comanche Peak. Although there were some corrections made in the testimony of Applicants' Witnesses, including Mr. Baker (Tr. 9971-9972, February 23, 1984), he did nothing to change that impression.

It was not until later, after the NRC Staff had revised its testimony (received by CASE 4/14/84, Addendum received 4/23/84) that Applicants'

Witness Baker testified that, sure enough, as Mrs. Stiner said (at Tr. 10628), her foreman James Stembridge had ordered her to make illegal welds on fabrication tables in the turbine building (see Baker, 11781-11787). Mr. Baker testified that James Stembridge admitted to him that he (Mr. Stembridge) had directed Ms. Stiner to make unauthorized repairs on three hangers. He also stated that Mr. Stembridge had been a foreman for about four months; that on one day he had received seven hangers; and three of them were wrong. "And in trying to prove himself he tried to shortcut the system." (Baker, Tr. 11781-11782) <sup>emphasis added.</sup> Mr. Baker goes on to state that:

"Another foreman saw this activity, and informed a QC inspector that he needed to check it out. The QC inspector did go to the area and he caught Ms. Stiner making the unauthorized repairs. . . the hangers were subsequently scrapped. Mr. Stembridge was cut back to . . . fitter. He has never had a supervisory position since that particular time."

It should be noted here that "that particular time" was not specified. Mr. Baker further stated that there was no deficiency paper generated out of the incident; (in response to Judge Bloch's question) that he believed the question was asked as to whether or not there may have been a guard posted for QC at that time, and that no one was looking or watching for QC; that they were aware that they were engaged in unauthorized behavior; that he assumed that if somebody was looking for QC, they wouldn't have got caught. (Tr. 11782-11783.)

(There was also a discussion between Judge Bloch and Witness Baker, regarding previous testimony by Applicants' Witness Coleman regarding work he had done on repair welds without seeing a paper for those welds, that Judge Bloch's recollection was that Mr. Coleman said that maybe his foreman had the paper, but that he hadn't received it. Judge Bloch asked for a report on those repairs; see discussion at Tr. 11783-11787.)

There are several aspects of this which are important to note. It is not clear exactly when the NRC investigation regarding this was done. It is reasonable to assume that it was done between the time the NRC Staff withdrew its February 1984 prefiled testimony and the time it filed its April 1984 testimony. If this is correct, it is also reasonable to assume that it is possible that Mr. Baker did not know about this matter until after the February hearings. However, even if one makes that assumption, there are still some significant conclusions to be drawn from this, and there are still questions which are raised. One was raised by Judge Bloch at Tr. 11786:

"Q: Why was Mr. Stembridge not terminated?

"A (Witness Baker): There was a good deal of discussion about his termination, so I understand.

"But because of his previous work record without any type of violations of this sort, it was decided that just to cut back to a craftsman, and he wouldn't be a supervisor again.

"JUDGE BLOCH: Do you agree or disagree that his automatic termination for a willfull (sic) violation of procedures--

"WITNESS BAKER: In my opinion, a willfull (sic) violation of procedure would be a termination offense.

"JUDGE BLOCH: But it didn't happen in this case.

"WITNESS BAKER: It did not happen in this case."

Obviously this is in direct contradiction to the previous testimony of Applicants' witnesses (see Applicants' Rebuttal Testimony, following Tr. 9976, at pages 34-45). More specifically:

MESSRS. BRANDT AND BAKER, at page 37:

"Q41. Messrs. Brandt and Baker, are inspections conducted of welds of misdrilled holes in safety-related or class 5 cable tray and pipe supports.



"A41. (Baker and Brandt) Yes. First, the welder himself inspects his work and if unacceptable he will correct it at that time. It must be remembered that welders have every incentive to perform good welds and absolutely no incentive to perform poor welds. Due to the number of personnel involved in this area, other construction department personnel, including the welding technician, fitters and the welder's foreman, would in all likelihood observe the weld area and could detect unacceptable surface indications.

"Further, misdrilled holes on safety-related systems or class 5 hangers require a quality control inspection. The type and timing of this inspection is entirely dependent upon the type of weld. At a minimum, all welds of misdrilled holes of cable tray or pipe supports on safety-related systems or class 5 hangers would require a final visual QC inspection. During this final visual inspection, unacceptable surface indications would be detected."

Messrs. Fernandez, Pickett, Braumuller, Brown, Coleman, Green, and Hallford all testified, or in the case of Messrs. Brown and Coleman, strongly implied, that if any foreman were caught standing watch for a welder while that welder performed a weld in violation of procedures, it was common knowledge that that foreman would be fired immediately. (See Fernandez, Pickett, and Braumuller at pages 39 and 40; Brown and Coleman at page 41; and Messrs. Green and Hallford at page 41.)

But we have sworn testimony from two welders that they were ordered to perform illegal plug welding with no QC inspection; we have sworn testimony from two welders about intimidation, harassment, etc. of welders; we have sworn testimony from two welders that there is strong incentive, in the form of keeping one's job, for performing illegal welds; we have sworn testimony from a welding QC inspector (who was formerly a welder herself) that she was intimidated, harassed, and threatened with losing her job (plus other such testimony in the Intimidation portion of the hearings).

Now we also have the sworn testimony of Applicants' own witnesses saying, on the one hand, that there are so many people around that such illegal welding would surely be seen and that QC would surely catch it, while on the other hand we have the sworn testimony of one of those same witnesses saying that what Applicants have implied could never happen, has in fact happened, that a foreman himself was the person who ordered the illegal welding to be done, that another foreman and a QC inspector also knew about the illegal welding, but that the foreman who ordered the illegal welding was not fired, the QC inspector did not write up any deficiency paper on it, and presumably that no one informed Mr. Baker or any of the other Applicants' witnesses who have ever testified in these proceedings or any of Applicants' counsel about it prior to the investigation by the NRC sometime between February and April 1984!

Other obvious questions are: How is it that nobody reported this to Mr. Baker? If Applicants' QA/QC program is so good and if Applicants' witnesses really know what's going on in the real world at Comanche Peak, how is it that none of them knew anything about this? If this particular foreman, in trying to prove himself, tried to shortcut the system, what assurance is there that other foremen have not done the same kind of thing? What assurance is there that anyone would have caught them if they had?

The implications of all this are obvious and extensive. They range from, at a minimum, proof of a serious and documented breakdown of Applicants' QA/QC program, to deliberate misleading of the Board or worse. The Licensing Board, in its deliberations in these proceedings, must necessarily deal with the issue of who to believe and how much to believe.

At pages 23 through 30 of their prefiled direct NRC Staff Testimony on Welding Fabrication Concerns Raised by Mr. and Mrs. Stiner, and Addendum to Page 27 thereof (accepted into evidence and bound into the record following Tr. 12,146 on April 24, 1984), the Staff's witnesses discuss plug welds. We do not want to unnecessarily burden the record by quoting that entire portion of the Staff's testimony here, but CASE urges that the Board read it (including the Addendum) in its entirety (which we assume would be done anyway in preparing the Board's findings). At page 30, Messrs. Gilbert and Taylor state:

"Q. Has the Staff conducted any inspections to determine if QC inspectors are, in fact, inspecting 'plug welds,' in accordance with established procedures and criteria?

"A. (Gilbert and Taylor) Yes. As part of Inspection Report 81-12/81-12 (Staff Exhibit 178), Region IV inspectors interviewed three QC inspectors at CPSES regarding 'plug welding' of misdrilled holes. These QC inspectors all stated that 'plug welding' repairs of misdrilled holes must be inspected by a QC inspector to determine if the weld was done properly, and does not violate Hilti bolt spacing requirements. Staff Exhibit 178, p. 6."

It should be noted that the Staff was ready to close out this issue without an adequate and accurate investigation (see NRC Staff's 2/24/83 Provisional Proposed Findings of Fact at page 169, item 643).

However, in their April 1984 prefiled testimony at pages 27 and 28, Messrs. Gilbert and Taylor stated that they had contacted Applicants' witness Baker, and (pages 28-30):

"Mr. Baker also stated that Mr. Stemberge admitted that he had illegally directed Mrs. Stiner to 'plug weld' in violation of applicable procedures on two small bore pipe hangers. According to Mr. Baker, Mr. Stemberge told him that these 'plug welds' were discovered by a QC inspector named Larry Wilkerson, and that these two hangers were immediately scrapped as a result of Mr. Wilkerson's inspection of the hangers. . . Mr. Baker also stated that Mr. Stemberge voluntarily demoted himself from a supervisory position a week after Mr. Wilkerson discovered the improper welds." (Emphasis added.)

". . . we believe that Mr. Stembridge did direct Mrs. Stiner to perform a weld in violation of applicable procedures."

In the Addendum to page 27 of the Staff's prefiled testimony, Mr. Gilbert testified that he inspected some welds in the South Yard Tunnel and in the North Cable Spreading Room and, although he found none in the South Yard Tunnel, he did find indications of plug welds in 3 supports (with 2 plug welds each) in the South Yard Tunnel; none of the plug welds had repair work documentation. He also testified that the Staff inspected 56 of the approximately 200 supports in the north cable spreading room and 31 of the approximately 660 supports in the South Yard Tunnel (Tr. 12274).

This means that the Staff inspected 28% of the supports in the North Cable Spreading Room and found that about 5.357% of the supports inspected had illegal plug welds. Even using simple arithmetic, it is obvious that there is a problem here. If 5.357% were used as an accurate percentage, there would be about 11 supports with 22 plug welds (assuming 2 plug welds per support) in the North Cable Spreading Room which could be expected to have illegal plug welds. Obviously, this figure could be lower, or higher. It also means that somebody needs to find the other 16 illegal plug welds. In addition, CASE submits that the Staff's look at about 5% (31 out of 600) supports in the South Yard Tunnel was not a sufficient sampling to prove that there were no plug welds there. It should also be noted that the Staff's review apparently included a very close look with a flash light (which is not, as far as CASE is aware, included in any welding inspection procedure at Comanche Peak). It should also be noted that NRC Staff Witness

Taylor testified that he estimated that 75% of the welds at Comanche Peak have been ground down, about 10 to 15% of them to the point where it can no longer even be told whether stringer or weave beads were used (Tr. 12156/16-12157/7).

While CASE is gratified that the Staff has made this investigation, it still must be noted that it took the Staff almost two years to find them, although Mr. Stiner testified about them in September 1982 (see page 1 of this section on Plug Welding).

In addition, CASE Witness Jack Doyle testified (Affidavit, page 6, item (2)):

"A test was performed for misdrilled holes which were repaired by plugging with a purposely botched up procedure to prove that weld inclusions (slag, etc.) presented no adverse problems. No test was performed using 1/16 inch thick welds after grinding on both faces of the plate and a gap between the two welds."

He also stated (Affidavit, pages 11 and 12, item (5)):

"Applicants assume that since a test was performed, the revision to the 1982 AWS code for restoration of unacceptable holes by plug welding (Section 3.7.7) is not applicable under the provisions of 10 CFR Part 50, Appendix A, Criterion 1.

"Testing is not an acceptable method of negating this prohibition, since the revision resulted from the random effects involved in perhaps hundreds of thousands of such repairs. In short, the repair is unpredictable; therefore, there is no way to reverse the prohibition added to the code. Because the concern involves the characteristics to be found through the repaired area (weld covering one side and a second weld covering the opposite side with a gap between the welds, among other problem) which cannot be checked visually, the only method for checking this gross violation of procedures is by ultrasonic or radiographic methods. (See NRC Staff Witnesses: Smith and Collins, Tr. 12234/22-12235/2; Collins, Tr. 12240/12-22 and 12250/7-11; plug welds with internal slag cannot be qualified visually. Visual inspection cannot detect slag or cracks which are not on the surface; Collins, Tr. 12158/14-12159/8 and 12187/2-21. See also NRC Staff Witness Gilbert,

Tr. 12260/8-19, where he admits, regarding plug welds which had been made with no documentation, that he and NRC Staff Witness Taylor were unable to conclude that the areas identified contain no plug welds which have been done in an unacceptable manner and that they were only able to identify that plug welds have been made.) Beyond this, it has now been acknowledged that 'plug welds' have been proven to exist which were performed clandestinely (see NRC Staff Testimony of Mr. Gilbert, Addendum to Page 27 of NRC Staff Testimony on Welding Fabrication Concerns Raised by Mr. and Mrs. Stiner, bound in following Tr. 12,146; also Tr. 12,260/8-19)."

(Affidavit of CASE Witness Jack Doyle, 5/14/84 CASE's Answer to Applicants' Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Welding Issues.)



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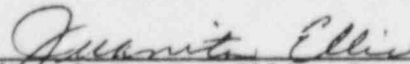
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