

answered and has personal knowledge of the matter under discussion.

2. Each interrogatory or document response should include all pertinent information known to: Applicants, their officers, directors, or employees, their agents, advisors, or counsel.

The term "employees" is to be construed in the broad sense of the word, including specifically (but not limited to): Brown and Root, Gibbs & Hill, Ebasco, Cygna, O. B. Cannon, any consultants, sub-contractors, and anyone else performing work or services on behalf of the Applicants or their agents or sub-contractors.

3. The terms "documents" and "documentation" shall be construed in the broad sense of the words and shall include any and all writings, drawings, graphs, charts, photographs, reports, studies, audits, slides, internal memoranda, informal notes, handwritten notes, tape recordings, procedures, specifications, calculations, analyses, and any other data compilations from which information can be obtained.

Where applicable, such documents shall also include any and all contracts, letters of understanding, letters of intent, statement of protocol, statement of scope, and all other pertinent information.

4. Each document provided should include a sworn statement of its authenticity, signed by the specific individual who answered and has personal knowledge of the document.

5. Answer each interrogatory in the order in which it is asked, numbered to correspond to the number of the interrogatory. Do not combine answers.
6. Identify the person providing each answer, response, or document.
7. These interrogatories and requests for documents shall be continuing in nature, pursuant to 10 CFR 2.740(e) and the past directives of the Licensing Board. Because of the time restrictions under which we are presently working, we request that supplementation be made on an expedited basis.
8. For each item supplied in response to a request for documents, identify it by the specific question number to which it is in response. If the item is excerpted from a document, identify it also by the name of the document. Please also provide the copies in the correct order (rather than in reverse order).

CASE'S INTERROGATORIES TO APPLICANTS AND REQUESTS TO PRODUCE

CASE has attempted not to request information which has already been provided. However, if any information which is requested has already been provided, please indicate the date of the cover letter by which such information was provided.

Regarding A500 Steel:

Unless otherwise indicated, where an affidavit is referenced, it is the Affidavit of John C. Finneran, Jr., Regarding A500 Tube Steel, which was attached to Applicants' 4/11/84 Response to Partial Initial Decision

Regarding A500 Steel:

1. Affidavit at page 5, second paragraph:
 - a. How many shipments of tube steel have been received at Comanche Peak?
 - b. Provide a breakdown of the test data (which Applicants state that they receive with each shipment of steel) in a tabular or similar form indicating the yield strength (we would assume that some document, such as handwritten notes, etc., already exists which contains this information). What we are looking for is something such as:

the test data for 3 shipments of tube steel indicated an
actual yield strength of 36 ksi

the test data for 5 shipments of tube steel indicated an
actual yield strength of 56 ksi

. . . etc.
 - c. Provide for inspection and copying any and all test data received with each shipment of tube steel at Comanche Peak.
2. Affidavit at page 6, first full paragraph, middle of page: Provide and all documentation regarding Applicants' statement that "This analysis demonstrates that all stresses in tube steel support members remain below even the reduced allowable stresses and that, in fact, the stresses in the vast majority of supports remained significantly below those allowables" (including, but not limited to, such items as interoffice memos which requested that such analysis be performed and/or set forth the goal which Applicants wished to achieve, notes of meetings at which such analysis was discussed, etc.)
3. Affidavit at page 6, second full paragraph, bottom of page continued on page 7:

- a. Provide the "alphabetical listings of all Unit 1 and common area ASME supports for each support design organization (NPSI, ITT-Grinnell and PSE)."
- b. (1) How many supports utilize A500 tube steel at Comanche Peak?
Answer for each of the following:
In Unit 1
In common (those areas shared by both Unit 1 and Unit 2)
In Unit 2
- (2) Are all of the supports in your answer to (1) above safety-related?
- (3) If the answer to (2) above is no, how many are safety-related in:
Unit 1?
In common?
Unit 2?
- c. Provide the drawing and calculation package for each of the 182 supports utilized in the sample (as they existed at the time the sample was taken and, if different, as they exist at this time).
- d. Provide any and all documentation of Applicants' statement that "The resulting selection of 182 supports contained an excellent mix of buildings, systems, classes and types of supports."
- e. Applicants stated "Analysis of the above sample demonstrates that for over 95% of the sampled supports the tube steel members seeing the maximum stress is stressed less than 50% of the reduced A500 allowable" (emphases in the original).
- (1) Provide any and all documentation of Applicants' statement.
- (2) List each support which constituted the 5% of the

sampled supports where the tube steel members seeing the maximum stress was stressed 50% or more of the reduced A500 allowable.

Include in your answer the maximum stress which was indicated for each such support.

- f. Applicants stated "In fact, the average percentage of the allowable stress seen by all such members is 16.4%."

Provide any and all documentation for Applicants' statement (including, but not limited to, the raw data for the listing on page 7 of the Affidavit).

Regarding AWS vs. ASME (design):

The Affidavit referenced is the 5/15/84 Affidavit of John C. Finneran, R. C. Iotti and J. D. Stevenson Regarding Allegations Involving AWS vs. ASME Code Provisions, which is Attachment 1 to Applicants' 5/17/84 Motion for Summary Disposition of Certain CASE Allegations Regarding AWS and ASME Code Provisions Related to Design Issues.

4. Applicants stated:

"To verify the adequacy of these measures, we performed an evaluation of 13 skewed T-joint designs at CPSES selected at random, and in all cases these joints met or exceeded the load capacities required by AWS. The highest stressed weld was only stressed to 39 percent of AWS allowables (21 ksi)."

- a. How many skewed T-joint designs are there at CPSES?
- b. How many supports have skewed T-joint designs at CPSES?
- c. How many skewed T-joints are there on all such supports at CPSES?
- d. How was it decided what the number of skewed T-joint designs to be evaluated would be? Provide the basis for that decision and all details.

- e. Provide any and all documentation of Applicants' statements and of your answers to a, b, c, and d above.

Regarding Axial Restraints:

Where an affidavit is referenced, it is the Affidavit of Robert C. Iotti and John C. Finneran, Jr. Regarding Consideration of Force Distribution in Axial Restraints, which was attached to Applicants' 7/9/84 Motion for Summary Disposition Regarding Allegations Concerning Consideration of Force Distribution in Axial Restraints.

5. Affidavit at page 4, last paragraph continuing on page 5: Applicants state:

"In order to assess the effect on piping stresses from modelling the rotational constraints, Gibbs & Hill performed a (sic) reanalyses of several stress problems for lines ranging in size from 4" to the 32". Table 1 (attached) shows a comparison of the results obtained for the pipe stresses under the two different modelling assumptions . . . "

- a. Only two (not several) stress problems were listed in Table 1.
 - (1) Were the results shown for the two stress problems which were listed in Table 1 representative of the results for the stress problems which were not included in Table 1?
 - (2) If the answer to (1) above is no, how do the results differ? Give specific details.
 - (3) Provide a detailed breakdown like that shown in Table 1 for the rest of the stress problems (other than the two shown in Table 1) which were reanalyzed.
 - (4) What were the allowables for the different loading conditions for Equation 9 and Equation 10 as shown in Table 1?
6. Affidavit at page 10, last paragraph continuing on page 11, and first full paragraph on page 11: Applicants state:

"We surveyed twenty-nine supports which have lugs welded to the pipe on both sides of the support frame (see Figure 1)."

- a. How many supports which have lugs welded to the pipe on both side of the support frame are there at CPSES?
 - (1) How many in Unit 1?
 - (2) How many in common?
 - (3) How many in Unit 2?
 - b. How many supports have skewed T-joint designs at CPSES?
 - c. How many skewed T-joints are there on all such supports at CPSES?
 - d. How was it decided what the number of skewed T-joint designs to be evaluated would be? Provide the basis for that decision and all details.
 - e. Provide any and all documentation of Applicants' statements and of your answers to a, b, c, and d above.
7. Affidavit at page 15, middle of page:
- a. What is the basis for the statement that "These minimal [plastic] strains are of no consequence to the integrity of the pipe or the lug"?
 - b. Has any analysis been performed to verify the statement referenced in a. preceding?

If the answer is yes, provide any and all documentation of such analysis.
 - c. Has any test been performed to verify the statement referenced in a. preceding?

If the answer is yes, provide any and all documentation of such test(s).
 - d. How does the sampling and/or analysis and/or NASTRAN analysis take into account cyclic loading?

- e. Provide any and all documentation of your answer to d. preceding.

Regarding Damping Factors:

Where an Affidavit is referenced, it is the Affidavit of Robert C. Iotti in Support of Applicants' Reply to CASE's Answer to Applicants' Motion Regarding Alleged Errors Made in Determining Damping Factors for OBE and SSE Loading Conditions, which was attached to Applicants' 9/21/84 Reply to CASE's Answer to Applicants' Motion Regarding Alleged Errors Made in Determining Damping Factors for OBE and SSE Loading Conditions.

8. Affidavit at page 5, last paragraph continuing on page 6:
 - a. Provide the basis for Applicants' position that the use of damping values for "the preponderant portion of the system being analyzed" will result in a valid design for the unpreponderant portion of the system.
 - b. Have any tests been performed to support your answer to a. preceding?
 - c. Provide any and all documentation for your answers to a. and b. preceding.

Regarding Differential Displacement (Wall-to-Wall/Floor-to-Ceiling):

Where an Affidavit is referenced, it is the 6/22/84 Affidavit of R. C. Iotti and J. C. Finneran, Jr. Regarding Differential Displacement of Large Frame Pipe Supports, which was Attachment 1 to Applicants' 6/22/84 Motion for Summary Disposition of CASE Allegations Regarding Differential Displacement of Large-Framed, Wall-to-Wall and Floor-to-Ceiling Pipe

Supports.

9. Affidavit at page 8, last paragraph continuing on page 9:

- a. What is the basis for Applicants' belief that the three supports (CC-1-070-002-A33R, CS-X-004-004-A33R and SW-1-132-703-Y33R) are "representative"?
- b. Provide any and all documentation for your answer to a. preceding.
- c. Provide all documentation (including, but not limited to, drawings and calculations) for the three supports analyzed (i.e., supports CC-1-070-002-A33R, CS-X-004-004-A33R, and SW-1-132-703-Y33R) as they existed at the time of the analysis.
- d. Have these three supports been changed since the time of the analysis?

If the answer is yes, provide all documentation (including, but not limited to, drawings and calculations) for the three supports as they exist at this time.

Regarding Friction:

Where an affidavit is referenced, it is the Affidavit of John C. Finneran, Jr. in Support of Applicants' Reply to CASE's Answer to Applicants' Motion for Summary Disposition Regarding Consideration of Friction Forces, which was attached to Applicants' 9/19/84 Reply to CASE's Answer to Applicants' Motion for Summary Disposition Regarding Consideration of Friction Forces.

10. Affidavit at page 10, first paragraph:

- a. Please quantify what you mean by "most significantly affected" by inclusion of friction forces.
- b. How was it determined which specific supports (i.e., short, stiff

- support members with relatively large pipes) would be reviewed?
- c. Who (name, title, organization) made such determination?
 - d. Specifically how were "short" and "stiff" defined?
 - e. Who (name, title, organization) determined what the definition would be?
 - f. Who (name, title, organization) were the engineers referred to in the next-to-the-last sentence of the first paragraph where it is stated "I requested that my engineers review support drawings at random to identify these supports."
 - g. Were any of the individuals identified in your answer to f. preceding field engineers?
 - h. If the answer to g. preceding is yes, were any of them the "somewhat knowledgeable" field engineers to whom Mr. Finneran referred during the operating license hearings?

If the answer is yes, identify by name which of the engineers fall into this category.

Provide the resume, qualifications and credentials of each engineer identified in your answer to f. preceding.

- i. Were ITT Grinnell and/or NPSI supports included in the sample?
- j. If the answer to i. preceding is no, why not?
- k. If the answer to i. preceding is yes, identify each such support, broken down as to whether it was ITT Grinnell or NPSI.

Regarding Generic Stiffness:

Where an affidavit is referenced, it is the Affidavit of R. C. Iotti and John C. Finneran, Jr. Regarding Use of Generic Stiffnesses Instead of Actual Stiffnesses in Piping Analysis, which was attached to Applicants'

5/21/84 Motion for Summary Disposition Regarding Use of Generic Stiffnesses
Instead of Actual Stiffnesses in Piping Analysis.

11. Affidavit at page 2, A3., continuing on page 3, regarding Applicants' discussion of the survey conducted by Gibbs & Hill in 1980 of 16 nuclear projects:

- a. Were the 16 nuclear projects selected the only nuclear projects which met the criteria of "having construction permit dates within a +/-1 year time span of the construction permit date of Comanche Peak"?
- b. If the answer to a. preceding is yes, list the 16 nuclear projects. Also identify the Engineering firm involved in each plant's design/construction. In addition, state the status of each of the 16 nuclear projects at this time.
- c. If the answer to a. preceding is no, list all other nuclear projects which also met the criteria and the Engineering firm involved in each plant's design/construction.
- d. Applicants discuss a survey of 16 nuclear projects and the surveyed Engineering firms. How many engineering firms were involved in the survey?
- e. Identify the Engineering firm which is stated to be the "only one [which] gave specific instructions to the support design group to meet the range of values for support stiffnesses assumed in the analyses."
- f. Identify the Engineering firm which is identified as "Another instructed the hanger vendor to meet the stiffness criteria for auxiliary steel only."
- g. Identify the remaining firms.

h. By what method has each of the remaining firms (including Gibbs & Hill) confirmed that the "engineering approach to design supports for conservative load combinations," which they permitted the pipe support vendor to use, is in fact conservative. Provide specific details.

i. Provide any and all documentation for your answers to a. through h. preceding.

12. Affidavit at page 4, A5:

a. What was the rationale for using only the actual stiffness values transmitted by NPSI?

b. What was the criteria for the sample selected?

c. Were the effects of base plate bending taken into account?

If the answer is yes, give specific details.

If the answer is no, what was the rationale for not taking it into account?

d. Were the effects of Richmond insert movement taken into account?

If the answer is yes, give specific details.

If the answer is no, what was the rationale for not taking it into account?

e. Provide any and all documentation for your answers to a., b., c., and d. preceding.

13. Affidavit at page 4, A6., continuing on page 5:

a. What was Applicants' rationale for limiting their analyses to worst case supports which had been identified by CASE Witness Jack Doyle?

b. Were the "four actual supports" which were tested also selected from those which had been identified by Mr. Doyle?

c. Were the four supports which were tested part of the "sixteen

worst case supports . . . identified by Mr. Doyle"?

- d. What assurance is there that the sixteen worst case supports identified by Mr. Doyle are representative of the worst case supports throughout Unit 1? throughout common? throughout Unit 2? throughout Unit 1, common, and Unit 2 (i.e., the entire plant)?
- e. Please define "reasonably well"? How much difference would have been required for Applicants to conclude that base plate flexibility is a major factor in stiffness calculations?
- f. What criteria was utilized to determine what constituted "reasonably well"?
- g. In Attachment 1, under the Calculated Stiffness column, the value shown for support CC-2-011-001-A63R begins with "?". Is this a typographical error? What should the number be?
- h. What was the rationale for testing only four supports?
- i. Provide any and all documentation for your answers to a. through h. preceding.
- j. Was more than one test performed or is expected to be performed?
 - (1) If the answer is yes, answer the following questions:
 - (i) How many additional tests were performed?
How many additional tests are expected to be performed?
 - (ii) What was the reason additional test(s) were/are expected to be performed?
 - (iii) Have Applicants supplemented their Motion for Summary Disposition with the information that additional test(s) were/are being performed? If not, why not?
- k. Provide any and all documentation (including the test and test

results and all documentation relating to them) regarding each test which was performed. Also provide any and all such documentation regarding each test which is expected to be performed or is currently being performed.

14. Affidavit at page 5, A7., continuing on page 6:

- a. What was the rationale for reanalyzing only three piping systems initially?
- b. What criteria were utilized to determine which three piping systems were reanalyzed?
- c. Were the effects of mass participation (as discussed by Cygna) included in the reanalyses?
- d. If the answer to c. preceding is no, why not?
- e. How did/will the inclusion of the effects of mass participation (as discussed by Cygna) affect the results of any reanalyses?
- f. Provide any and all documentation for your answers to a. through e. preceding.

Regarding Richmond Inserts:

Where an affidavit is referenced, it is the 6/1/84 Affidavit of John C. Finneran, Jr., Robert C. Iotti and R. Peter Deubler Regarding Design of Richmond Inserts and Their Application to Support Design, which is Attachment 1 to Applicants' Motion for Summary Disposition Regarding Design of Richmond Inserts and Their Application to Support Design.

15. Affidavit at page 9, last paragraph, continued on page 10:

- a. How many supports are there in Unit 1 and common areas which employ Richmond inserts?

How many in Unit 2?

- b. Provide the rationale for reviewing only 912 supports in Unit 1 and common areas.
- c. Provide the rationale for reviewing the specific 912 supports which were reviewed.
- d. What was the reason for the review (i.e., what was the stated purpose, what triggered the review, etc.)?
- e. Provide any and all documentation for your answers to a. through d. preceding.

16. Affidavit at page 7, first full paragraph, and page 11, continuing on page 12:

- a. On page 7, Applicants state:

"While the concrete at CPSES is designed for 4000 psi, it actually ranges from 4500 to above 5000 psi."

And on page 11, last paragraph, Applicants state:

"All [of the nine specimens which were tested] utilized 1-1/2 inch type EC-6W inserts in concrete representative of the strength and reinforcement found at CPSES. For the test the concrete strength was approximately 4600 psi."

- (1) Provide any and all documentation that all concrete at CPSES is designed for 4000 psi.
- (2) Isn't it a fact that some of the concrete at CPSES was designed for 2500 psi?
- (3) What determined the use of 4000 psi or 2500 psi concrete at CPSES (i.e., was it according to whether or not: the concrete was in a safety-related area; the concrete was for a certain specified use, such as for the base mat, or for a wall; the concrete was for use inside the containment, etc.); or some other criteria was used (if so, give specific details).
- (4) Provide any and all documentation regarding the criteria for

determining whether concrete at CPSES was to have been designed for 4000 psi or for 2500 psi, and (if different) regarding the criteria for determining whether the concrete which was actually used at CPSES.

- (5) Who (names, titles, organizations) made the determination as to which concrete was to be designed for 4000 psi and which for 2500 psi?
- (6) What was the age of the concrete utilized in the test at the time it was tested?

How does this compare with the age of the concrete which Applicants allege actually ranges from 4500 to above 5000 psi?

- (7) Isn't it a fact that the strength of concrete increases with age?
- (8) Was the approximately 4600 psi concrete utilized in the test based on a field cured specimen or a lab cured specimen?
- (9) Is the concrete at CPSES which Applicants allege actually ranges from 4500 to above 5000 psi based on field cured specimens or lab cured specimens?
- (10) Isn't it a fact that lab cured specimens normally test out at higher psi values than field cured specimens?
- (11) Did the tests on the Richmonds take into account the possibility that inserts might be embedded in concrete which was less than 4600 psi (for instance, the stated design strength of 4000 psi, or 2500 psi)?

(i) If not, why not?

(ii) If so, provide any and all documentation regarding

such tests.

(12) Was a criteria on maximum shear deflection considered in the test(s)?

(13) Was a cyclic load test considered using the current allowable?

(i) If not, why not?

(ii) If so, provide any and all documentation regarding this.

(14) Why were only 9 specimens tested?

(15) (i) What was the yield strength of the tube steel and rods?

(ii) Was the yield strength of the materials considered to be variable?

(iii) If not, why not?

(16) Provide the test data report(s) for the A-490 bolts, SA-36 threaded rods, and tube steel materials which were utilized in the test(s).

(17) Provide any and all documentation that the 4600 psi concrete utilized in the test was representative of concrete at Comanche Peak.

(18) Provide any and all documentation for your answers to (2), (3), (5) through (10), (12), (14), and (15) preceding.

17. Affidavit at pages 13 and 14, regarding additional tests done in March and April, 1984:

a. (1) What was the age of the concrete utilized in the test at the time it was tested?

How does this compare with the age of the concrete which Applicants allege actually ranges from 4500 to above 5000 psi?

- (2) Was the concrete in excess of 4900 psi utilized in the tests based on a field cured specimen or a lab cured specimen?
- (3) Did the tests on the Richmonds take into account the possibility that inserts might be embedded in concrete which was less than 4900 psi (for instance, the stated design strength of 4000 psi, or 2500 psi)?
 - (i) If not, why not?
 - (ii) If so, provide any and all documentation regarding such tests.
- (4) Was a criteria on maximum shear deflection considered in the test(s)?
- (5) Was a cyclic load test considered using the current allowable?
 - (i) If not, why not?
 - (ii) If so, provide any and all documentation regarding this.
- (6) Why were only 30 specimens tested?
- (7) (i) What was the yield strength of the tube steel and rods?
 - (ii) Was the yield strength of the materials considered to be variable?
 - (iii) If not, why not?
- (8) Provide the test data report(s) for the A-490 bolts, SA-36 threaded rods, and tube steel materials which were utilized in the test(s).
- (9) Provide any and all documentation that the concrete with an average compressive strength in excess of 4900 psi which was utilized in the test was representative of concrete at

Comanche Peak.

- (10) What was the rationale for utilizing concrete with a concrete strength of approximately 4600 psi for the earlier tests, but utilizing concrete with an average compressive strength in excess of 4900 psi for the later tests?
 - (11) Provide any and all documentation of your answers to (1) through (7) and (10) preceding.
18. Affidavit at page 16, last paragraph on page, continuing on page 17:
- a.
 - (1) Isn't it a fact that in some instances reinforcing steel was left out of concrete pours at Comanche Peak?
 - (2) If the answer is yes, provide a summary of each such instance. Identify each as to where the instance occurred (for instance, Unit 1 containment, Unit 2 containment, etc.) and provide all other relevant details (such as elevation, how and why the omission occurred, who was responsible for the omission's having occurred, whether or not the area is safety-related, etc.).
 - (3) If the answer is yes, provide any and all documentation regarding each such instance.
 - b. Were any Richmond inserts installed in any area where reinforcing steel was left out?
 - (1) Provide any and all documentation for your answer.
 - (2) If the answer is yes, provide a summary of how many inserts are installed in each location where reinforcing steel was left out. Provide all other relevant details and any and all documentation for your answer.
 - c. Were any tests performed with no reinforcing steel in the concrete?

- (1) If not, why not?
- (2) If the answer is yes, provide a summary of all results.
- (3) If the answer is yes, provide any and all documentation regarding such test(s).

d. Applicants stated:

"Applicants have conducted a review of a representative sample of test reports of concrete used at CPSES to assure that such concrete is essentially the same as that used in the tests."

- (1) Who (names, titles, organizations) conducted the review?
- (2) Provide any and all documentation that the sample reviewed was representative of concrete used at CPSES.
- (3) Please quantify what is meant by the phrase "essentially the same" as it is used in the above-quoted sentence.
- (4) What was the result of Applicants' review?

e. Applicants state:

"In addition, Applicants have reviewed NCRs regarding concrete at CPSES to provide additional assurance that the concrete used in these tests was representative of that used at CPSES. From our review, we conclude that test conditions are representative of conditions at CPSES."

- (1) Who (names, titles, organizations) reviewed the NCR's?
- (2) Did their review include any of the NCR's discussed in Attachment D to CASE's Answer to Applicants' Motion for Summary Disposition Regarding Richmond Inserts (sent under cover letter dated 9/12/84)?
 - (i) Provide any and all documentation for your answer.
 - (ii) If the answer is yes, specify which of those NCR's were reviewed.
- (3) List each and every NCR reviewed by Applicants.
- (4) Provide copies of each of the NCR's reviewed by Applicants

(original and all revisions and all attachments), as well as any additional documents related to such NCR.

- (5) For each of the NCR's listed in (3) preceding, provide the following information:
- (i) In dispositioning the NCR, was the Swiss hammer test or equivalent used?
 - (ii) If the answer to (i) above is yes, what was the basis for accepting the results?
 - (iii) If the answer to (i) is yes, how was the Swiss hammer (or equivalent) calibrated?
 - (iv) If the answer to (i) is yes, who (names, titles, organizations) performed the Swiss hammer (or equivalent) tests?
 - (v) If the answer to (i) is yes, who (names, titles, organizations) interpreted the results of the Swiss hammer (or equivalent) tests?
 - (vi) Was each and every concrete pour listed on the NCR retested?
 - (a) Provide any and all documentation for your answer.
 - (b) If the answer is no, why not?
 - (c) If the answer is yes, what was the result of such retesting?

Provide any and all documentation for your answer.
 - (d) If the answer is no, were any pours dispositioned "use as is," although the strength was below the design strength?

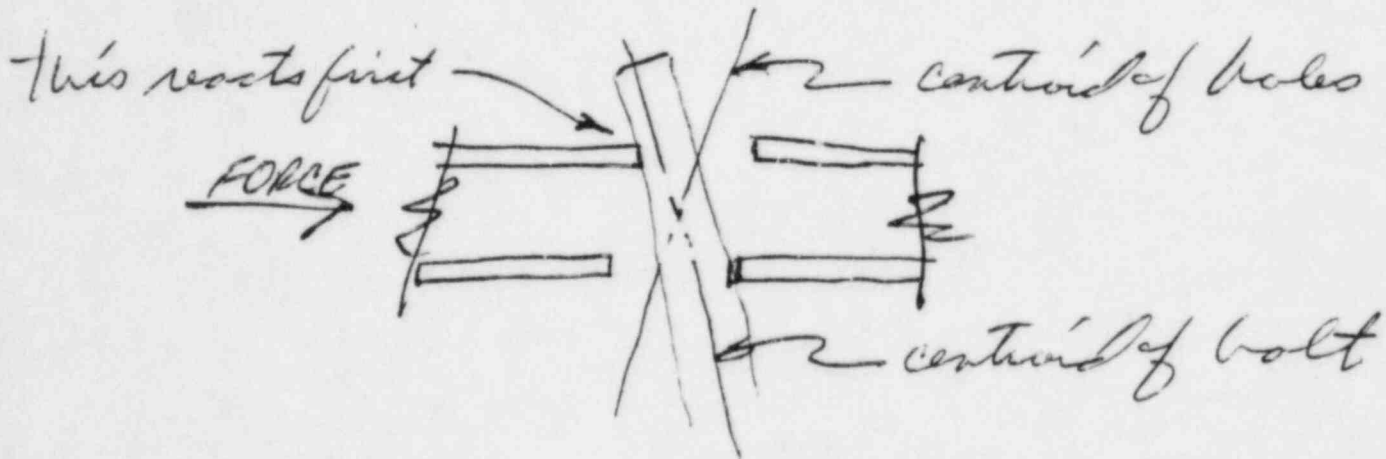
Provide any and all documentation for your answer.

- (6) Provide any and all documentation that the NCR's reviewed by Applicants "provide additional assurance that the concrete used in these tests was representative of that used at CPSES."
- (7) Who (names, titles, organizations) decided which NCR's would be reviewed?
- (8) What criteria was utilized to decide which NCR's would be reviewed?
- (9) Provide any and all documentation that the NCR's reviewed contained information on concrete pours which are representative of the concrete used at CPSES.
- (10) Provide a listing of all designations for concrete pours which indicates which building and unit is designated by the numbering system; also indicate whether or not each such pour is safety-related (the type of listing we are looking for is something like: 101- at the beginning of the concrete pour number is the designation for Unit 1 containment, which is safety-related; 201- at the beginning of the concrete pour number is the designation for Unit 2 containment, which is safety-related; etc.). Also include an explanation of what the rest of the numbers in concrete pour numbers designates.

19. Affidavit at page 21, answer, middle of page:

- a. How many supports were reviewed?
- b. Provide any and all documentation that the finite element analyses provided results which are representative of the actual conditions at CPSES.

- c. (1) Did the analyses consider the variability of the tube steel material properties, length end conditions; i.e., welded plates, angularity of the rod and insert?
- (2) Isn't it true that the effect of the top of the tube would resist the load first, and then the bottom would resist, as demonstrated in the drawing below:



- (3) Provide any and all documentation of your answers to (1) and (2) above.

20. Affidavit at page 23, last paragraph, continuing on page 24:

- a. How was the sample selected which is shown in Table 1?
- b. What is the source of the sample of 90%?
- c. What criteria is there which would require the inclined bolt or offset bolt to be shown on the drawing?
- d. What criteria was there to determine whether a support "may be primarily loaded in torsion or shear"?
- e. What was the rationale for including only supports which "may be primarily loaded in torsion or shear"?
- f. Why wasn't consideration also given to those supports which had

primarily tension and were close to allowables but the additional stresses were not accounted for?

- g. Provide any and all documentation that the supports listed in Table 1 are representative of what actually exists at Comanche Peak.
- h. Provide any and all documentation for your answers to a. through f. preceding.

21. Affidavit at page 24, continuing on page 25:

- a. Provide the screening criterion and any and all documentation regarding it or its results.
- b. How does this criterion relate to bolt holes that are offset?
- c. Why wasn't the gap between the bolt and hole considered?
- d. How do Applicants account for the offset in designs less than 1.75?
- e. Isn't it true that it is standard industry practice to use a factor of 1.0, rather than the 1.75 used by Applicants?
- f. What is Applicants' rationale for using a factor of 1.75 rather than following standard industry practice?
- g. Based on the test data, what confidence level is there that the connection will behave as intended with relation to the 1.75 factor proposed by Applicants and the 1.0 factor that is used in all designs except for Richmonds?
- h. Provide any and all documentation for your answers to a. through g. preceding.

22. Affidavit at page 34:

- a. Has a study been performed for lengths greater than 20 inches?
- b. If the answer to a. preceding is no, why not?
- c. If the answer to a. preceding is yes, what are the results of such

study (or studies) and how does this correspond to what has been stated in the Affidavit?

- d. What were the effects when the concrete strengths varied?
- e. What were the results when the concrete varied?
- f. What were the stresses imposed on the concrete due to the bending in this analysis?
- g. Provide any and all documentation for your answers to a. through f. preceding.

23. Affidavit at page 38, last paragraph:

- a. What assurance is there and/or what criteria required the NPSI designer to check for sufficient elongation?
- b. What sampling program was used to assure that the criteria discussed in a. preceding was actually utilized and implemented?
- c. How many supports were included in this analysis?
- d. List each support which was included in this analysis.
- e. Provide the drawings and calculations for each support which was included in this analysis.
- f. Provide any and all documentation for your answers to a. through d. preceding.

24. Affidavit at page 39, second paragraph:

- a. What was the basis of the sample?
- b. Provide any and all documentation that this sample is representative of the rest of the plant.
- c. Provide any and all documentation for each of your answers to a. preceding.

Regarding Gaps:

25. a. Have Applicants or their employees performed any tests or analyses regarding the effects of gaps which were not discussed in Applicants' Motion for Summary Disposition regarding gaps?
- b. Provide any and all documentation for your answer to a. preceding.
- c. If the answer to a. above is yes, provide any and all documentation regarding such tests or analyses.

Regarding U-Bolts Acting As Two-Way Restraints:

Where an affidavit is referenced, it is the 5/23/84 Affidavit of R. C. Iotti and J. C. Finneran, Jr. Regarding U-Bolts Used As One-Way Restraints Acting As Two-Way Restraints, which was Attachment 1 to Applicants' 5/23/84 Motion for Summary Disposition of CASE's Allegations Regarding U-Bolts Acting As Two-Way Restraints.

26. Affidavit at page 10, continuing on page 11:
 - a. Provide the tests which Applicants commissioned ITT Grinnell to carry out on U-bolt capability to carry both normal and lateral loads; also provide any and all documentation regarding such tests.
 - b. Provide the tests which NPSI had run in 1975 on the lateral load capability of U-bolts.

Regarding Cinched-Down U-Bolts:

Where an affidavit is referenced, it is the Affidavit of Robert C. Iotti and John C. Finneran, Jr. Regarding Cinching Down of U-Bolts, which was Attachment 1 to Applicants' 6/29/84 Motion for Summary Disposition of CASE's Allegations Regarding Cinching Down of U-Bolts. See also CASE's

11/5/84 Motions and CASE's Answer to Applicants' Response to Board Request for Information Regarding Cinching Down U-Bolts.

27. Regarding the raw data underlying Table 2 contained in Applicants' Motion for Summary Disposition on cinched-down U-bolts:

- a. What criteria was utilized to select the particular supports which were included in the sample?
- b. Regarding the 10/8/82 Brown & Root procedure for torquing U-bolts:
 - (i) How many of the supports included in the sample had their U-bolts cinched down after the 10/8/82 Brown & Root procedure went into effect?
 - (ii) How many of the supports included in the sample were torqued after the procedure went into effect?
 - (iii) How many of the supports included in the sample were inspected for torquing after the procedure went into effect?
 - (iv) How many of the supports in Unit 1 had their U-bolts cinched down:
 - (a) before the 10/8/82 Brown & Root procedure went into effect?
 - (b) after the 10/8/82 Brown & Root procedure went into effect?
 - (v) How many of the supports in Unit 1 were torqued:
 - (a) before the procedure went into effect?
 - (b) after the procedure went into effect?
 - (vi) How many of the supports in Unit 1 were inspected for torquing:
 - (a) before the procedure went into effect?
 - (b) after the procedure went into effect?
 - (vii) Indicate which of the following multiple choices is/are

correct:

The 10/8/82 procedure was:

- (a) utilized in the torquing of U-bolts in Unit 2, whereas it was not utilized, in most cases, in Unit 1 and common.
- (b) utilized in the torquing of all U-bolts in Unit 2.
- (c) utilized in the torquing of all U-bolts in Unit 1.
- (d) utilized in the torquing of all U-bolts in common.
- (e) utilized in the torquing of (20%, 30%, 40%, 50%, 60%, 70%, 75%, 80%, 85%, 90%, 95%) [choose the percentage which is the most nearly accurate for each] of the U-bolts in:

Unit 1

common

Unit 2

- c. List each support referenced in your answer to b. preceding.
- d. Regarding the listing attached to Applicants' 10/23/84 Response to Board Request for Information Regarding Cinching Down U-Bolts:
 - (1) For each support listed, state which building the support is in.
 - (2) For each support listed, state whether or not it is safety-related.
 - (3) Provide any and all documentation that the supports in the sample are representative of the supports: ○

- (i) in Unit 1.
 - (ii) in common.
 - (iii) in Unit 2.
 - (iv) in Unit 1, in common, and in Unit 2 (i.e., throughout the entire plant)
- e. Was there any type of reliability analysis performed so that one could extract the confidence level as to whether the supports would be stable utilizing the cinched-down torque values (i.e., as to whether there is sufficient torque applied to assure stability)?
- (1) Provide any and all documentation for your answer.
- f. Provide any and all documentation for each of your answers to a. through d. preceding.

Other:

28. Refer to the attached IE Information Notice No. 85-15: NONCONFORMING STRUCTURAL STEEL FOR SAFETY-RELATED USE:

- a. Have Applicants performed any tests to ascertain whether or not the actual physical properties (yield and tensile strength) of the A-36 plate material used at Comanche Peak are the same as, or greater than, that required by the A-36 material specification?
- b. If the answer is no, do Applicants anticipate undertaking any such tests?

If so, provide any and all documents regarding this.

- c. If the answer is yes, provide a summary of such test and its results.
- d. If the answer is yes, provide any and all documentation regarding

each such test and its results.

29. Isn't it true that mass participation was not considered in any of Applicants' Motions for Summary Disposition?
- a. If the answer is no, provide any and all documentation for your answer.
 - b. If the answer is yes, why wasn't it considered? Provide specific details.
30. Which of the following was considered in sampling, analyses, and/or testing in Motions for Summary Disposition other than its own (i.e., were generic stiffnesses considered in any Motion for Summary Disposition other than the Motion for Summary Disposition regarding generic stiffnesses):
- Reduction in yield strength of A500 steel
 - Damping values
 - AWS/ASME (design)
 - Friction forces
 - Section property values
 - Gaps
 - Generic stiffnesses
 - Effects of U-bolts acting as two-way restraints
 - Richmond inserts
 - Stability
 - Local displacements
 - Differential displacements
 - Effects of cinched-down U-bolts
 - Axial restraints
- Provide any and all documentation for your answer.
31. Have Applicants utilized any samples or performed any analyses or tests

considering the cumulative effects of the following:

Reduction in yield strength of A500 steel

Damping values

AWS/ASME (design)

Friction forces

Section property values

Gaps

Generic stiffnesses

Effects of U-bolts acting as two-way restraints

Richmond inserts

Stability

Local displacements

Differential displacements

Effects of cinched-down U-bolts

Axial restraints

Provide any and all documentation for your answer.

32. In regard to samples, for each of the items discussed in questions 1 through 31 preceding, supply the following information (if it has not already been supplied in answer to a previous question):

a. Do Applicants consider that the sample was a randomly selected representative sample?

b. Do Applicants consider that the sample was a randomly selected representative sample which is representative of the items:

in Unit 1?

in common (those areas shared by both Unit 1 and Unit 2)?

in Unit 2?

in Unit 1, in common, and in Unit 2 (i.e., throughout the

entire plant)?

- c. Was there a specific procedure or instruction regarding the criteria which was to have been used to select the sample?

If so, identify each such procedure or instruction, and provide a copy of each.

- d. Provide any and all documentation regarding the specific criteria which Applicants used in selecting the sample, including any and all documentation of the representativeness of the sample of the items in Unit 1, in common, in Unit 2, and/or in Unit 1, in common, and in Unit 2.
- e. Did Applicants use any recognized authoritative sampling technique (such as Military Standard 105D-63, "Sampling Procedures and Tables for Inspection by Attributes") in selecting your sample and size of your sample?

If not, why not?

If so, what specific technique(s) did you utilize? Provide a copy of each such technique.

Provide any and all documentation that such technique(s) was/were used.

- f. What is the confidence level (limit) (i.e., 95% confident that 95% of the supports will behave as predicted by the sample; 90% that 20% of the supports will behave as predicted by the sample; etc.) which one can expect (taking into consideration the sample size used, etc.)?

Provide the basis and any and all documentation for your answer.

- g. What distribution of data was assumed or considered to arrive at the confidence level (limit) (i.e., Weibull, gamma, Rayleigh,

- etc.)? Provide any and all documentation for your answer.
- h. If the confidence level (limit) was not considered, why wasn't it? If not considered before, please state now what the confidence level is based on the sample which was used? Provide the basis and any and all documentation for your answer.
 - i. Who (name, title, organization at the time) determined the specific criteria which Applicants used in selecting the sample?
 - j. Who (name, title, organization at the time) actually selected the specific items included in the sample?
 - k. Provide a list of all items included in the sample. For each, also indicate: whether the item was in Unit 1, in common, or in Unit 2; and the time frame during which the sample was performed.
 - l. Provide copies of all documentation for each of the items included in the sample.
33. If tests (actual physical tests, analytical tests, or other tests) were performed, for each of the items discussed in questions 1 through 31 preceding, supply the following information:
- a. Do Applicants consider that the items tested were representative of worst-case conditions?
 - b. Do Applicants consider that the items tested were representative of worst-case conditions for the items:
 - in Unit 1?
 - in common (those areas shared by both Unit 1 and Unit 2)?
 - in Unit 2?
 - in Unit 1, in common, and in Unit 2 (i.e., throughout the entire plant)?
 - c. Was there a specific procedure or instruction regarding the

criteria which was to have been used to determine which items were to be tested?

If so, identify each such procedure or instruction, and provide a copy of each.

- d. Was there a specific procedure or instruction regarding the criteria which was to have been used to determine which items were representative of worst-case conditions?
- e. Provide any and all documentation of the specific criteria which Applicants used in determining which items were to be tested, including any and all documentation of the representativeness of the sample of the items in Unit 1, in common, in Unit 2, and/or in Unit 1, in common, and in Unit 2.
- f. Did Applicants use any recognized authoritative testing technique (such as Military Standard 105D-63, "Sampling Procedures and Tables for Inspection by Attributes") in performing the test?

If not, why not?

If so, what specific technique(s) did you utilize? Provide a copy of each such technique.

Provide any and all documentation that such technique(s) was/were used.

- g. What is the confidence level (limit) (i.e., 95% confident that 95% of the supports will behave as predicted by the test results; 90% that 20% of the supports will behave as predicted by the test results; etc.) which one can expect?

Provide the basis and any and all documentation for your answer.

- h. What was the confidence level (limit) which the Applicants required prior to the sample's being taken?

Provide the basis and any and all documentation for your answer.

- i. What distribution of data was assumed or considered to arrive at the confidence level (limit) (i.e., Weibull, gamma, Rayleigh, etc.)? Provide any and all documentation for your answer.
- j. If the confidence level (limit) was not considered, why wasn't it? If not considered before, please state now what the confidence level is based on the test results? Provide the basis and any and all documentation for your answer.
- k. Provide any and all documentation of the specific criteria which Applicants used in determining which items were representative of worst-case conditions.
- l. Did Applicants use any recognized authoritative testing technique (such as Military Standard 105D-63, "Sampling Procedures and Tables for Inspection by Attributes") in determining which items were representative of worst-case conditions?

If not, why not?

If so, what specific technique(s) did you utilize? Provide a copy of each such technique.

Provide any and all documentation that such technique(s) was/were used.
- m. What is the confidence level (limit) which one can expect that Applicants' tests were representative of worst-case conditions?

Provide the basis and any and all documentation for your answer.
- n. What was the confidence level (limit) which the Applicants required prior to the test being performed?

Provide the basis and any and all documentation for your answer.

- o. What distribution of data was assumed or considered to arrive at the confidence level (limit) (i.e., Weibull, gamma, Rayleigh, etc.)?

Provide any and all documentation for your answer.

- p. If the confidence level (limit) was not considered, why wasn't it? If not considered before, please state now what the confidence level is, based on the test results, that Applicants' tests were representative of worst-case conditions? Provide the basis and any and all documentation for your answer.
- q. Who (name, title, organization at the time) determined the specific criteria which Applicants used in determining which items were to be tested?
- r. Who (name, title, organization at the time) determined the specific criteria which Applicants used in determining which items were representative of worst-case conditions?
- s. Who (name, title, organization at the time) actually selected the specific items to be included in the test?
- t. Provide a list of all items included in the test. For each, also indicate: whether the item was in Unit 1, in common, or in Unit 2; and the time frame during which the sample was performed.
- u. Provide a list of all items included in the sample which were considered to be representative of worst-case conditions.
- v. Provide copies of any and all documentation for each of the items included in the test.
- w. What is the basis for Applicants' belief that the items tested are representative of worst-case conditions?

x. Provide copies of any and all documentation that the items tested are representative of worst-case conditions.

y. Were there any tests performed which were not included in Applicants' discussions in their Motions for Summary Disposition? If the answer is yes, provide the answers to questions a. through x. preceding for each such test, as well as the results of, and any and all documentation regarding, each such test.

z. Have any additional tests been performed since the time when any of Applicants' Motions for Summary Disposition were filed?

If the answer is yes, provide a brief summary of each such test.

If the answer is yes, provide the answers to questions a. through x. preceding for each such test, as well as the results of, and any and all documentation regarding, each such test.

aa. Is it anticipated that any additional tests will be performed?

If the answer is yes, provide a brief summary of each such test.

If the answer is yes, provide the answers to questions a. through x. preceding for each such test, as well as the results of, and any and all documentation regarding, each such test.

Provide the information as soon as any portion of it is available.

bb. Where your answers to any of questions 1 through 33 preceding concern an individual, for each of the individuals referenced in your answer, supply the following information:

(1) Is the individual still employed at Comanche Peak?

(2) What was the individual's position and job description at the time the referenced decision was made?

- (3) Has the individual had a change in shifts, position, pay scale, etc., since the time the referenced decision was made?
- (4) If the answer to (3) above is yes, supply complete details. Also supply all documents, including specifically job performance ratings, counseling reports, exit interviews, etc., regarding all such changes.
- (5) Has the individual quit or been terminated since the time the referenced decision was made?
- (6) If the answer to (5) above is yes, supply complete details, including whether or not such individual was fired or laid off, the reason for such action, and all other related details. Also supply all documents, including specifically job performance ratings, counseling reports, exit interviews, etc. Also include the individual's last known address and telephone number.

34. Provide any and all documentation that the A36 and A307 steel which Applicants tested is representative of the steels actually employed at Comanche Peak.

Also answer questions 33 and 34 preceding in regard to SA36 and SA307 steels.

35. If not already provided, supply CASE with copies of all answers to requests for information and all documents which Applicants have provided or will provide to the NRC Staff (including the TRT, Contention 5 Panel, Region IV, and all other panels, committees, individuals, etc., with the NRC) in response to the Staff's questions

or requests for documents. These should include (but not be limited to) all documents requested during the meetings between the Staff and Applicants on February 26, 27, and 28, 1985, and March 5, 6, and 7, 1985.

Regarding the documents not already provided, please supply CASE with copies at the same time you supply them to the Staff.

35. If not already provided, supply CASE with copies of all answers to requests for information and all documents which Applicants have provided or will provide to Cygna in response to Cygna's questions or requests for documents.

Regarding the documents not already provided, please supply CASE with copies at the same time you supply them to Cygna.

36. It is CASE's understanding (from statements made during the February 26 and 27, 1985, meetings between the Applicants and NRC Staff) that Applicants have hired several individuals who are with Terra Corporation as "independent" outside consultants who will review the design/design QA issues as well as the problems identified by the NRC's Technical Review Team.

- a. Is this correct? If not, provide correct information in this regard.
- b. Is it true that these consultants will also be reviewing and overseeing sampling and testing as part of their duties? If not, who (names, titles, organizations) will be doing such reviewing and overseeing?
- c. Provide full and complete details (including any and all resumes, background, qualifications, and training, contracts, letters of understanding, letters of intent, statement of protocol, statement

of scope, and all other documentation as defined on page 2, item 3, of this pleading) regarding these consultants and their duties.

Include specifically any and all documentation regarding the qualifications of each consultant regarding sampling and testing.

Also include specifically full and complete details and a discussion of each consultant's ties and past associations with Applicants' John Beck.

- d. Provide CASE with copies of all answers to requests for information and all documents which Applicants have provided or will provide to these consultants in response to their questions or requests for documents.

Regarding the documents not already provided, please supply CASE with copies at the same time you supply them to the consultants.

- 37. Will Applicants' academic expert be reviewing and analyzing samples and testing as part of his duties? If so, provide any and all documentation regarding his qualifications regarding sampling and testing.
- 38. Have Applicants hired consulting firm(s) or consultants who are, or will be, doing the statistical sampling, analyses, and/or setting the parameters for testing, sampling, etc. (including but not necessarily limited to Applicants' evaluation and response to the TRT's and the NRC's Walsh/Doyle Allegation Panel's questions and concerns) as "independent" outside consultants who will review the design/design QA issues as well as the problems identified by the NRC's Technical Review Team?
 - a. If the answer is no, provide correct information in this regard.
 - b. Will these consultants actually be doing the statistical sampling,

analyses, and/or setting the parameters for testing, sampling, etc.? Will they also be reviewing and overseeing sampling and testing as part of their duties? If not, who (names, titles, organizations) will be performing each of these functions?

Supply specific detailed information regarding the duties of these consultants and/or others who will be performing each of these function.

- c. Provide full and complete details (including any and all resumes, background, qualifications, and training, contracts, letters of understanding, letters of intent, statement of protocol, statement of scope and all other documentation as defined on page 2, item 3, of this pleading) regarding these consultants and/or others and their duties.

Include specifically any and all documentation regarding the qualifications of each individual regarding sampling and testing.

Also include specifically full and complete details and a discussion of each individual's ties and past associations with Applicants' John Beck and with one another.

- d. Provide CASE with copies of all answers to requests for information and all documents which Applicants have provided or will provide to these individuals in response to their questions or requests for documents.

Regarding the documents not already provided, please supply CASE with copies at the same time you supply them to the individuals.

39. a. Identify (name, title, organization, and brief job description) each of the individuals who constitute any review team which is

reviewing and/or addressing the TRT findings and/or the Walsh/Doyle design/design QA issues. Include details regarding John Beck, James Wells, Phillip Halstead, David McAfee, and Jack Redding.

Include in your answer what part each will play in doing the statistical sampling, analyses, and/or setting the parameters for testing, sampling, etc. (including but not necessarily limited to Applicants' evaluation and response to the TRT's and the NRC's Walsh/Doyle Allegation Panel's questions and concerns).

- b. Will these individuals actually be doing the statistical sampling, analyses, and/or setting the parameters for testing, sampling, etc.? Will they also be reviewing and overseeing sampling and testing as part of their duties? How will each of these individuals interface with those individuals who will be performing each of these functions.

Supply specific detailed information regarding the duties of these individuals.

- c. Provide full and complete details (including any and all resumes, background, qualifications, and training, contracts, letters of understanding, letters of intent, statement of protocol, statement of scope, and all other documentation as defined on page 2, item 3, of this pleading) regarding each of these individuals and their duties.

Include specifically any and all documentation regarding the qualifications of each individual regarding sampling and testing.

Also include specifically full and complete details and a discussion of each individual's ties and past associations with Applicants' John Beck, with one another, and/or with anyone else

associated with Applicants (see page 2, item 2, of this pleading).

- d. Provide CASE with copies of all answers to requests for information and all documents which Applicants have provided or will provide to these individuals in response to their questions or requests for documents.

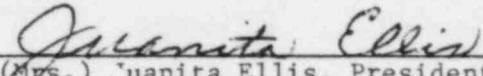
Regarding the documents not already provided, please supply CASE with copies at the same time you supply them to the individuals.

CASE believes that all documents discussed in CASE's First, Second, Third, Fourth, and Fifth Sets of Interrogatories to Applicants and Requests to Produce re: Credibility which pertain in any way to the Walsh/Doyle allegations or Applicants' Plan to resolve the design/design QA concerns should be provided by Applicants at no charge to CASE. It was CASE's understanding at the time we agreed to Applicants' proposals in this regard that we would be provided with three copies (one for Mr. Walsh, one for Mr. Doyle, and one for CASE) of each such document.

Regarding the rest of the documents we have requested, CASE believes that 7 cents a page is a reasonable price to pay for them.

If Applicants do not agree with CASE regarding the charges for copying, please promptly advise so that we can make whatever arrangements are necessary in advance of reviewing the documents. (See also discussion in CASE's 2/25/85 Fourth Set of Interrogatories to Applicants and Requests to Produce re: Credibility (page 44).)

Respectfully submitted,



(Mrs.) Juanita Ellis, President
CASE (Citizens Association for Sound
Energy)
1426 S. Polk, Dallas, Texas 75224
214/946-9446

Attachment: IE Information Notice No. 85-15: NONCONFORMING STRUCTURAL STEEL
FOR SAFETY-RELATED USE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

February 22, 1985

IE INFORMATION NOTICE NO. 85-15: NONCONFORMING STRUCTURAL STEEL FOR
SAFETY-RELATED USE

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or construction permit (CP).

Purpose:

This information notice is provided to alert recipients of a potentially significant problem pertaining to the structural material provided by steel suppliers for safety-related use, especially plate that the steel suppliers cut into small pieces. It is expected that recipients will review the information for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem occurring at their facilities. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

On August 3, 1984, Illinois Power Company made notification of a potentially reportable deficiency concerning ASTM A-36 plate material. A 1/2 x 15 x 15 in. plate of steel did not behave as expected in a mechanical cutting operation. Subsequent testing of this plate showed that the physical properties (yield and tensile strength) were less than that required by the A-36 material specification. Confirmatory testing of samples from other plates having the same identification number (the material manufacturer's heat number) by a different laboratory also showed that the yield and tensile strengths were lower than required. For all the samples tested with this identification number, the lowest yield strength was 14% below the ASTM minimum and 23% below the certified material test report (CMTR). The lowest tensile strength was 24% below the ASTM minimum and 34% below the CMTR. The certified material test report, which accompanied this material, came from Phoenix Steel Corporation. The report showed that the material met the requirements of ASTM A-36 and was manufactured in 1980.

Subsequently, Phoenix Steel performed a chemical analysis of two other samples with the same identification number and concluded that this material was not made by them. Phoenix Steel makes steel from scrap and the analysis of trace chemical elements showed a purity not possible from the remelting of scrap material. Testing of an additional sample with the same identification by an independent laboratory confirmed this analysis.

The Illinois Power Company began a thorough examination program and discovered a 1/2 x 10 x 10 in. steel plate with a different identification number that also had yield and tensile strengths lower than required by the A-36 material specification. The certified material test report, which accompanied this material, came from Bethlehem Steel Corporation. The report showed that the material met the requirements of ASTM A-36 and was manufactured in the last half of 1980. Testing of an additional sample with the same identification by an independent laboratory also showed yield and tensile strengths lower than required. For all the samples tested with this identification number, the lowest yield strength was 16% below the ASTM minimum and 36% below the CMTR. The lowest tensile strength was 25% below the ASTM minimum and 45% below the CMTR.

Neither Bethlehem Steel nor Phoenix Steel sell steel cut into small pieces. In both cases, an independent supplier, Interstate Steel Supply Company of Philadelphia, Pennsylvania, provided the material to Illinois Power Company. Interstate Steel purchases plates, shapes and rectangular tubing in large quantities from steel mills and other suppliers. The material is usually resold, as is, to small users, but occasionally the material is cut into smaller sizes. Interstate Steel does not have an ASME Quality System Certificate, but does supply structural steel for safety-related use. The Clinton Power Station purchased material from Interstate Steel for safety-related pipe supports, conduit supports, beam stiffeners, and cable pan hangers.

Traceability of Cut Material

Until recently, Interstate Steel had a subcontractor perform all cutting of plate. A review of certified material test reports, shipping invoices and purchase orders, as well as discussions with subcontractors, indicated that traceability was not maintained when material was sent out for cutting. Interstate Steel was unable to show that the material that their vendor cut to size and shipped to Clinton was the material shown on the certified material test report.

A comparison was made between the quantities of steel listed on the certified material test report, identified by heat number, and the quantities of steel received by Illinois Power Company with the same heat number. There were several instances where the quantities of cut plate shipped by Interstate Steel exceeded the dimensional limitations of the material supplied under the same heat number by Bethlehem Steel to Interstate Steel. The disparities have not been resolved.

Safety-Related ASME Code Material

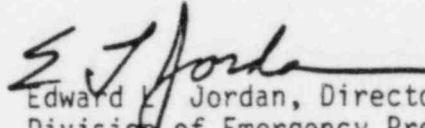
A review of certified material test reports, which were supplied by Interstate Steel for material delivered after April 1982 to Clinton, revealed that Interstate Steel purchased material from sources that were not approved to supply ASME material, in accordance with the requirements of Subarticle NA-3700 of Section III of the ASME Code. The testing necessary to upgrade the material, as required by Subarticle NA-3700, was not performed.

Interstate Steel maintains inventory records by size, not by heat number, and it does not retain inventory records beyond 4 years. The records do not provide positive identification of the customers for a specific manufacturer's heat number.

The Illinois Power Company is locating the material that is suspected of having lower-than-specified yield and tensile strengths and is evaluating the effect of reduced strength on safety. Further testing of material is being performed.

Interstate Steel has provided a list (Attachment 1) of the nuclear power reactor facilities to which they have supplied material. In two instances, only the name of the utility was furnished. The list does not contain information about the safety significance of the material.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate NRC regional office or this office.



Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contacts: P. Cortland, IE
(301) 492-4175

E. T. Baker, IE
(301) 492-4874

Attachments:

1. List of Nuclear Power Reactor Facilities Receiving Material from Interstate Steel
2. List of Recently Issued IE Information Notices

LIST OF NUCLEAR POWER REACTOR FACILITIES
RECEIVING MATERIAL FROM INTERSTATE STEEL

<u>UTILITY</u>	<u>FACILITY</u>
Carolina Power & Light Company	Shearon Harris Nuclear Power Plant
Consumers Power Company	Unknown
Duke Power Company	Unknown
Duquesne Light Company	Beaver Valley Power Station
Florida Power & Light Company	Turkey Point Plant
Georgia Power Company	Alvin W. Vogtle Nuclear Plant
GPU Nuclear	Three Mile Island - 1
GPU Nuclear	Three Mile Island - 2
Gulf States Utilities	River Bend Station
Illinois Power Company	Clinton Power Station
Long Island Lighting Company	Shoreham Nuclear Power Station
Niagara Mohawk Power Company	Nine Mile Point
Northeast Utilities	Millstone Nuclear Power Station Unit 3
Pennsylvania Power & Light Company	Susquehanna Steam Electric Station
Philadelphia Electric Company	Limerick Generating Station
Philadelphia Electric Company	Peach Bottom Atomic Power Station
Power Authority of the State of New York	Indian Point Nuclear Power Plant
Public Service Company of New Hampshire	Seabrook Station
Public Service Electric & Gas Company	Hope Creek Generating Station
Public Service Electric & Gas Company	Salem Nuclear Generating Station
Virginia Electric & Power Company	Surry Power Station

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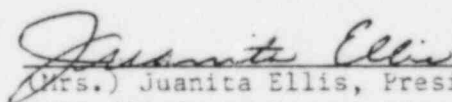
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