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BEFORE THE  
UNITED STATES  
NUCLEAR REGULATORY COMMISSION



Before the Atomic Safety and Licensing Appeal Board

In the Matter of )  
 )  
TEXAS UTILITIES GENERATING COMPANY, ) Dkt. Nos. 50-445-CPA  
 et al. )  
 )  
(Comanche Peak Steam Electric )  
 Station, Unit 1) )

CASE AND MEDDIE GREGORY'S OPPOSITION  
TO APPEAL OF TUEC AND NRC STAFF

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I.  
The Licensing Board's Acceptance of the Challenge  
to TUEC's Failure to Meet Its Burden of Proof  
Is Not Contested Here

This is a proceeding for consideration of the issuance of an amendment to extend the completion date for Unit 1 of the Comanche Peak Steam Electric Station (CPSES) owned by Texas Utilities Electric Company (TUEC) in Glen Rose, Texas. Pursuant<sup>1</sup> to Section 185 of the Atomic Energy Act (42 USC §2235), 10 CFR §50.55(b), and 10 CFR §2.732, the burden is on TUEC to demonstrate that it meets the requirements for issuance of the amendment. The Commission held in Washington Public Power Supply System (WPPSS Nos. 1 & 2), CLI-82-29, 16 NRC 1221, 1229 (1982):

In seeking an extension, a permit holder must put forth reasons, founded in fact, that

<sup>1</sup>  
Whether this hearing should precede or follow the decision on the requested amendment is one of the issues now pending before the United States Court of Appeals for the District of Columbia Circuit in CASE v. U.S.N.R.C. (C.A. No. 86-1169).

explain why the delay occurred and those reasons must, as a matter of law, be sufficient to sustain a finding of good cause.

Contrary to these well established principles, Staff and TUEC argue that the only possible valid contention which CASE and Meddie Gregory (Consolidated Intervenors) can present is to prove themselves that there is no good cause for the delay and the extension. However, the contention presented by Consolidated Intervenors is, inter alia, a challenge to the failure of TUEC to meet its burden of proof -- a challenge which neither TUEC nor the Staff have contested. Consolidated Intervenors contend that:

Applicants have not met their burden of proving that the delay in completion of construction was not caused by their own dilatory conduct.

In support of this contention, Consolidated Intervenors have alleged that:

Applicants have not given any reason for the existence of the delay. They only assert they need more time to complete a reinspection, redesign, and reconstruction program but they do not disclose the reason why such programs are needed or that the reason for delay was not intentional and without a valid purpose.

The basis for this allegation is TUEC's license amendment application (not the unsworn argument of its counsel) which contains only explanations for why TUEC needs more time for completion of Unit 1 but absolutely no basis for what good cause existed for the delay in the first place.

The Licensing Board held that Consolidated Intervenors presented an adequate basis for their allegation that TUEC had not met its burden of proof. Special Prehearing Conference

Memorandum and Order, Slip Op. p. 10:

Petitioners appear to be correct in pointing out that Applicants have not alleged the underlying cause of the delay in completing construction nor what valid purpose may explain that delay.

Thus, regardless of the outcome of this appeal, the decision of the Licensing Board admitting that portion of Consolidated Intervenors' contention challenging the failure of TUEC to prove that it either did not deliberately cause the delay in completion of construction or if it did that it had a valid business purpose for doing so will remain and a hearing on that issue will be held.

## II.

The Appeal Board is Without Jurisdiction  
To Consider Any Portion of the Appeal,  
Which, at This Time, If Granted,  
Would Not Result in Denial of the Hearing

This Board lacks jurisdiction to hear any challenge to the grant of a petition to intervene except "on the question whether the petition and/or the request for a hearing should have been wholly denied." 10 CFR §2.714a(c). The Appeal Board has consistently applied the corollary of this doctrine to intervenors who sought to appeal the denial of some contentions where other contentions were admitted. See 10 CFR §2.714a(b), and see, e.g., Houston Lighting & Power Co. (Allens Creek, Unit 1), ALAB-535, 9 NRC 377, 384 (1979), and Power Authority of the State of New York (Green County), ALAB-434, 6 NRC 471 (1977).

As noted in I., supra, neither TUEC nor the Staff challenge the Licensing Board decision on the admissibility of the allegation that TUEC has failed to meet its burden of proof and

that issue will be litigated. Thus, since the challenges to the admissibility of Consolidated Intervenors' allegations regarding their view of the real reasons for delay would, even if accepted, not wholly dispose of the Petition to Intervene, this Board should not entertain those challenges.

III.

The Licensing Board Was Correct In Allowing  
The Challenge Based Upon Establishing That the Real Cause  
For the Delay Was a Deliberate Invalid Purpose

The other aspect of Consolidated Intervenors' contention, which TUEC and the Staff do attack, is the allegation regarding the real cause for the delay in constructing the plant. Two issues are raised on appeal by these attacks: (1) whether it is relevant, in deciding if TUEC should be granted the unconditional extension of its construction permit that it is seeking, that the cause for the delay in completion of construction was a deliberate disregard of the admonitions of the NRC staff, outside auditors, and the Licensing Board, for which no valid business purpose exists; and (2) whether, as a matter of law, reference to the documents that demonstrate repeated warnings to TUEC about its failure to properly design, construct, and inspect CPSES Unit 1 and the failure of TUEC either to explain its refusal or to give a valid business purpose for the refusal are sufficient bases to support this aspect of the contention.

- A. Deliberate and Repeated Refusals to Properly Design, Construct, and Inspect the Plant, Which Resulted in Delay in Completing Construction of CPSES, Do Not Justify an Unconditional Extension of Time to Complete Construction of CPSES.

In CLI-82-29, the Commission, after analyzing the question of what issues may be raised in a construction permit extension proceeding, concluded, contrary to the thrust of TUEC's pleading, that there are permissible bases for challenging a construction permit extension (Washington Public Power Supply System (WPPSS, Nos. 1 & 2), supra, 16 NRC at 1230):

An intervenor is thus always free to challenge a request for a permit extension by seeking to prove that, on balance, delay was caused by circumstances that do not constitute "good cause." [footnote omitted]

In that opinion the Commission also framed the central issue to be addressed in a construction permit extension proceeding (Id.):

We believe that the most "common sense" approach to the interpretation of section 185 and 10 CFR §50.55 is that the scope of a construction permit extension proceeding is limited to direct challenges to the permit holder's asserted reasons that show "good cause" justification for the delay.

This articulation of the relevant legal issue was refined by the Appeal Board in Washington Public Power Supply System (WPPSS No. 2), ALAB-722, 17 NRC 546, 553 (1983):

In this connection, we note that the ultimate "good cause" determination called for by Section 185 of the Atomic Energy Act is whether good cause exists to extend the construction completion date. The statutory focus is not so much (or at least, not exclusively) on an applicant's past conduct, but rather on the future. Plainly then, that ultimate "good cause" determination is expected to encompass a judgment about why the plant should be completed and is not to

rest solely upon a judgment as to the applicant's fault for delay.

We recognize that the Commission's implementing regulation, 10 CFR §50.55(b), does not track the statute in all respects and focuses on whether the applicant was responsible for the delay. But as we discern the Commission's intent, its regulation and guidance suggest that, unless the applicant was responsible for the delays and acted in a dilatory manner (*i.e.*, intentionally and without a valid purpose), a contested construction permit extension proceeding is not to be undertaken at all. Moreover, even if a properly framed contention leads to such a proceeding and is proven true, the statute and implementing regulations do not erect an absolute bar to extending the permit. A judgment must still be made as to whether continued construction should nonetheless be allowed.

Thus TUEC must show both that the delay was not caused intentionally or was for a valid business purpose and that there is good cause for the extension.

In Public Service Company of New Hampshire (Seabrook), CLI-84-6, 19 NRC 975 (1984), the Commission endorsed the Appeal Board's refinement of the standards applicable to a construction permit extension proceeding.

Consolidated Intervenors contended and the Licensing Board agreed that if, in the face of continuing criticism, TUEC deliberately and repeatedly refused to design, construct, and inspect its plant properly and that refusal was the cause for the delay in completion of construction, then it could not constitute a valid business purpose for the delay. TUEC challenges this position by arguing, in essence, that deliberately and repeatedly refusing to design, construct, and inspect its plant properly is a valid business purpose for delay in completing construction of

the plant. Whatever else constitutes a valid business purpose before the NRC, such deliberate and repeated refusal to do the job right cannot qualify.

A central source of the controversy between TUEC and Consolidated Intervenors arises because we do not have the same view of what delay should be the focus of the inquiry. TUEC argues that delay refers to the additional time now needed to complete design, construction, and inspection and that completing that work will delay completion of Unit 1. Consolidated Intervenors and the Licensing Board focus on the delay in building the plant properly in the first instance. That this latter view correctly defines the delay to which the regulation refers is clear from 10 CFR §50.55(b), which lists several examples of delay that could constitute good cause:

The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date.

All of these are factors which address why more time is needed to complete construction and not whether more time is needed to complete construction. Thus, in this proceeding, where there is a tacit admission that Unit 1 was not properly built,<sup>2</sup> the focus

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TUEC recently conceded in a filing to the Securities and Exchange Commission that it (8-K Filing with SEC, 4/18/86):

now expects that modifications (most of which are minor) will be required on approximately thirty percent of the pipe supports in Unit 1 and has also directed the replacement of containment electrical penetrations in such

of the inquiry is: why was it not properly built initially, was TUEC responsible, and was its reason for not building it properly a good cause for the delay?

Based on its invalid analysis of what delay is the focus of the inquiry, TUEC argues that in CLI-82-29 the Commission intended to rule that every application for an extension of a construction permit that had as its purpose completion of construction by correction of past deficiencies would be granted regardless of why it was necessary to have more time to complete proper construction and why the original construction permit time limits were insufficient. TUEC Brief, pp. 20-25. That argument is severely flawed in several crucial respects, all of which demonstrate the fallacy in focussing on the delay necessitated by having to engage in corrective actions rather than the delay in building the plant properly in the first instance.

First, using TUEC's argument, all contentions in the WPPSS case should have been rejected regardless of the reason for the delay in completing lawful construction, since the WPPSS case undeniably involved a request for more time to correct

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Unit. While this construction effort is expected to be completed before the end of 1986, due to uncertainties regarding further reinspections and rework and the nature and extent of the hearing process before the Atomic Safety and Licensing Board thereafter, Electric Company is unable at this time to predict how much additional time will be required to obtain license approval to permit the operation of Unit 1 or the extent to which presently estimated construction costs will be exceeded.

construction deficiencies. See particularly TUEC Brief, p. 22. Of course, that is not what occurred in the WPPSS case and the Commission remanded to the Licensing Board one contention as to which it concluded (CLI-82-29, supra at 1231):

This leaves only joint contention 2 supporting CSP's hearing request, which charges that "delays in construction have been under the full control of WPPSS management." To the extent CSP is seeking to show that WPPSS was both responsible for the delays and that the delays were dilatory and thus without "good cause" this contention, if properly particularized and supported, would be litigable. See 10 CFR §2.714.

This holding directly contradicts TUEC's claim that whenever a utility needs more time for correcting construction deficiencies the Commission "created ... a flat exception to the rule on 'dilatory;' this exception is a separate rule excluding a class of contentions on a per se basis." TUEC Brief, p. 22.

Second, the portion of CLI-82-29 to which TUEC refers is a limited articulation of reasoning applicable to the facts then before the Commission -- facts importantly different from the facts presented here. Significantly, in WPPSS, the intervenor alleged in the first contention relating to WNP-2 that solely because there were construction deficiencies and those deficiencies were the cause for the delay, the delay was not for a good cause. The Commission rejected such an analysis and decided that the mere existence of deficiencies could not prove the absence of a good cause but rather a subjective test focussing on the motive for the delay was required, i.e., was the delay dilatory? Consolidated Intervenors, unlike the WPPSS intervenor, here allege that the motive for the delay was the

deliberate and repeated refusal to build the plant properly in the face of external audits and investigations consistently warning TUEC over a ten-year period. Thus here the crucial missing ingredient in WPPSS -- the bad motive for the delay -- has been alleged.

Third, the policy applicable to the analysis in CLI-82-29, i.e., not discouraging a permit holder from reporting and correcting deficiencies, is not applicable in this case. The refusal to build Unit 1 properly was in the face of repeated warnings from, among others, the NRC and the Licensing Board and not until the NRC Technical Review Team (TRT) actually found a system-wide QA/QC breakdown and construction and design deficiencies in the allegedly completed plant did TUEC agree to address these problems. TUEC did not agree to take the time to correct its past errors until it was forced to do so by the NRC staff, which conditioned its further review of the proposed operating license on TUEC's addressing the problems identified by the TRT. Surely where the problems whose correction necessitates the extension of time are well known by the NRC staff before the applicant either acknowledges them or agrees to address them, where staff approval of the requested operating license is conditioned on addressing those problems, and where the problems were well known by TUEC for ten years but it did nothing to correct them, there is no opportunity to "discourage permit holders from disclosing and correcting improper construction." CLI-82-29 supra at 1231.

What Consolidated Intervenors allege occurred is that TUEC had a policy that it would not obey the procedures for building

Unit 1 properly where following those procedures would result in an immediate substantial delay in completing construction. TUEC hoped that it could evade the consequences of such illegal activity (1) by avoiding detection, (2) by post hoc engineering analyses, and/or (3) by seeking an exemption from the regulatory requirement. TUEC knew or should have known that if this scheme did not work there would be a substantial delay, but decided to take the risk. Consolidated Intervenors are entitled to have the opportunity promised by the regulation, the Commission, the Appeal Board, and the Licensing Board to prove their allegations since such conduct could not possibly constitute good cause for the delay in completing proper construction of Unit 1.

- B. Adequate Basis Was Provided Such That TUEC and the Staff Know What They Will Have to Defend Against or Oppose.

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In what is the most recent seminal case on the issue of what is an adequate "basis" to support a contention, the Appeal Board reiterated that the standard for deciding whether sufficient basis exists is whether "applicant and the staff were supplied with enough 'so that they will know at least generally what they will have to defend against or oppose.'" Houston Lighting & Power Co. (Allens Creek), ALAB-590, 11 NRC 542, 549 n. 10, quoting from Philadelphia Electric Co. (Peach Bottom Units 2 & 3), ALAB-216, 8 AEC 13, 20 (1974). Neither the Staff nor TUEC

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The original seminal decision was Mississippi Power & Light Co. (Grand Gulf Units 1 & 2), ALAB-130, 6 AEC 423 (1973), which the licensing board and the parties in Allens Creek ignored.

have claimed or could claim that they do not know what they will have to defend against or oppose in this proceeding.

Perhaps in their initial pleadings in this proceeding Consolidated Intervenors too readily assumed that the Staff and TUEC would appreciate pleadings which were reasonably concise and free of excess verbiage. Since all parties had been in the operating license proceeding for some time, since all were parties to the proceeding initiated by TUEC's January 29th request for an amendment, and since all were appearing before the same licensing board members,<sup>4</sup> Consolidated Intervenors felt confident that TUEC and the Staff would know precisely what documents were referenced in the contentions, and assuredly they do.

During oral argument, we made this even clearer by referencing Appendix B attached to the CASE Request to the Commission in this proceeding when a hearing on TUEC's amendment

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<sup>4</sup> TUEC and the Staff refer to this as "fortuitous" and a "serendipitous coincidence," respectively. TUEC Brief at p. 26; Staff Brief at p. 8. Actually CASE specifically asked for appointment of the same board as was sitting on the operating license in order to foster "efficiency" because the record would include many of the same facts. CASE Request for Imposition of Fine, Suspension of Construction Activities, and Hearing on Application to Renew Construction Permit (1/31/86), p. 14 (hereinafter "CASE Request"). One of those efficiencies is that all parties and the board have a history that can be relied upon without unnecessary duplication. Apparently the Chairman of the ASLB Panel accepted CASE's reasoning and assigned the same judges to hear this proceeding as are sitting in the operating license proceeding. That decision was neither fortuitous nor coincidental but the culmination of CASE's strategy. Were we to immodestly choose an adjective to describe the result of this strategy, "sagacious" would seem far more appropriate than "fortuitous" or "serendipitous coincidence."

application was requested. Appendix B (attached in its entirety to this pleading for the convenience of this Board) consists of 57 pages of summaries of findings and excerpts from more than twenty documents which disclose a long history of repeated warnings about recurring improper practices, and finally confirmation that these practices had in fact led to significant deficiencies in the as-built plant. Consolidated Intervenors have also attached to this Brief references to findings and decisions related to TUEC's failure to properly design the plant and failure to correct design errors.

There really cannot be any serious doubt that this meets and far exceeds the "basis" test laid down by the Appeal Board. Consolidated Intervenors not only provided the reasoning behind their contention (Houston Lighting & Power Co. (Allens Creek), supra at p. 548) -- i.e., that the consistent and repeated refusal to follow proper procedures was the cause for the delay in constructing a properly built plant and that was a deliberate decision by TUEC which could not be a valid business purpose -- but also provided extensive and detailed references to some of the evidence upon which they relied for their position (id. at pp. 548-9 and n. 10, and cases cited there).

Apparently what TUEC is really objecting to is the failure of Consolidated Intervenors to produce the "smoking gun" -- the memo from a TUEC official confessing that TUEC had the policy it is alleged to have had. Concededly, at least until we have the full discovery to which we are entitled, we will not have such a document or oral confession, and there is no legal requirement that we do so. That is the crucial difference between providing

the reasoning that forms the basis for a contention and providing the evidence to support that reasoning.

However, Consolidated Intervenors do have a wealth of data from which at least a reasonable inference can be drawn that (1) TUEC deliberately and repeatedly chose not to build its plant properly -- i.e., the ten years of documents warning it that it was ignoring proper procedures and its late (1985) and reluctant (only after the Staff decided to hold up its review pending completion of a reinspection, redesign, and reconstruction effort) agreement to start listening to and doing something about the problems; and (2) TUEC did not have a valid business purpose for its failure to complete the proper construction of the plant in the time allowed by its permit.

Among these documents are the opinions of experts who examined the design, inspection, and construction process at Comanche Peak from time to time and who conclude that TUEC did have the devious and invalid purpose for its conduct that Consolidated Intervenors attribute to it. These opinions are cited in Appendix B to the CASE Request to the Commission, which is attached to this Brief. A few of these expert opinions are reproduced here to illustrate the point (CASE Summary of NRC Inspections and Independent Audits From 1976 to January 1985, pp. 1-2):

In 1976 an internal NRC trend analysis of Comanche Peak stated:

During the early part of 1976, it became apparent to the principal inspector that the effectiveness of the licensee's QA/QC Program was in a state of degradation as a result of a domineering and over-powering control by the

contractor's site construction management.  
(NRC Trend Analysis 1976, Staff Exhibit 184,  
p. 1, Items 3, f, and g.)

In 1979 the NRC found that the QA/QC program  
was ineffective because the Applicant

has been led down a poor path by Brown and  
Root during past years. It appears to [the  
RRI] that Brown and Root has, in many  
instances, provided construction procedures  
to fulfill Appendix B that provide a minimum  
amount of direction to the construction force  
and yet comply to the words, if not the  
spirit of Appendix B.

What I have begun to see, but have difficulty  
proving is that the Brown and Root  
construction philosophy is to build something  
anyway they want to and then put it up to the  
engineer to document and approve the "as  
built" condition. If the engineer refuses,  
he is blamed for being too conservative and  
not responsive to the client's needs and thus  
the driving force behind my request for a  
special engineering audit of site operations.

. . . .

In 1980, the first annual Systematic Assessment  
of Licensing Performance report (IE Report #80-25,  
NRC Staff Exhibit 181), continued to report  
problems with the QA/QC program, unqualified  
personnel, and attitude toward regulations.

The report concludes the following about the  
effectiveness and attitudes of licensing personnel  
in complying with NRC requirements:

Licensee construction and engineering  
management -- the NRC personnel stated that  
it appears there is a continuing tendency to  
engineer away construction problems rather  
than enforce compliance to drawings and  
specifications.

It was this arrogance and obstinance by TUEC that  
Consolidated Intervenors allege led to the failure to properly  
build the plant within the time provided. TUEC was taking a  
calculated risk that it was expediting construction by  
deliberately short-cutting proper procedures (and continuing to

do so even after numerous warnings) and hoping it would get away with this scheme. It is a fair inference that TUEC knew, or should have known, that if its scheme did not work it could experience a massive delay in completing construction. TUEC's decision to take the gamble is a legitimate issue to explore in the context of determining whether TUEC had a valid business purpose for the delay in building its plant properly.

#### IV.

#### The Licensing Board May Properly Impose Conditions On the Approval of An Extension of a Construction Permit

Consolidated Intervenors' objective in this proceeding is to prevent TUEC from continuing to design, construct, and inspect Unit 1 of Comanche Peak improperly. Staff and TUEC assert that this objective cannot be achieved in this proceeding because of the limited scope of the jurisdiction delegated to the licensing board and/or because of the Licensing Board ruling that it would not admit the Consolidated Intervenors' contention, which sought, irrespective of the finding of good cause for the delay, to impose conditions on the issuance of a construction permit extension. Staff and TUEC are wrong on both counts.

First, the issue in this proceeding is, at a minimum, whether the extension sought by TUEC should be granted. Consolidated Intervenors have made clear that the extension requested (an extension without conditions) should be denied. They have also made clear that there is an extension that they would not oppose -- i.e., an extension with certain conditions attached. In short, we have put forth a settlement offer, which

TUEC may accept or reject. If the extension request it seeks is rejected, it can abandon Unit 1 or seek an extension that will not be opposed. We feel it is important to make this clear at the outset.

Second, the Licensing Board recognized that it could impose conditions on the approval of an extension of the Unit 1 construction permit. What the Board held on pages 11-12 of its Order is that the only conditions that can be imposed on the extension would be conditions that are not independent of the admitted contention. Conditions that are related to the admitted contention, which addresses dilatoriness, are litigable. Thus, for instance, if the Licensing Board found that TUEC had been dilatory in completing construction of Unit 1 because, inter alia, it deliberately refused, after repeated warnings, to have design changes reviewed and approved by Gibbs & Hill (the plant architect/engineer) before they were implemented, the licensing board could and should impose a condition on the extension that in the future TUEC must implement design changes only after they have been fully approved. Conversely, if Consolidated Intervenor<sup>5</sup>s sought to impose a condition that was unrelated to reasons for the delay, the Licensing Board has decided that such conditions cannot be imposed.

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We believe the Licensing Board has too narrowly construed the scope of its authority and that implicit in the jurisdiction to grant or deny an extension is the jurisdiction to impose conditions on the extension which the Licensing Board determines are essential to assure compliance with NRC regulations. It is not good law or good policy to conclude that in deciding whether to grant a privilege to a party the decision-maker is precluded from taking the steps necessary to assure that the privilege, if granted, is not abused. However, because of the limitations

Third, the Licensing Board has the authority and jurisdiction to impose conditions that arise out of the admitted contention on dilatoriness. There cannot be any serious dispute that Licensing Boards have the power to impose conditions, and this happens in virtually every decision on issuance of a construction permit or an operating license. In addition, the Licensing Board can impose conditions that must be met as a necessary (but not sufficient) precedent to the issuance of approval of a license. Such conditions were imposed in this case when the Licensing Board on December 28, 1983, issued its Memorandum and Order (Quality Assurance for Design) and held (LBP-83-81, Slip Op. p. 1):

The record before us casts doubt on the design quality of the Comanche Peak Steam Electric Station (Comanche Peak), both because the Texas Utilities Generating Company, et al. (applicant) has not demonstrated the existence of a system that promptly corrects design deficiencies and because our record is devoid of a satisfactory explanation for several design questions raised by the Citizens Association for Sound Energy (CASE). We suggest that there is a need for an independent design review and we require applicant to file a plan that may help to resolve our doubts.

In Carolina Power & Light Co. (Shearon Harris, 1-4), ALAB-577, 11 NRC 18, 29 (1980), reconsidered ALAB-581, 11 NRC 23 (1980), modified CLI-80-12, 11 NRC 514 (1980), the Appeal Board stated the operative principle as follows:

True enough, in carrying out its adjudicatory responsibilities, a licensing board has broad authority to impose

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imposed by 10 CFR §2.714a, this issue is not now ripe for review.

conditions on the sought permit or license which require that certain measures be taken relating to plant construction or operation in the interest of safety or the preservation of environmental values.

In fact, conditions such as those which Consolidated Intervenors seek here were imposed by the Commission in Cincinnati Gas & Electric Co. (Zimmer), CLI-82-33, 16 NRC 1489, 1497-98.

However, while the power to impose conditions does exist, it is still not exercisable by a Licensing Board unless it has been delegated the authority to impose such conditions. Carolina Power & Light Co. (Shearon Harris, 1-4), supra. In this proceeding, the authority of the Licensing Board is set forth in CLI-86-04, Slip Op. at p. 11:

we refer CASE's request for a hearing to the Chairman of the ASLBP for designation of a hearing board and further proceedings in accordance with 10 CFR Part 2, Subpart G. However, the scope of the proceeding is limited to challenges to TUEC's effort to show "good cause" for the extension. Washington Public Power Supply System (WPPSS Nuclear Projects Nos. 1 and 2), CLI-82-29; 16 NRC 1221, 1229 (1982).

A review of page 1229 of the WPPSS decision indicates that the scope of the proceeding here was intended to be the same as the scope of any extension proceeding -- no less, no more -- since page 1229 addresses the generic principles for such a proceeding.

There is nothing in the delegation of the authority to a Licensing Board in any construction permit extension hearing, including this one, that limits the authority of the licensing board to impose any condition that the Commission could impose. Rather, TUEC and the Staff appear to argue that since the only

question before the Licensing Board is whether there is "good cause" for an extension, it follows that the type of an extension to be granted is not an issue. But that reasoning would also apply to the issuance of a construction permit or an operating license where the only issue, narrowly viewed, is whether to grant what the applicant has requested. In theory, were that approach followed, hearings could become perpetual as applicants kept proposing licenses with applicant-crafted conditions in which they hoped to find the right combination of conditions that would be acceptable. Fortunately a saner approach has prevailed and Licensing Boards regularly issue decisions with conditions which an applicant must accept if it wants a license. Of course, the applicant is always free to reject the license conditions and thus reject the license.

The development of the construction permit extension proceeding principles also supports this analysis. In Washington Public Power Supply System (WPPSS No. 2), supra, 17 NRC at 553, the Appeal Board divided the "good cause" inquiry into two separate questions: first, is there good cause for the delay as articulated by the Commission in CLI-82-29? Second, is there good cause for the extension? This latter inquiry "is expected to encompass a judgment about why the plant should be completed." Id. In order to conduct this inquiry, the Licensing Board must necessarily examine what it is the utility proposes to do and not merely how much time is needed to do it.

In this proceeding, TUEC asserts that it needs more time in order to conduct reinspections and reanalyses of various structures, systems, and components in response to concerns

raised by the NRC's TRT, the Licensing Board, and other external sources, and to demonstrate the safety of the plant. Letter William Council to Harold Denton (1/29/86), pp. 1-2. Surely these asserted reasons for why additional time is needed are subject to challenge in order to determine, inter alia, whether what is proposed will be useful for accomplishing the stated purpose and, if not, what TUEC would have to do to make its future activities useful. The "judgment about why the plant should be completed" necessarily includes a judgment about whether what an applicant seeks to do will be reasonably likely to result in the licensable plant it seeks. For instance, in this proceeding, if Consolidated Intervenors can prove that TUEC's reinspection program is seriously flawed such that it will not be able to establish whether Unit 1 was or was not properly built, then there cannot be a good cause for an extension of time to pursue such a useless endeavor. A corollary of this proposition is that the Licensing Board could condition the approval of an extension on modifications of the proposed reinspection program for which an extension is sought in order to assure that it will be useful.

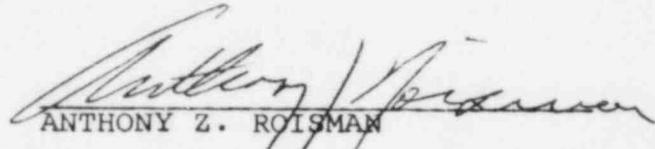
Also, in ALAB-722 the Appeal Board concluded that even in the absence of a good cause finding for the applicant an extension might be approved if it is determined that continued construction should still be allowed. 17 NRC at 553. Here again the Licensing Board would be called upon to make a judgment about the proposed work to be conducted during the extension and to consider conditions which should be imposed if that work is to be deemed sufficient to justify the extension.

Thus the question presented to the Licensing Board in this proceeding encompasses within the good cause determination not only the reason for the delay but whether, in light of the cause for the delay, the work proposed to be conducted during the extension should be allowed and what if any conditions should be imposed on that work in order to make it allowable.

CONCLUSION

For the reasons presented here and in the Licensing Board decision, the appeals of the Staff and TUEC should be denied.

Respectfully submitted,

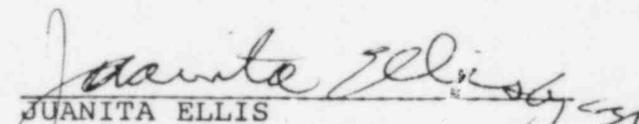
  
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Representative for CASE

Dated: May 27, 1986

UNITED STATES  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of )  
 )  
TEXAS UTILITIES GENERATING COMPANY, ) Dkt. Nos. 50-445-CPA  
 et al. )  
 )  
(Comanche Peak Steam Electric )  
 Station, Units 1 and 2 )

CERTIFICATE OF SERVICE

I hereby certify that CASE AND MEDDIE GREGORY'S OPPOSITION TO APPEAL OF TUEC AND NRC STAFF were served today, May 27, 1986, by first class mail, or by hand where indicated by an asterisk, upon the following:

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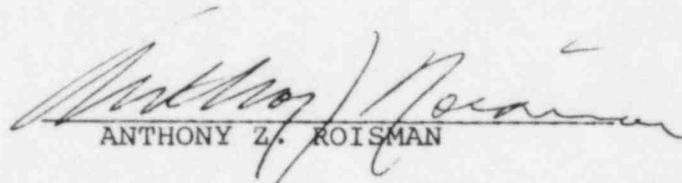
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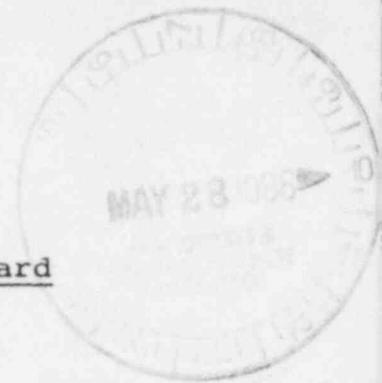
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BEFORE THE  
UNITED STATES  
NUCLEAR REGULATORY COMMISSION



Before the Atomic Safety and Licensing Appeal Board

In the Matter of )  
 )  
TEXAS UTILITIES GENERATING COMPANY, ) Dkt. Nos. 50-445-CPA  
 et al. )  
 )  
(Comanche Peak Steam Electric )  
 Station, Unit 1) )

ATTACHMENT I

TO

CASE AND MEDDIE GREGORY'S OPPOSITION  
TO APPEAL OF TUEC AND NRC STAFF

APPENDIX B

SUMMARY OF NRC INSPECTIONS AND INDEPENDENT AUDITS  
FROM 1976 TO JANUARY 1985

In 1976 an internal NRC trend analysis of Comanche Peak  
stated:

During the early part of 1976, it became apparent to the principal inspector that the effectiveness of the licensee's QA/QC Program was in a state of degradation as a result of a domineering and over-powering control by the contractor's site construction management. (NRC Trend Analysis 1976, Staff Exhibit 184, p. 1, Hems 3, f, and g)

In 1979 the NRC found that the QA/QC program was ineffective because the Applicant

has been led down a poor path by Brown and Root during past years. It appears to [the RRI] that Brown and Root has, in many instances, provided construction procedures to fulfill Appendix B that provide a minimum amount of direction to the construction force and yet comply to the words, if not the spirit of Appendix B.

What I have begun to see, but have difficulty proving is that the Brown & Root construction philosophy is to build something anyway they want to and then put it up to the engineer to document and approve the "as built" condition. If the engineer refuses, he is blamed for being too conservative and not responsive to the client's needs and thus the driving force behind my request for a special engineering audit of site operations.

\* \* \*

Only recently has there been a real effort on the part of the licensee itself or on the part of Brown & Root, to write explicit instructions to the line inspectors on what they were to inspect. Previously, the procedures were frequently pretty general, again not too bad if the inspectors were knowledgeable in the subject being inspected but terrible if they are not. In a couple of cases I have been able to show them that their people are essentially incompetent, even though they have been through the site training and certified as competent.

\* \* \*

... too often an installation clearly accomplished other than as originally designed and buildable has been approved the licensee's onsite engineering are as fulfilling requirements. In effect, the engineer has approved a non-conforming condition in advance of QC being called. QC has

been signing for the as-built condition and the underlying problem is not addressed. (NRC Staff Exhibit, p. 2(f))

The report continues on page 3 about trends indicative of poor performance,

It seems likely to me that the licensee will use his full powers to be less open with us in the area of identified construction deficiencies than he has in the past. I think he will take maximum advantage of part 50.55(e) and the [NRC] guidance to go through the necessary formalities but avoid, if at all possible, having to report to us. (supra)

In 1980, the first annual Systematic Assessment of Licensing Performance report (IE Report #80-25, NRC Staff Exhibit 181), continued to report problems with the QA/QC program, unqualified personnel, and attitude toward regulations.

The report concludes the following about the effectiveness and attitudes of licensing personnel in complying with NRC requirements:

Licensee construction and engineering management -- the NRC personnel stated that it appears there is a continuing tendency to engineer away construction problems rather than enforce compliance to drawings and specifications.

Again the Applicant promised to reform and correct its programmatic and personnel weaknesses by taking unspecific "management action with the engineering and construction personnel to alleviate this situation." (p. 5)

In 1981 Comanche Peak underwent a survey conducted by the American Society of Mechanical Engineers (ASME) in connection with obtaining an extension on Brown and Root's Authorization (N-stamp). That survey failed to provide Brown & Root the sought-after extension. Instead the survey team decided that a re-survey was required. In a November 23, 1981 letter from ASME Manager of Accreditation to then QA Director R.J. Vurpillat, the

following observations were noted. (CASE Exhibit 590)

The deficiencies noted in your program include, but are not limited to, the following items which require corrective action:

I. Quality Assurance Manual

(A) The manual was vague, failed to establish required controls, responsibilities, or provide for objective evidence that required activities were satisfactorily performed.

(B) The manual established the Summer addenda 1974 for piping and Winter addenda 1974 for component supports as the Code effectivity. The manual addressed activities only permitted by later Code addenda; such as NC-2610, NA-3867.4(f) and supply of material - NCA-3820(e), without any identification of the applicability of these provisions.

(C) The manual control system did not include the exhibits displayed in the manual or any manual approval method.

(D) The program elements of process control, nonconformity control and document control required significant changes.

(E) The design control element (control) of field change design information and feed back of construction information to the Owner) was missing from the manual.

(F) All elements required changes to provide definitive information since few auditable controls were included.

II. Implementation

(A) Document Control - The manual requires that the File Custodians in each department maintain a log of design changes received from the Owner. The File Custodian is to mark the involved document to indicate that a design change had been received and then the document user checks the log to find the applicable design change(s).

The log being maintained by the QA Department File Custodian contained numerous mistakes and was missing information. Three of three design packages, checked by the team, contained design changes not properly identified in the log.

(B) Instruction Procedures & Drawings - B&R Construction Procedure 6.9G, reviewed by the Site QA

Manager, was in direct conflict with the QA Manual and the Code (NA-5241) in that it stated that the ANI would sign a blank process sheet and then B&R would add the ANI hold points. The AIA representatives stated that this procedure was not honored by them and that they had requested the procedure to be revised. The procedure has not been revised.

The purpose of the Site QA Manager's review is to assure that the procedure complies with the Code and the QA Manual.

(C) Control of Purchased Materials, Items and Services

(1) Vendor Control - B&R procured plate material from a vendor that they had surveyed and qualified as a Material Supplier of bolting and plate materials. The material had been formed into a saddle configuration by this vendor. The B&R survey and qualification of this vendor did not address review of any operation relative to forming and the B&R purchase order did not define a forming process or procedure.

(2) The same material addressed in C1 was observed in the production shop with work in process. This material had not been receipt inspected in non-compliance with the QA Manual and the material was not identified as required by the B&R purchase order. B&R had divided the material and transferred the material identification incorrectly. B&R does not verify the transfer of material identification and during the review of the manual stated that this verification was unnecessary. (emphasis added)

(D) Control of Construction Processes -

(1) Process Sheets were observed in production that had not been reviewed with the ANI for establishment of hold points in noncompliance with the B&R QA Manual and NA-5241 of the Code. The process sheets CC-068-002-S33R and AF-035-023-S33A are included in this finding although numerous such process sheets are in production. (See B above)

(2) Welding Procedure Specification 11012 for welding with impact test requirements did not specify the travel speed but instead controlled the heat input by Volt/amp range and maximum bead width for a given electrode diameter. The Procedure Qualification Record 010AB127 for this WPA recorded a beam width greater than that allowed by the WPS.

(E) Nonconformity Control - Nonconformity Control Report (NCR) M-2952 reported that a spool piece had been welded into the system backwards. B&R QA

determined the disposition to be rework and not repair and thereby the disposition to cut the spool piece out and reweld it in the correct configuration was not reviewed by welding engineering, as would have been required by a repair designation. There appeared to be no consideration of the heat input effects on the material, etc. as would be expected with this type of nonconformance.

(F) Identification and Control of Material and Items - Component Supports are procured as stamped items by the Owner. The Code Data Report does not list Code Case N-225. The Component Support is supplied to B&R with only the Code Data Report by the Owner. B&R then cuts the component support, removing the welds, and uses the material to fabricate other component supports. B&R does not have the Certificate of Compliance (C of C) for the material.

(G) Authorized Nuclear Inspector Involvement - The ANI hold points on process sheets have been bypassed on numerous occasions. The ANI logbook documents these conditions and the volume would indicate a significant breakdown of the program and interface between B&R and the Authorized Inspection Agency personnel (See B and D-1 above).

According to a Brown and Root interoffice about the ASME Resurvey team's exit interview held on January 20, 1982 (CASE Exhibit 604), ASME still found problems with the QA program. That was confirmed by a letter from Hartford Steam Boiler to ASME dated February 8, 1982 (CASE Exhibit 605) which detailed three findings of the ASME Resurvey Team which required resolution.

Finding #1 of ASME Resurvey Team; consists of deficiency, proposed corrective action, and summary of verification of actual corrective actions taken. [Clearly shows B&R QA Program problems with vendor supplied items, although problem was supposedly taken care of after ASME identified problem.] (CASE Exhibit 606)

Finding #2 of ASME Resurvey Team; consists of deficiency, proposed corrective action, and summary of verification of actual corrective actions taken. [This finding is another indication whereby B&R procured items from a supplier not on the approved list. The corrective action was to verify that the supplier held ASME N stamp and to then add them to approved suppliers list. Again, raises questions about how many other vendor items were procured by B&R from non-approved suppliers that were not caught by either ASME or

B&R QA program, neither of which are designed to catch each and every problem.] (CASE Exhibit 610)

Finding #3 of the ASME Resurvey Team; consists of deficiency, proposed corrective action, and summary of verification of actual corrective actions taken. Finding relates to welding materials received from vendor which were receipt inspected and accepted but not identified and documented as having had the receipt inspection. [The material was scrapped (see CASE Exhibit 613). However, as a result of this finding, it was necessary to retrain receiving inspectors in proper use of procedures. Seems to be somewhat late in the game to be training inspectors in receiving inspections (Feb. 1982).] (Case Exhibit 611)

The 1982 SALP reviewed the following noncompliances, during the 1981-82 review period. The following deficiencies were identified by Region IV IE inspectors:

- Personnel not properly trained and indoctrinated
- Failure to follow procedures for verification of the performance of automatic welding machines
- Failure to follow nonconformance procedures for electrical cable
- Failure to follow procedures for hoisting safety-related components
- Failure to update procedures
- Failure to provide appropriate instructions for installation of Class IE equipment
- Failure to follow welding procedures
- Failure to provide instructions and procedures appropriate to installation of Class IE battery chargers
- Failure to follow procedures for cable pulling
- Failure to follow procedures for reporting and repair of damaged electrical cable
- Failure to follow welding procedures
- Failure to follow electrical inspection procedures
- Failure to establish quality assurance program for Class 5 pipe support systems

- Failure to follow inspection procedure for returning inspection stamps
- Failure to follow inspection procedure to initial and date operations traveler
- Failure to report a significant construction deficiency (50.55(e))
- Failure to follow construction procedures required by drawings

In Spring of 1982 the CPSES Quarterly Report on QA Department and QA Program Activities for the First Quarter of 1982 (CASE Exhibit 620) reported:

(1) The constant revision of the QA procedures and instructions prevented the QA/QC program from being adequately implemented and followed by management, QA/QC, and Construction personnel alike.

(2) Internal, external, and vendor audits for the 1st Quarter of 1982 reveal deficiencies which have been recurring since the inception of the QA/QC program at Comanche Peak.

(3) Trend evaluations performed on deficiency control documents reveal that recent trends in both construction and engineering type problems are mere extrapolations of past deficiency trends, indicating that corrective actions taken on previous deficiencies did not prevent recurrence.

On December 3, 1982, the second SALP report was issued which again noted deficiencies or violations in:

- plant operations and preoperational testing, noting that tests were scheduled "out of sequence with construction status, coupled with the lack of timely test procedure generation, are examples of lack of experience" (p. 4)
- failure to follow Quality Assurance Procedures for inspection of coatings (81-15)
- failure to perform inspections of installation activities related to Unit 1 Containment Polar Crane (82-11)
- failure to properly indoctrinate and train personnel performing activities affecting quality (82-11)
- inadequate control of procurement document and

purchased materials (82-03)

In October 1982 the Comanche Peak station received a Design and Construction Self-Initiated Evaluation, using methodology prepared by the Institute for Nuclear Power Operations (INPO). That evaluation, transmitted to the Board on March 8, 1983, also contained numerous warnings about the failure of the QA/QC program.

Construction procedures were observed as not being followed. Construction personnel were observed bypassing steps of weld procedures. This observation was performed on balance of plant work activities and not safety-related items. (p. 123)

Procedures do not appear sufficient to control construction activities. It was noted that welding had been initiated on large bore piping attachments with water flowing through the pipe, contrary to welding procedures. No construction procedure was found which would preclude this situation. (p. 127)

Uncontrolled drawings were observed being used. Sketches had been made to assist in the modifications of vendor supplied items. (p. 129)

The Startup Support Group checks their records to determine the status of systems for which work packages are being released. Hangers, however, are being treated differently and are being issued directly to the field without this review. They are only aware of attachments when they noticed work being performed or a question arose. Another instance of welding being performed on a turned over system was brought to my attention. (p. 133)

Several sketches had been made using the details in CP-CPM 9.13. These uncontrolled sketches are used to provide the physical information required to correctly modify the transition kits. Using uncontrolled sketches does not assure control of the processes used to fabricate these snubber assemblies. (p. 133)

Paper tags with no protective covering on them are used for calibration stickers and the duration between calibrations may allow for the dates on the calibration stickers to become unreadable and cause a tool to be used out of calibration. (p. 148)

The majority of activities evaluated under the performance objective was generally satisfactory. However, the procedure for indoctrination and training of CPP engineers

is inadequate as it does not require or document formalized training in site procedures. (p. 198)

Comanche Peak Project engineers are indoctrinated by required reading of listed documents. Any additional training is the responsibility of the CPP discipline engineers and is not documented. The adequacy of the training of the engineers in the application of site procedures is questionable. (p. 199)

Current TUGCO-TUSI policy documents and procedures pertaining to training were reviewed. There were no procedures available requiring and documenting the training of CPP engineers in site engineering procedures other than CP-EP-2.0. (p. 200)

Discussed Pipe Hanger Design with TSG supervisor. There is no formal training to procedures/instructions/guidelines. Supervisors require personnel to read documents. (p. 200)

Sampling of DCA's/CMC's indicate that "engineering/design error" is the reason for processing of the design change documents. Such an approach, of using general terms in identifying the error, prevents identification and trending of the root cause of the errors. (p. 226)

Three findings, included below, contain explanations by TUEC management which are illustrative of its dangerous management attitude.

**Finding:** The TUSI engineering procedures/instructions define safety-related activities to be performed. However, Quality Assurance review and concurrence with these procedures/instructions is not required by the Comanche Peak Quality Assurance Plan.

**Response:** We agree with the finding. Our experience leads us to believe that this is the best approach for the following reason: Quality is designed and built into a plant - not "QA-d" into it. In our system, each functional group is responsible for developing a working knowledge of the requirements and commitments that apply to their activity. Each group is responsible for developing and establishing procedures that not only address requirements and commitments, but also serve as management tool to accomplish activities uniformly.

TUGCO QA verifies through timely audits that the above described system results in a quality awareness and places responsibility on the people who are doing the work. This verification by TUGCO QA is accomplished by assuring that procedures/instructions are adequate and

effective. TUGCO QA also assures that they contain proper controls and that they are consistently implemented.

Finding: When reviewing CP-EP-6.0, Preparation of Engineering Procedures and Instructions, it appeared that TUGCO QA does not review site engineering procedures/instructions.

Response: In various discussions with the Site QA Manager and the QA/QC Supervisor, the following was noted:

TUGCO audits include review of engineering procedures, as well as technical audits. However, in accordance with TUGCO corporate policy, QA review of site engineering procedures/instructions is not required. (emphasis added)

Finding: The procedure for DCA/CMC's does not require formal inter-disciplinary review at the site. There is the possibility that two or more disciplines could issue design change requests for the same problem area; i.e., the procedure does not require interdiscipline review of DCA's/CMC's.

Response: We agree with the finding. However, our experience has indicated that the after-the-fact design review performed at New York provides adequate assurance that no problem of safety significance will remain unresolved.

(pp. 220-222)

In late 1982 a special NRC Construction Appraisal Team (CAT) also identified significant deficiencies in the QA/QC program. In its report, released April 11, 1983 (Staff Exhibit 206), the team identified the following construction program weaknesses:

1. Results of the inspection indicated a breakdown in fabrication, installation, and inspection in the heating, ventilation, and air conditioning (HVAC) systems.
2. A number of examples were identified of failure to meet criteria for separation of safety-related cables from mechanical structures and piping, and separation of redundant trains of safety systems....
3. The licensee's quality assurance program did not ensure that certain hanger, support, electrical and mechanical equipment was installed to the latest design documents, and commensurately that an appropriate inspection was

conducted to the latest design documents.

4. Findings also indicate a number of instances where nonconforming conditions were identified; however, various methods (e.g., punchlists, inspection reports, verbal, and other informal methods) were used to address and resolve these nonconformances. These methods do not comply with requirements to identify nonconforming conditions and provide corrective actions to prevent recurrence.
5. The licensee's Quality Assurance audit program should have been more effective in detecting and obtaining correction of deficiencies in safety-related work; such as those in the HVAC system, mechanical equipment, and electrical components.

In summary, the identified weaknesses require increased dedication by management at all levels to assure completed installations meet design requirements and that inspection documentation reflects that the completed installations have been adequately inspected to the latest design document.

On September 13, 1984 the Technical Review Team issued its first of three reports into the "allegations of improper construction practices at the facility." (p. 1) This report covered the areas of electrical/instrumentation, civil/structural and test programs.

This report provided the utility with a confirmation of allegations that:

- 1) electrical quality control inspectors were not aware of certain inspection attributes for witnessing the installation of "nuclear heat shrinkable cable insulation sleeves
- 2) inspection reports didn't contain the "witnessing" attribute for splice installation
- 3) lack of cable splice qualification requirements and circuit operability
- 4) drawings and "as-built" cable terminations are in disagreement
- 5) improperly closed NCRs on vendor-installed GE motor control centers
- 6) violations of minimum separation requirements for

- safety-related cable within flexible conduits
- 7) violation of minimum separation requirements between safety and non-safety cables
  - 8) no requirement NRC review of separation criteria has been performed
  - 9) violation of separation criteria inside control panels
  - 10) inconsistent support installation for non-safety related conduits with seismic requirements
  - 11) lack of verification documentation for electrical QC inspections
  - 12) totally compromised testing and certification programs for QC inspectors
  - 13) omission and unauthorized cutting of rebar from reactor cavity
  - 14) unauthorized cutting of rebar from the fuel handling building
  - 15) questionable concrete strength tests
  - 16) questionable "air-gaps" between concrete structures
  - 17) inadequate control room design (seismic)
  - 18) inadequate, incomplete, and unreliable heat functional test procedures
  - 19) unreliable CILRT results
  - 20) use of unqualified craft personnel to perform start-up tests.

On November 29, 1984 the TRT issued its second of three reports into their investigation of allegations in the mechanical and miscellaneous areas. They found that:

- 1) No fillet weld inspection criteria existed for certain types of skewed welds.

"... although the small sample of welds inspected by the TRT are acceptable, due to deficiencies in inspection records and the apparent lack of inspection criteria, the TRT is not certain whether other type skewed welds were inspected properly. This is a generic issue involving many NF supports in various safety-related systems." (p. 2)

2) No evidence existed that anchor bolts were properly installed, and not cut.

"The TRT concludes that such unauthorized bolt-cutting and lack of installation inspection records is a violation of Criticism XVII in Appendix B of 10 C.F.R. 50 and ... General Design Criterion 1 of 10 C.F.R." (p. 2)

3) Piping systems (Main Steam, Aux. Steam and Feedwater) are routed from the Electrical Control Building (seismic Cat I) to the Turbine Building (non-seismic Cat I) without any isolation.

4) Uncontrolled repairs (plug welds) of holes in pipe supports, cable tray supports and base plates (confirmed in cable tray supports, Unit 2).

"Although the effects of unauthorized, undocumented and uninspected plug welds in some locations ... will be inconsequential, their effect in critical locations in critically located supports or base plates could affect their structural integrity and intended function." (p. 4)

5) "... inadequate requirements and construction practices for the support of the main steam line during flushing, and for temporary supports for piping and equipment in general. In particular, evaluations to assure the adequacy of temporary supports during flushing and installation were not required. The deficiencies in the analyses, specifications and construction practice identified above constitute a violation of Criterion V of Appendix B to 10 C.F.R. 50." (p. 5)

6) "... a design change in the RPVRI support ring (i.e. locating the ring outside rather than inside the insulation) resulted in a limited clearance between the RPVRI and the shield wall. The TRT review of the 50.55(e) report revealed that TUEC failed to (1) address the fundamental issue of design change impact on annulus cooling flow, and (2) determine whether Unit 2 was similarly affected." (p. 6)

7) Polar Crane bracket and seismic connections exceeded design requirements.

Finally, several weeks ago the Technical Review Team released a 25-page summary of its findings which, according to the January 8 report, indicates:

A. TUEC failed to periodically assess the overall effectiveness of the site QA program in that there have been no regular reviews of program adequacy by senior

management. Further, TUEC did not assess the effectiveness of its QC inspection program.

- B. During the peak site construction period of 1981-2, TUEC employed only four auditors, all of whom had questionable qualifications in technical disciplines. Although charged with overview of all site construction and associated vendors, these Dallas based auditors provided only limited QA surveillance of construction activities.
- C. Repetitive NCRs were issued that identified the need to retrain construction personnel in the requirements and contents of QA procedures. One corrective action request (CAR) dealing with inadequate construction training and records remained open for one year. The identical problem was identified in a subsequent CAR, which still had not been closed at the time of the TRT's onsite review.
- D. The TRT found many examples of incomplete and inadequate workmanship and ineffective QC inspection in TUEC's evaluation of the as-built program. (See Section 4 for a detailed discussion.)
- E. Some craft workers newly assigned as QC inspectors were in a position to inspect their own work and records. Site management did not view this lack of separation between production and inspection roles as a potential conflict-of-interest.
- F. There were potential weaknesses in the TUEC 10 CFR 50.55(e) deficiency-reporting system. Applicable procedures did not identify what types of deficiencies constituted significant breakdowns in the QA program, nor how they should be evaluated for reportability to the NRC. Evaluation guidelines for reporting hardware deficiencies lacked clarity and definitive instructions and the threshold for reporting deficiencies was too high.
- G. The TUEC exit interview system for departing employees appeared to be neither well structured nor effective, as evidenced by the lack of employee confidence, limited implementation, failure to document explanations and rationale, and failure to complete corrective actions and to determine root causes.
- H. The B&R corrective action system was generally ineffective and was bypassed by the B&R QA Manager.
- I. The TUEC corrective action system was poorly structured and ineffective.

Additionally, in 1978 the Management Analysis Corporation (MAC) conducted an audit of the Quality Assurance program of Texas Utilities Generating Company to determine the adequacy of the program as related to the NRC's requirements and the effectiveness of implementation to meet program requirements. The scope of the audit included commitments made in the PSAR, the corporate QA manual, the project procedures manual, and the Brown & Root QA manual and procedures related to the Comanche Peak site. Their findings, including a finding that as late as 1978 the QA program did not conform to Appendix B requirements, are included in their entirety as further evidence that the terms of the construction permit were not complied with. (Exhibit B-1)

ADMISSIONS BY SPOKESPERSONS FOR TUEC  
(OR AS CONTAINED IN DEFICIENCY REPORTS, NCRs,  
OR OTHER TUEC-GENERATED DOCUMENTS)

December 18-19, 1985, Meeting between NRC and TUGCO regarding  
breakdown in the Unit 1 cable tray as-built program and status of  
CPRT program plan activities:

The NRC inspection of the Comanche Peak Unit 1  
cable tray as-built program was discussed  
first. The purpose of this inspection was to  
verify the accuracy of the as-built data  
developed by EBASCO which would be used in  
their reanalysis of the cable tray supports.  
T. Westerman (NRC) presented a summary of the  
findings identified in the November 18-23,  
1985 inspection. Out of 32 cable tray  
supports inspected, the independent NRC  
inspection team found 19 supports which had  
discrepancies.

W. Council (TUGCO) then presented a summary of  
the actions, and the consequential findings,  
taken by Texas Utilities after being informed  
by V. Noonan (NRC) on December 3, 1985 of the  
NRC inspection results. The first action was  
a stop-work order; the second was to develop a  
sampling program. This sampling program was  
to confirm the NRC findings and to insure that  
this problem was confined to Unit 1. TUGCO's  
preliminary findings identified that there are  
deviations from the as-built program on Unit 1  
and that the problem is confined to Unit 1.  
W. Council said that the results from an  
investigation he ordered indicated that a  
supervisor had reinterpreted work procedures  
to eliminate double-checking of inspection  
results and that the supervisor had placed  
production quotas on inspection teams.

January 13, 1985, Summary of Meeting Held on December 18-19,  
1985 re Discussion of Comanche Peak Unit 1 cable tray as-built  
program and status of CPRT program plan activities.

Similar problems have been discovered by the staff in other  
areas of the plant. Additionally, the record produced through

discovery and investigation confirms that a major breakdown in compliance with federal and/or corporate procedures occurred during the life of construction. See, generally, record of recent 50.55(e) reports, significant design adequacy review reports, nonconformance reports, and all other identifications of deficiencies.

FINDINGS AND CONCLUSIONS OF STAFF INVESTIGATIONS  
OF ALLEGATIONS BY FORMER WORKERS AT UNIT 1 AS DETAILED IN  
THE SSERS; AND THE EG&G FINDINGS

Five Supplemental Safety Evaluation Reports have been issued since January 1985 which detail the findings and conclusions of the NRC's Technical Review Team into allegations provided to the TRT by allegers. SSER #7, which deals with electrical and instrumentation issues, SSER #8, which addresses miscellaneous quality and hardware issues, SSER #9, which deals with protective coatings allegations, SSER #10, which addresses mechanical and piping concerns, and SSER #11 on QA/QC allegations.

The significance of the TRT's findings is demonstrated by the conclusions of the QA/QC Group regarding the implementation of the QA/QC program approved by the original FSAR. The summary, pages P-27 to P-35 of SSER #11, are attached in their entirety. The undeniable conclusion of the TRT's findings is that the QA/QC program at Comanche Peak failed over the life of construction. (Exhibit B-2)

\* \* \* \*

In September 1985 the EG&G issued its supplementary report into the alleged climate of intimidation. The supplement, while only reviewing a selection of the harassment and intimidation incidents pursued during the licensing case and none of the incidents of harassment of craft personnel, engineering personnel, or auditors, still reached the conclusion that some incidents of harassment had occurred. The report concluded:

In summary, a number of managerial practices exist which, while not intimidating, may not have been conducive to good job performance. The job skills of inspectors may

have been negatively impacted by poor communication with their supervisors, inadequacy in their job training, and infrequent feedback on performance. Some evidence exists that inspectors were asked to perform tasks without adequately understanding what was expected or why the work was performed. Difficulties in dealing with crafts were apparently accepted rather than managed, with little attention devoted to fostering more cooperative working relationships. A lack of clarity prevailed regarding appropriate employee interfaces with the NRC. The general lack of supervisory attention to the human dimension may have generated mistrust, suspicion, and some lack of credibility with employees.

SUMMARY OF PRELIMINARY DECISIONS OF THE  
ATOMIC SAFETY AND LICENSING BOARD

On December 28, 1983, the ASLB issued a Memorandum and Order (Quality Assurance for Design) which contained the Board's initial conclusions on the question of the design adequacy of Comanche Peak. The Board stated:

The record before us casts doubt on the design quality of the Comanche Peak Steam Electric Station (Comanche Peak), both because the Texas Utilities Generating Company, et al. (applicant) has not demonstrated the existence of a system that promptly corrects design deficiencies and because our record is devoid of a satisfactory explanation for several design questions raised by the Citizens Association for Sound Energy (CASE). We suggest that there is a need for an independent design review and we require applicant to file a plan that may help to resolve our doubts.

On October 2, 1985, the Board stated in a Memorandum and Order (Applicants' Motion for Modification) that nothing subsequently presented to them in the record since December 1983 has detracted from the conclusion reached above.

APPENDIX B

TEXAS UTILITIES GENERATING COMPANY  
OBSERVATIONS AND RECOMMENDATIONS

TUGCO AUDIT  
OBSERVATIONS AND RECOMMENDATIONS

I.        ORGANIZATION

A.        General

TUGCO Quality Assurance has undergone considerable reorganization in the past year. The general thrust of this effort has been the assumption of greater direct involvement in the management and supervision of the Comanche Peak Quality Assurance Program. It is to be noted that important shifts in responsibility were being made at the time of MAC's review.

As a part of this assessment, MAC evaluated the reactions of key managers, supervisors and inspectors to the overall changes that have taken place to date.

It was generally observed that those interviewed thought that with few exceptions the changes were for the better. There appeared to be a team effort on the part of QA and Construction with excellent TUSI executive management and project management support of the QA program. There was no noticeable problem with organizational prejudice brought about by the organizational intermixing of TUSI, Brown & Root or Gibbs & Hill work forces and supervision.

B.        Organization

During the course of the audit MAC discussed the value of a revised organizational structure with the TUGCO Quality Assurance Manager and the Manager, Site Surveillance.

It is recommended that TUGCO adopt an organizational realignment of activities as set forth in Exhibit I, whereby Quality Engineering and Inspection report to the Site QA Supervisor as two separate sub-organizational entities with responsibilities as defined in Exhibit I. Such an organization will better supplement the existing Construction organization and will permit better organization for handling day-to-day site problems as well as implementing recommendations of this report. This is particularly so in the area of inspection planning.

C. Quality Surveillance Committee

All minutes of meetings of the QSC since its inception were reviewed. It is noted that the QSC was established as a mechanism for providing top TUGCO management with a periodic update on such matters as "schedules and milestones" or "audits and corrective actions".

It was noted that recent meetings dealt with tracking on the status of action items as set forth in the Outstanding Surveillance Report Items or the Quality Assurance Items of Concern Report. In such instances it appeared the Quality Surveillance Committee was taking on the role of a task force or problem solving group. The problem that exists if the QSC assumes such a role is that problems would tend to await the three month meeting cycle before the necessary management attention is effected.

It is recommended that TUGCO re-evaluate the charter of the QSC and serious consideration given as to its value to the project recognizing that:

1. All action to resolve problems should be handled on a day-to-day basis through the functioning organization, and
2. The primary objective of maintaining management awareness of Quality Assurance status might be accomplished more efficiently, effectively and on a more timely basis through a monthly Quality Assurance progress report distributed to the TUGCO/TUSI executives.

D. Qualification of Personnel

MAC reviewed the qualifications of all TUGCO/TUSI and Gibbs & Hill Quality Assurance personnel and many of the Brown & Root personnel. It was observed that most of the TUGCO/TUSI Quality Assurance personnel have gained their Quality Assurance experience through Comanche Peak activities only. Although the project has provided valuable experience, it is recommended that any future assignments in Quality Assurance be filled with quality engineers hired from outside the company with broad nuclear experience, preferably in construction. Such experience added to the existing staff will serve TUGCO/TUSI well in accomplishing the important

pipng, electrical and startup activities ahead.

MAC had occasion throughout the audit to assess the qualifications and experience of 20-30 inspectors throughout the construction site. These observations are worth mentioning:

1. The inspectors are generally young and inexperienced with many having as little as six months experience in inspection.
2. There was an obvious need for more seasoned inspectors to work with the novice inspectors on a day-to-day basis.
3. Too much responsibility is placed on the inspectors with respect to preparation of inspection planning, resolution of site problems and determination of the design configuration base for performance of inspections.

## II. QUALITY ASSURANCE PROGRAM

The Quality Assurance Program is defined in three basic documents:

The Corporate Quality Assurance Manual

Chapter 17 of the PSAR

The Comanche Peak Quality Assurance Plan

These documents are not in total agreement with one another. Since there is no other nuclear plant currently planned and since the authority delegations identified in the Corporate Manual are not in consonance with practices on Comanche Peak, TUGCO should consider discontinuance of the Corporate Manual unless there are other projects to which it is to be applied. If a Corporate Manual is required at a later date, a new one could be prepared based on Comanche Peak experience and the requirements of any new projects to which it would be applied.

The Comanche Peak Quality Assurance Plan addresses only the following criteria of the eighteen identified in IOCFR50 Appendix B.

Organization  
Design Control  
Procurement Administration  
Inspection  
Nonconformance Control  
Document Control  
Records  
Audits

With the expanded responsibilities of the TUGCO Quality Assurance Department, the plan needs to be expanded to address all eighteen criteria to reflect the creation and functions of the Procurement Department and to be consistent with the authority delegations and functions still resting with Gibbs & Hill and with Brown & Root.

There needs to be a plan for procedural identification and development and a schedule and assigned responsibilities for their completion, including a complete architecture of Quality Assurance procedures, project procedures and interfacing procedures of the Architect/Engineer and Constructor. The effort should be to minimize the number of procedures required and to eliminate duplicating or overlapping procedures through consolidation of detail and joint approvals of the organizations involved. It is recommended that the Quality Assurance Manager use his organization as the driving force to achieve required procedural coverage on schedule.

It was noted that TUGCO is planning on obtaining its own Code manual. The stated reason for this was the fear that Brown & Root would not achieve Code acceptance. The auditors feel that the Brown & Root manual would be acceptable to the Code Survey Team and that its weld practices as exemplified in the Weld Shop are very acceptable. The auditors are of the opinion that obtaining a Code Stamp will be difficult where all the work of implementing the program is performed by others.

III. DESIGN CONTROL

The present system of expediting field changes by referring design changes to the original design organization for approval after the fact does not

meet the intent of 10CFR50 Appendix B nor of ANSI N45.2.11, which require that field changes be subject to design controls commensurate with those exercised on the original design. TUGCO audits have already disclosed that the Architect/Engineer has not been reviewing field originated changes on a concurrent basis, thus the design engineer's comments may be received after the specific construction work is complete resulting in possible loss of design integrity, undue pressure on the designer to justify what has been done, loss of designer responsibility or possible extensive repairs. It is recommended that a system for expediting review and approval by the original designer be established on all safety related changes using telephone, telecopier or telex as necessary to coordinate and document change approvals.

#### IV. PROCUREMENT DOCUMENT CONTROL

Except for site procurements, the Comanche Peak Quality Assurance Plan does not provide for a review of procurement documents and their changes prior to placing a purchase order. This is contrary to requirements of 10CFR50 Appendix B, Criterion IV and ANSI N45.2.13, "Quality Assurance Requirements for Control of Procurement.....". There is a review of procurement documents by Quality Assurance during Design Review, but it was ascertained that this was a review of the drawings and specifications and not the purchase order or contract.

Procurement document review by Quality Assurance should assure that all necessary requirements for access to the supplier's facilities are provided and that necessary controls and documentation have been specified and that the appropriate configuration has been defined. The review should also assure that requirements imposed are appropriate to the procurement and that there are no excessive requirements for quality program development or for the delivery of unnecessary documentation. Some of the procurement packages reviewed appeared to have both blanket requirements for Quality Assurance programs and excessive requirements for documentation.

V. INSTRUCTIONSA. Inspection Planning

The current system of providing inspection instructions or checklists to the inspectors is too generic in nature. In the case of concrete inspection planning the inspector fills out a simple pour card with an attached Concrete Placement Checklist, a Reinforcing Steel, Electrical, Mechanical and Embedded Item Placement Checklist and a Stainless Steel Liner Checklist, the combination of which:

1. Provides no information with respect to unique, embedments or penetrations to be incorporated in the pour.
2. Places an undue burden on the inspector in attempting to determine applicable drawings, specifications, applicable revisions and applicable DC DDA's. Much of this input should be provided by clerical support under the direction and subsequent approval of a quality engineer.

Inspectors estimated that 45-70% of their time is spent on documentation rather than physical inspection activity. Well thought out planning could do much to alleviate this situation.

Traceability

It was observed that Comanche Peak has established a program of unnecessary material traceability which, based on one estimate, consumes at least a three-man level of effort and perhaps as high as a six man level of effort if one considers all the support functions required to implement the program. All anchor bolts and B series cadwelds are fully traceable to heat numbers such that through an elaborate and extensive system of mapping all installations, the capability exists of identifying each embedded anchor bolt, B series cadwelds and other standard embeds to its heat number. There exists no such NRC or industry requirement for this degree of traceability. It is interesting to note that rebar does not require traceability on Comanche Peak (and shouldn't). MAC knows of no other project that imposes this require-

ment and could not identify a Comanche Peak specification or procedure requiring it. Accordingly, it is recommended that this practice be dropped immediately. Such a move would enhance inspector morale as those involved are aware that the practice serves no useful purpose.

C. Procedure Simplification

Newly established procedural systems are such that Construction and Quality Assurance issue procedures on similar subject matter jointly, for example, the recently issued procedure on shop travelers was jointly prepared by Construction and Quality Assurance. It is recommended that important procedures such as those related to concrete be revised and issued as a single procedure approved by Construction and Quality Assurance. Similarly, those procedures related to piping and electrical should be revised and jointly issued as a single Comanche Peak procedure.

D. Procedures Independent of Houston

The present system of obtaining Brown & Root, Houston office approval on construction procedures should be modified. Guidelines should be worked out with the Houston office whereby they approve only top level procedures, permitting the site full flexibility in revising detailed site procedures. Perhaps the Brown & Root, Houston office could retain approval authority on those top level documents that establish Brown & Root policy, control the necessary type of forms, etc. However, detailed operating procedures should be changed with site approval only. Perhaps the Houston office would agree to a retroactive review procedure.

E. Configuration Control

A review of records for completed concrete pours indicates that the configuration reflecting the as-poured condition is not properly defined. It was noted that the inspectors record the particular drawing number and revision letter, however, all applicable DC DOAs are not noted anywhere in the inspection supporting documentation.

F. Preplanning of Construction Work

In discussions with construction management personnel it was indicated that a new scheme of construction planning is being developed. This new scheme provides for a detailed material takeoff on all Gibbs & Hill drawings which provides detailed instructions to the crafts as to the civil, mechanical and electrical items to be included in each segment of work. This formalized approach of taking material takeoffs in the office and providing this information to the field forces on an approved material takeoff list will do much to improve the quality of the work. Since the material takeoff is a formal process accomplished by construction engineers well in advance of the work, it provides a significant measure of preplanning, including the processing of necessary design changes to accomplish the work. Such an effort will do much to minimize field errors with respect to left out embedments or inability to complete work as a result of design errors. It is recommended, however that this effort be formalized into a Comanche Peak site procedure. As such, it will be recognized as part of the system and will do much to assure that Gibbs & Hill drawings are forwarded to the site on a timely basis to accomplish this preplanning effort.

VI. DOCUMENT CONTROL

While there appeared to be some problems with bringing the Automatic Records Management System on line, the manual system backing it up appeared to be functioning satisfactorily. The auditors found no deficiencies in document control.

VII. CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

The Quality Assurance Plan is not up to date in regard to TUGCO's responsibilities for procurement, source evaluation and source surveillance. TUGCO has developed a program for rating supplier performance and shows evidence of actions when ratings are unsatisfactory.

The list of suppliers requiring evaluation and source surveillance is not kept up to date by the Architect/Engineer. The list in use is over

four months old, but is maintained manually by the TUGCO Supervisor of Supplier Compliance.

There does not appear to be any method of assuring that the latest configuration is supplied to the personnel performing source inspection prior to shipment of procured items. The source inspector appears to be at the mercy of the supplier in determining what changes have been identified and incorporated. Thus, it is conceivable that items will be shipped to the site that do not meet the desired configuration even though requirements of the purchasing document have been met. Such receipts can cause delays and unwarranted costs in meeting the proper configuration.

It is recommended that a practice be established of identifying and confirming required configuration prior to procurement and prior to shipment of purchased materials and components.

VIII. IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

No deficiency noted. Material reviewed in the warehouse, in open storage and in the weld shop appeared to be adequately identified.

IX. SPECIAL PROCESSES

A. Radiography

Iridium 192 is being used as the radiation source for all radiography at the site. This isotope has its optimum capability at about 1.5 inch thickness of steel and is not recommended by the Code below .75 inches. It is permitted for lesser thicknesses when the use of other radiation sources is not practical and when resolution of the outline and 4T hole size of the penetrameter can be demonstrated. The energy levels of iridium isotopes are higher than optimum for materials .375 inches or thinner, resulting in a flat image and lack of contrast. Because exposure time relates to distance, the isotope is normally placed against the pipe opposite the film. With a .100 inch source size, this causes blurring of the image. Lack of contrast and a blurred image makes it unlikely

that hairline cracks will be seen and difficult to accurately define large indications. The use of iridium 192 meets the minimum requirements of the Code, but by not providing optimum identification of observed anomalies it does three undesirable things. First it causes unnecessary removal and repair of indications that can be seen but not properly identified; secondly, it masks narrow cracks, tight lack of weld penetration and non-fusion which can be detrimental to service life; thirdly, it does not provide an adequate base line for in-service inspections performed after the plant has gone into operation. Failure to have clear identification of the original indications at that point can cause delays, the cost of which greatly exceeds the cost of providing better identification and necessary repair of defects found in the construction phase.

Recommendation - It is recommended that TUGCO require x-ray for shop welds, and consider its use where practical for construction welds. X-ray machines in the range of thirty pounds of weight are available and are nearly as portable as the isotope. Because of its smaller focal spot size and variable voltage, x-ray can give superior radiography. The feedback of information to welders can improve the quality of welds and minimize the potential for defects. The ability to discriminate between indications having roundness or sharpness at the ends can eliminate repair. The ability to positively identify in the construction phase those indications which have a potential for growth and failure can permit economical repair without radiation hazards that are inherent if found later in the operating phase.

#### B. Welding

No causes for concern and no procedural noncompliances were found in review of the weld shop. There seemed to be a general opinion that after radiography repairs are being required that are acceptable within the Code. A review of a small quantity of rejected film indicates this generalization may be valid. It was disclosed during the audit that radiographs may be reviewed by as many as five individuals. Such excessive review leads to supercritical evaluation of film and to excessive repair. As previously stated, better radiography permits better

**moc**

identification of conditions acceptable within the Code. Unnecessary repairs increase cost and reduce pipe reliability.

Recommendations - Have radiographs which have been rejected for defects reviewed by TUGCO Level III radiographer. If a reasonable statistical sample shows that excessive repair of welds has been required, establish the policy that Code acceptable indications shall remain untouched, but shall be recorded on the reports.

As an economy, consider reducing the number of persons performing sequential review of radiographs.

C. NDE Qualifications

The site NDE Level III situation is unclear. Only Level II certification by Brown & Root was available for the NDE Supervisor; however, it is understood that TUGCO has issued a letter identifying him as Level III.

Recommendation - Clarify the authority and responsibility of the NDE supervisor in administering tests and evaluating and certifying personnel. This is very important as related to Code work, since the Level III will be working under the authority of the holder of the Code stamp.

X. INSPECTION

There were no deficiencies noted relative to inspection; however, it was noted that a large number of inspection personnel are receiving their first nuclear construction experience on the Comanche Peak site. As a consequence, it is necessary to improve the quality of inspection planning and to increase the level of supervision and quality engineering support. Inspection planning should identify the required configuration including applicable DC DCAs, the features to be verified, the inspection method and acceptance criteria in order to minimize possible confusion and error.

XI. TEST CONTROL

A review was made of the TUGCO startup administrative procedures, with the following observations.

1. The procedures appear to be written around the old organization; that is, in several instances they refer to the Brown & Root QA/QC input required in the preparation of "startup work requests".
2. It was noted that a unique system is being established to handle nonconformances during the startup phase. It is recommended that wherever possible existing schemes utilized in construction be used during the startup process. This is important since most personnel involved in dispositioning such items as nonconformances and design changes will be the same persons involved in construction.

XII. CONTROL OF MEASURING & TEST EQUIPMENT

It was observed that out of 24 instruments sampled which are utilized in civil, structural, mechanical and electrical work, approximately 50 percent had not been withdrawn from the calibration laboratory since its last calibration date. This is particularly significant when it is recognized that the present system is such that if a calibration date becomes due, the instrument is recalibrated whether or not it has been issued for use. It is recommended that consideration be given to simply changing the calibration date rather than going through a calibration cycle if the tool has not been used.

It was noted that many construction tools are calibrated. It is important to note that calibration of construction tools is not necessary with respect to 10CFR50 Appendix B. Although calibration and maintenance is extremely important on construction tools, it may be that frequencies may be relaxed.

XIII. INSPECTION, TEST AND OPERATING STATUS

No deficiencies were noted in this area. Material and equipment observed in receiving inspection, in the warehouse and outside storage

area appeared to be adequately identified. No tests were observed.

XIV. HANDLING, STORAGE AND SHIPPING

Exterior storage practices should be reviewed. The protective coverings of many items are damaged; some reported on monthly surveillance reports have not been corrected. Large temporary structures, such as those over the emergency diesel engines, require wind bracing to prevent further damage. Because of soil chemistry, rain and humidity, the current practice of allowing large stainless steel piping to remain uncovered should be reviewed. Sensitized stainless is extremely sensitive to chloride, fluoride and sulphide contamination which with water as a couplant can cause intergranular corrosion and premature failure.

XV. CONTROL OF NONCONFORMANCES

There appears to be an effort to reduce the number of documented non-conformances.

It was noted that DC DDAs were being utilized for nonconformance reports. Although this was observed on a small percentage of DC DDAs issued during the month of April, it is recommended that this practice be stopped immediately. The TUGCO system is correctly established whereby non-conformances are written after the fact and DC DDAs are reserved for design changes before the fact. It is important that this practice be enforced since DC DDAs prepared after the fact necessitate that workers be directed verbally to violate the drawing since the deviation will be handled after the fact with DC DDAs. This is a poor Quality Assurance practice.

Procedure CPQT-AB, Rev. 0, dated 5-5-78 was issued for the purpose of providing expedient disposition of concrete discrepancies. The procedure infers that discrepancies of 72°F versus 70°F or 6.2% air content versus 6.0% maximum is perfectly acceptable when it is signed off by the field engineer. Such a system shortcuts the established nonconforming material control system as defined in Brown & Root and TUGCO procedures and should

be discontinued. If tolerances are unrealistic such that the 72°F is acceptable, then the design specification should be changed to so indicate.

It is recommended that good inspection planning be provided inspectors, identifying the characteristics to be inspected, the method of inspection and acceptance criteria and that inspectors identify nonconformances to such criteria. This will maintain the integrity of inspectors and provides identification of problem areas and provides a means for their correction.

It is reasonable to assume that on a project as large as Comanche Peak there will be several thousand nonconformance reports. The number does not reflect adversely on the quality of construction, but the failure to identify nonconformances does reflect adversely on the integrity of inspectors and leaves unknown the quality of the plant.

#### XVI. CORRECTIVE ACTION

There were no deficiencies noted relative to corrective action on hardware. The Supplier Compliance Supervisor has established a method of tracking vendor performance and shows positive results from actions taken to correct supplier quality problems. A review of reports of site surveillance conducted by TUGCO showed corrective action responses were being promptly received. A review of reports of surveillance actions by Brown & Root showed generally adequate response and resolution of corrective action except for a period of four months when surveillance personnel were assigned to other tasks.

In general, corrective action appears to be adequate and timely on vendor and site related problems, but some deficiencies identified in audits of major contractors still persist. Some of the changes in authority delegation to major contractors appears to be action taken to correct inadequate or untimely response by those organizations; however, other actions taken, such as handling of field changes and nonconformances, appear to be those of circumventing the problem rather than correcting it.

XVII. RECORDS

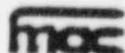
Except for lack of internal fire protection, the quality records area is considered to be satisfactory. Some Quality Assurance records, such as personnel qualifications, are not stored in the records center but are maintained separately by the Brown & Root training coordinator. There is not currently a catalog or listing of required records although it is being prepared. A review of a selection of Quality Assurance records showed the documents in them to have been properly completed and in the correct order.

Recommendation - The installation of an inert gas fire extinguishing system or the identification of geographically separate duplicate records should be expedited. TUGCO should review the fire protection capabilities of storage facilities in the training supervisor's trailer and consider a duplicate set of such records to be maintained in the records center.

XVIII. AUDITS

There are several audit and surveillance programs in effect. Audits by the Quality Assurance Department Central Staff are performed on site activities, major contractors and suppliers. Site surveillance actions are performed under the direction of the TUGCO QA Site Supervisor. Similar surveillance activities are carried out under the direction of the Brown & Root Site Quality Assurance Manager. While called surveillance actions, the surveillance programs are formally planned and scheduled, utilize checklists to guide the activity and record results, and issue reports of deficiencies and require correction. Except for formal and documented pre-audit and post-audit meetings, all the elements of an audit program are in place. It was reported that the reason for calling the activity "surveillance" was to avoid outside auditors finding the program deficient because it did not include the documented pre- and post-audit meetings, yet the auditors found that such meetings were conducted, but on an informal basis.

Recommendation - The auditors consider the present program to be an effective tool which could be further improved. TUGCO should consider

The logo for TUGCO, consisting of the letters 'TUGCO' in a bold, sans-serif font. The letters are black and have a slightly shadowed or 3D effect.

combining the audit and surveillance activities into a single, cohesive effort. Such an integrated effort could cover required areas more efficiently, without duplication and at a frequency that can be maintained. Such an audit program should be described in written procedures and include a description of both the formal audit and the continuous audit plan (surveillance) and the method of conducting pre- and post-audit meetings should be described to preclude later criticisms by outside organizations. The resulting audit program should be a superior tool for management assessment of program implementation and effectiveness.

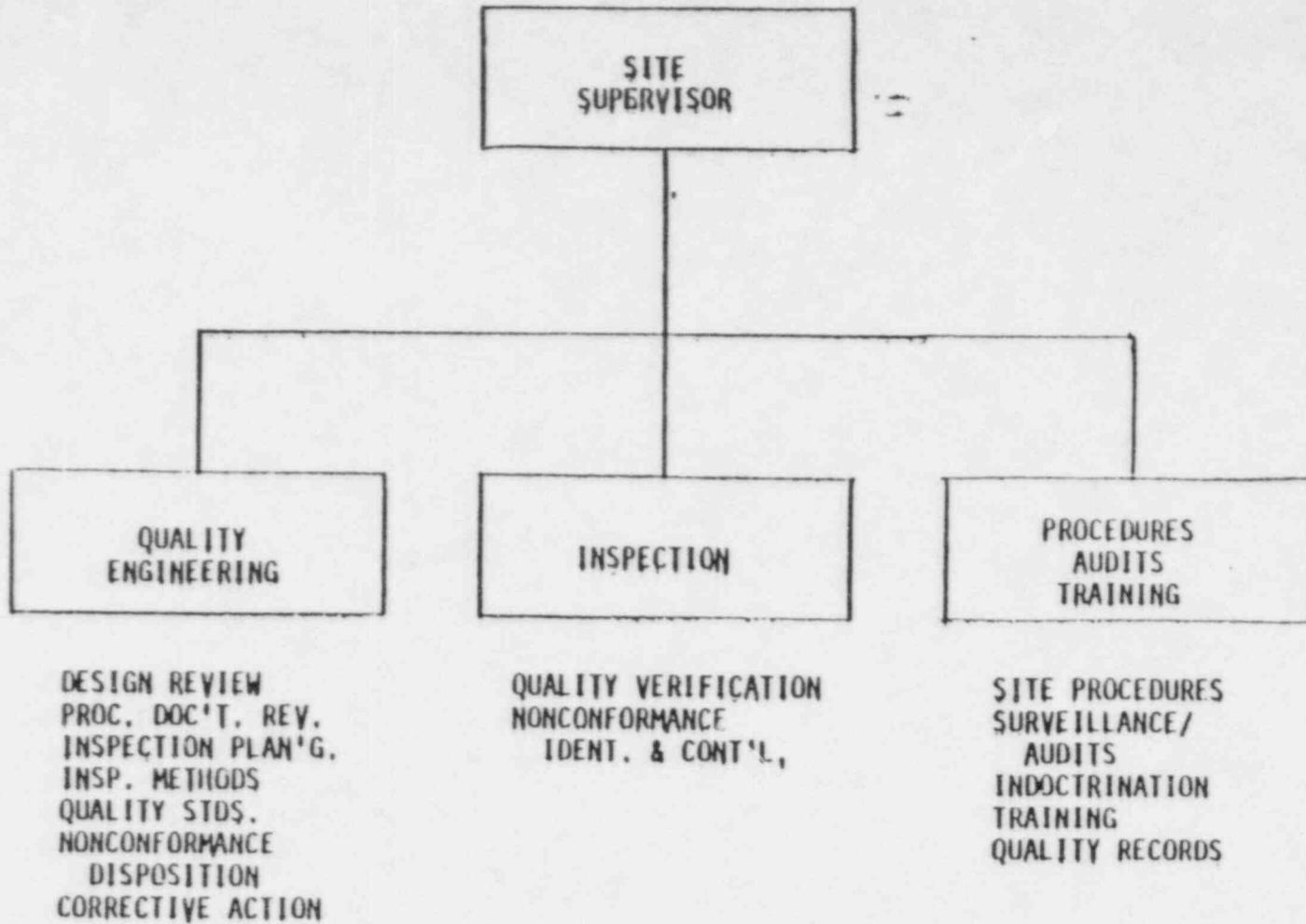


EXHIBIT 1

APPENDIX A

TEXAS UTILITIES GENERATING COMPANY  
AUDIT REPORT

MANAGEMENT ANALYSIS COMPANY

APPENDIX A

TEXAS UTILITIES GENERATING COMPANY  
AUDIT REPORT

APPENDIX A

TEXAS UTILITIES GENERATING COMPANY  
AUDIT REPORT

AUDIT REPORT

Subject: Audit of Texas Utilities Generating Company, Dallas Offices and Comanche Peak Steam Electric Station Construction Site

Date of Audit: May 1-12, 1978

Audit Scope: A management audit was conducted of the Quality Assurance Program of Texas Utilities Generating Company during the weeks of May 1 and May 8, 1978. The purpose of the audit was to determine the adequacy of the Quality Assurance Program as related to Nuclear Regulatory Commission requirements and the effectiveness of implementation to meet program requirements and authority delegations. Activities were audited at both the TUGCO offices in Dallas and at the Comanche Peak construction site. Activities of the Architect/Engineer and Constructor were audited only at the construction site. The scope of the audit included commitments made in the PSAR, the Corporate Quality Assurance Manual, the Comanche Peak Quality Assurance Plan, the Project Procedures Manual and the Brown & Root Quality Assurance Manuals and Procedures related to the Comanche Peak site.

Auditors: Dallas office, May 1-3, 1978  
J. P. Jackson, MAC Audit Team Leader  
J. M. Norris, MAC Auditor

Comanche Peak Construction Site, May 4 & 5, May 8-12, 1978  
J. P. Jackson, MAC Audit Team Leader  
J. M. Norris, MAC Auditor  
J. A. Hendron, MAC Auditor (May 8-12 only)

Personnel  
Contacted or  
Interviewed:

<u>NAME</u>	<u>COMPANY</u>	<u>TITLE</u>
D. N. Chapman	TUGCO	QA Manager, *-1-2
R. G. Tolson	TUGCO	Mgr. Site Surveillance, *-1-2
R. V. Fleck	TUGCO/G&H	Civ. Inspec. Supv., *-1
J. V. Hawkins	TUGCO/G&H	Prod. Assurance (QA), *-1

Personnel  
Contacted or  
Interviewed:

<u>NAME</u>	<u>COMPANY</u>	<u>TITLE</u>
J. B. George	TUSI	Proj. General Mgr., *-1-2
J. T. Merritt	TUSI	Resident Manager, *-1
E. G. Gibson	TUSI	Project Engineer, *-1-2
B. J. Murray	TUSI	Engineering Supv., *-1
J. J. Moorhead	G&H	Resident Engineer, *-1-2
B. C. Scott	B&R	Site QA Manager, *-1
J. P. Clarke	B&R	Site QC Manager, *-1
R. Mann	B&R	QA Records Coordinator, *
H. G. Kirkland	B&R	Proj. General Mgr., *-1
U. D. Douglas	B&R	Project Manager, *-1
D. C. Frankum	B&R	Asst. Project Mgr., *-1
P. Foscolo	B&R	Proj. Chief Engineer, *-1
L. Hancock	B&R	Mat'l Procurement, Con- struction Branch, *-1
A. Boren	TUGCO	Vendor Compliance, *
A. Vega	TUGCO	QA Central Staff Function, *-1
C. Beggs	TUGCO	Systems Compliance, *-1-2
R. Gary	TUGCO	V.P., Operations, *-1
L. Fiker	TUSI	V.P., Design & Procurement, *-1
P. Brittain	TUGCO/TUSI	President, 1

\* Interview

1 Pre-audit meeting

2 Post audit meeting

## Audit Method:

The audit was conducted through a series of interviews with responsible management and supervision and examination of Quality Assurance manuals, procedures, records and work operations both at the Dallas headquarters of Texas Utilities Generating Company and Texas Utilities Services, Incorporated and at the Comanche Peak construction site.

## Summary:

The audit disclosed that recent changes in authority delegations had been generally well accepted and that morale

Summary (Cont'd): and team spirit were good. However, the changes had not yet been formalized in revisions to the PSAR and the Comanche Peak Quality Assurance Plan. The audit also disclosed that present practices in the control of design changes and of certain nonconformances do not provide the requisite level of review by the original designer. In other instances it was evident that design changes were being used in lieu of nonconformance reports. Except for the areas noted herein and below, there was generally good adherence to existing procedures.

#### Findings:

1. The current activities of TUGCO Quality Assurance personnel are not consistent with the authority delegations to Brown & Root and to Gibbs & Hill as defined in the PSAR and Comanche Peak Quality Assurance Plan.

Similarly, the Quality Assurance Plan and Procedures are not consistent with current and planned revisions in authority delegations to the Architect/Engineer and the Constructor, and is not complete in addressing all eighteen criteria of 10CFR50 Appendix B. The lack of a well identified plan of reorganization and responsibility causes uncertainty in carrying out some activities. There needs to be a plan for revising the Quality Assurance Program; such a plan should include the establishment of an architecture of procedures to show how other TUGCO/TUGCO and contractor manuals inter-relate with the Quality Assurance Manual. The TUGCO QA Manager should establish a schedule and assign responsibilities for completion of the necessary procedures. The schedule should be supplemented with a management effort to monitor adherence to the plan and achievement of the schedule.

2. The current site DC DDA system of after the fact coordination of design changes with the original designer

Findings:  
(Cont'd)

provides a significant risk of design error and does not meet the requirements of 10CFR50 Appendix B, nor of ANSI N45.2.II, "Quality Assurance Requirements for the Design of Nuclear Power Plants".

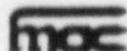
A system for expediting and documenting Gibbs & Hill home office approvals should be established using telephone, telecopier or telex as a means of speeding communication.

3. The Comanche Peak Quality Assurance Plan does not provide for a Quality Assurance review of procurement documents and changes thereto prior to purchase order placement, except for site originated procurements. Such a review is identified in 10CFR50 Appendix B, Criterion IV and is a requirement of ANSI N45.2.I3. It should be required on all safety related procurements.
4. The current combination of Chapter 17 of the PSAR, the TUGCO Corporate Quality Assurance Manual, the Comanche Peak Quality Assurance Plan, Project Procedures and Brown & Root Manuals and Procedures provides a complex array of procedures which is difficult to maintain current and consistent.
5. The current system of providing inspection instructions or checklists to inspectors is too generic, placing an undue burden on the inspector in attempting to determine applicable drawings and specifications and applicable revisions thereto. A review of records of concrete pours indicates that configuration reflecting the as-poured condition is not clearly defined. Applicable DC DDAs are not noted in inspection documentation. Configuration needs to be clearly identified to inspectors on a current basis, including all applicable

Findings:  
(Cont'd)

DC DDAs and completed documentation must reflect the status of the applicable changes.

6. Special processing markings for later in-service inspections are carelessly applied. The circle and arrow used for such marking is sometimes incomplete and not recognizable for its intended purpose. In one instance only a portion of the circle resembling the letter "C" was discernible. Failure to properly mark these locators now will cause delay and possible error when in-service inspections are made in highly irradiated areas.
7. Disposition of nonconforming items does not always achieve the requisite review by appropriately qualified design personnel. A procedure, limited to defects in concrete, was recently issued which bypasses the established nonconformance control system and, thus, violates regulatory requirements in this regard. In other instances, the DC DDA program has been used to bypass the nonconformance reporting system. The nonconformance control system should be the means for maintaining inspector integrity, identifying problem areas and provide a driving force for their correction.
8. The records storage facility does not currently have any means of internal fire protection during hours it is unmanned, although it is understood some method is planned. Quality Assurance records, such as personnel qualifications, are not maintained in the Records Center, but are maintained in fireproof file cabinets in a trailer under the cognizance of Brown & Root training coordinator.
9. Approximately twenty-four percent of Central Staff audits have not been conducted as scheduled. Combining Central Staff audits, site audits and site surveillance activities

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Findings:  
(Cont'd)

by TUGCO and by Brown & Root into a single, cohesive program would provide improved visibility to the overall audit and surveillance effort and permit evaluation and adjustment to the audit schedule to attainable and yet effective frequencies.

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# **Safety Evaluation Report**

related to the operation of  
**Comanche Peak Steam Electric Station,  
Units 1 and 2**

Docket Nos. 50-445 and 50-446

Texas Utilities Generating Company, et al.

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**U.S. Nuclear Regulatory  
Commission**

Office of Nuclear Reactor Regulation

May 1985



## 4 QA/QC CONCLUSIONS

This section summarizes and concludes the issues presented in each of the eight specific areas in Section 2 and in the tables in Attachment 1. The conclusions reflect the findings of Appendices O and P. Section 4.9 presents the QA/QC Group's conclusion regarding the QA/QC issues reviewed by the TRT at Comanche Peak.

### 4.1 Design Process

The assessment of design process generally focused on a review of control of changes to design documents, principally vendor designs, incorporation of field changes in the design, and design interaction with plant organizations. From the QA/QC point of view, the TRT finds that the design process for Comanche Peak is based on procedures consistent with NRC requirements and that these procedures were implemented. Actual design process performance, however, displayed some deficiencies. Design changes (DCAs and CMCs) were permitted to accumulate against basic design documents with no program requirement for their timely incorporation into the drawings. Measures have now been established to quicken the incorporation of changes and to lessen the control problems and delays previously experienced.

The TRT found examples of ineffective interaction among the engineering, construction, and quality control groups that was evident because of incomplete or inadequate work instructions for the craft personnel, design acceptance of questionable construction practices, inadequate design analyses of field changes, and incomplete seismic analyses. NCR dispositions by engineers were sometimes poor in judgment, lacking in analysis and in technical depth.

Because a basic premise in designing a piping system includes the fact that support designs will reflect the assumptions made in the analysis of that piping, the failure of the design process to require Gibbs & Hill to review designs and modifications of pipe supports prior to fabrication and installation, is of concern.

There were instances of failure to control quality standards in the design documentation (see SSERs 8 and 10). There was also failure to notify the NRC of changes to the FSAR (see SSER 10).

Within the scope of TRT QA/QC Group's assessment of the design process, the interactions among the engineering, construction and QC groups, and program deficiencies presented, appear to be the only deficient areas addressed by TUEC. A more comprehensive assessment of this design process will be included in future SER supplements dealing with the NRC's review of findings from the CYGNA Independent Assessment Program.

### 4.2 Document Control

The TRT assessment of the document control function for the period following July 1984 indicates that the preparation, issuance and changes to documents that specify quality requirements or prescribe activities affecting quality are adequately controlled. Documentation packages reviewed at the point of issue, and in the field where prescribed activities were being performed, were found to be complete and current. Further, a sample of safety-related quality

records stored in the permanent plant records vault (PPRV) was reviewed and found to be acceptable. Included in the documentation packages were completed records for piping, piping supports (hangers), assembled and/or installed components, fabrication and inspection/testing data, including walkdown inspection check lists and the applicable N-5 data reports. In-process and final inspection and acceptances for completed record packages appeared to have been performed to the latest revision of drawings and specifications.

However, the history of recurring document control deficiencies prior to July 1984 raises concerns about certain aspects of the quality of construction. For example, the TRT observed deficiencies in coating inspection reports which included: inadequate description or location of areas or items coated; improper changes and corrections; lack of signatures or acceptance for inprocess and final inspections; and missing dates and times. These deficiencies were significant enough to render the inspection reports unacceptable as quality records and inadequate to provide documentation of material traceability. One specific traceability and records problem was that paint mixing slips were not retained as permanent records, but were discarded after the inspector in the coating applications area transcribed the information onto his own report. Thus, the original record of the mixing inspection, including inspection acceptance, was lost. In procedural control, the TRT mechanical and piping group observed that uncontrolled and unauthorized procedures were used to perform cold-springing (realign piping) during its installation.

With respect to drawing control prior to 1984, the TRT found deficiencies that included: distribution of incomplete or obsolete drawing packages to the craft and QC personnel; inadequate drawing control; high DCC satellite error rates; and procedural non-compliance. The TRT QA/QC Group concludes that although many of the document control inadequacies have been corrected, the implications of past inadequacies on construction and inspection have potential generic significance which has not yet been fully analyzed by TUEC.

#### 4.3 Training and Qualifications

The TRT QA/QC Group found a pattern of inadequacies with the training, certification and qualification program at CPSES, because of the many deficiencies identified. These problems can be directly traceable to TUEC's and B&R's "minimal requirement" training, certification, and qualification program; the lack of or failure to follow procedures and guidelines; and a lack of programmatic controls to assure that the program achieved and maintained requirements as set forth by 10 CFR Part 50, Appendix B.

The TRT Electrical and Instrumentation, Protective Coatings, and Civil and Structural Groups also assessed allegations and concerns about electrical inspectors, coatings inspectors, and concrete inspectors. These inspectors were all trained, certified, and qualified under the same program (non-ASME) as the inspection personnel reviewed by the QA/QC Group. Each TRT group found examples of the same kinds of deficiencies: no verification of education or work experience; an identical certification test taken after the examinee failed the first one; no guidelines provided for the use of waiver for OJT; no time limit on how many times an examination could be retaken; and inspectors with questionable qualifications.

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There were also many problems with the certification testing program for the non-ASME inspectors. There was no time limit between a failed test and a retest, there were different scoring methods to grade the original test and the retest, there were no guidelines on how a test question should be disqualified, and there were no details on how the administration of tests should be monitored.

The TRT also found that many craftsmen that transferred into QC inspection had no prior background or experience in inspection. This was especially true in the coatings area when painters were made "instant" QC paint inspectors.

B&R had procedures for ASME personnel training and certification that minimally met the requirements of ANSI N45.2.6 and Regulatory Guide 1.58, but in practice these guidelines were not always followed. Although TUEC and B&R had committed to follow the requirements set forth in ANSI N45.2.6 and Regulatory Guide 1.58, both chose to follow the "exception to the rule" and used "other factors" as the normal method of qualification. More than 80 percent of the inspection personnel (both ASME and non-ASME) were qualified under the "exception to the rule" factor.

The TRT QA/QC Group also found that some QA auditors lacked experience, were inadequately trained, or had questionable qualifications.

The TRT QA/QC Group concludes that deficiencies in procedural requirements and guidelines in TUEC's training, certification, and qualification programs have potential quality significance. Further evaluation by TUEC is required in order to determine the impact of the deficiencies on the safety of the project.

#### 4.4 Construction and Testing

The tables in Attachment 1 to Appendix P indicate those items of construction practice which were considered to be deficient. Following is a list of these recurring practices for which construction craft personnel was either a primary or contributing factor and had a plant-wide impact.

- (1) Craft personnel failed to follow design documents or installation procedures.
- (2) Unauthorized work was performed in absence of procedures.
- (3) Housekeeping procedures were not followed.
- (4) Use and return of equipment, tools, and materials were not per requirements.
- (5) There was loss, damage, and interchange of valve parts.
- (6) There was improper transfer of heat numbers onto scrap metal which was used in a pipe support.
- (7) Equipment repairs and rework were performed without proper documentation.

The fact that the TRT found these recurring practices indicates a lack of proper first-level supervision.

In conclusion, these types of improper workmanship by craft personnel, coupled with lack of proper supervision of craft personnel during construction, have potential for significant quality and safety impact on critical plant systems and structures.

For several entries on the tables in Attachment 1 to Appendix P, there were allegations or concerns involving construction practice that were neither substantiated nor refuted. These were not included in the above conclusion, but are unresolved QA/QC issues.

There were only two entries on the tables in Attachment 1 which involved the area of testing. Both of these entries indicated that the deficient practice was not frequent enough as to imply a generic problem. One concern involved several hot functional test objectives that were not met. The other deficient practice was that TUEC's method for calculating leak rate was not consistent with TUEC's FSAR commitment.

#### 4.5 Nonconformances and Corrective Actions

The TRT QA/QC Group identified deficiencies during its overall review of the nonconformance system. Most of the deficiencies related to implementation of the NCR system in specific areas; for example, coatings NCRs that were dispositioned "use-as-is" lacked sufficient engineering justification (Protective Coatings Category 5A), and some instances were noted in the Mechanical and Piping area in which NCR corrective action was not considered to be satisfactory. There was also an instance of the use of pieces of nonconforming pipe while on NCR hold. Improper disposition of the NCR allowed the installation of the pipe (Mechanical and Piping Categories 13 and 20).

The TRT also noted a generic deficiency in the corrective action system. Some of the specific deficiencies noted are:

- a. The B&R corrective action system was generally bypassed, as shown in the following examples:
  - (1) There were no definitive instructions to describe the types of problems that required corrective action. Minimal procedural instructions resulted in corrective action decisions frequently being left to the judgment of the QA Manager.
  - (2) Since June 1983, B&R had issued no corrective action requests (CARs), and was substituting memos and letters of concern for this function. This shortcut had become a regular method of operation and appeared to bypass the CAR system.
- b. The TUEC corrective action system was poorly structured and ineffective in that:
  - (1) Controlling procedures were brief and general.
  - (2) There was no translation of FSAR requirements on trending and no details on how trend analyses were to be accomplished.
  - (3) Quarterly reports were not issued in a timely manner.

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- (4) The method of categorizing IRs and NCRs by building did not assure meaningful trend analysis.
- (5) A 1984 CAR report identified three items that appeared to require action; however, none had been taken.
- (6) CAR 029 was used as a vehicle for a specific disposition rather than for generic action, as intended by the CAR system.

The TRT QA/QC Group also noted that approximately 40 different forms and reports (other than NCRs) were used for recording deficiencies. Many of these forms and reports did not appear to provide information entry into the Corrective Action System to prevent problem recurrence.

In conclusion, the QA/QC Group found deficiencies in NCR implementation; and in some cases NCR corrective action was unsatisfactory. The QA/QC Group found B&R and TUGCO's corrective action systems poorly structured, ineffective, and poorly applied.

#### 4.6 QC Inspection

The tables in Attachment 1 indicate those items of QC inspection that were considered to be deficient. Of particular concern were those items for which QC inspection was indicated as being primarily responsible and having a generic impact level of 4 (frequent occurrences that have plant-wide impact). There are eight such items in the tables. Of lesser concern were the 27 additional entries that indicated QC inspection as a contributing factor for level 4 items, or as either a primary or contributing factor for level 3 items (frequent occurrences, but apparently confined to a particular area or item). The above 35 items indicated to the TRT that QC inspection was particularly deficient in the areas of coatings and mechanical hardware, and that QC inspectors made significant errors in a number of additional specific items. Further, QC inspection problems are generally accompanied by and associated with construction/testing problems (see Section 4.4).

As described in more detail in the individual assessments listed for entries on the tables in Attachment 1, QC inspectors in many instances failed to follow design documents and the quality procedures for inspection. Of concern is the potential for critical installations to be inadequately constructed and improperly represented on documents in the plant permanent records vault as well as inaccurate accounting of safety-related systems and structures for input used in the stress analyses by the engineering group. In conclusion, the QA/QC Group considers the site QC inspection program to be less than fully effective in monitoring, detecting, and reporting deficiencies that have or could have a significant safety impact on the plant.

#### 4.7 Audits and Reporting

In the TRT's overall assessment of TUEC's audit program, emphasis was placed on evaluating the administration of the audit program, management's action to review the status and adequacy of the QA program, and followup on findings identified by internal (TUEC) and external audit teams (NRC and consultants).

TUEC's audit program consisted of internal and external audits of design, construction, engineering, and procurement activities. TUEC assumed the responsibility for external audits of vendors.

Region IV found that TUEC's audit procedures did not comply with NRC requirements, and that the program was not implemented in accordance with procedures. The lack of an established audit program was also substantiated by Region IV. For example, Region IV Report No. 50-445/84-32 cited TUEC for failure to establish and implement a comprehensive system of planned and periodic audits. Non-compliances identified were: annual audits were not adequately addressed by audit implementation procedures; planning and staffing to perform 1983 audits were inadequate; the Westinghouse site organization performing Nuclear Steam Supply System (NSSS) engineering services was not audited by TUEC from 1977 through 1981; and audits of vendors that manufacture or fabricate parts, components, and equipment for safety-related systems were not conducted in compliance with annual or other applicable requirements dating back to August 1978. Assessments by the Miscellaneous and Mechanical and Piping Groups concurred with the QA/QC Group that the audit frequency of vendors did not comply with ANSI N45.2.12 requirements.

Review of the past administration of the audit program disclosed that during 1981 and 1982, the height of construction, the audit staff consisted of four auditors. From 1982 to 1984, the audit staff has increased from 4 to 12. Also, on occasions, individuals participating on the audit teams were not QA auditors. As such, a potential existed to compromise their independence. The TRT reviewed the technical background, experience, and training of auditors, as well as the quality of audit reports. The TRT determined auditor staffing and qualifications to be questionable, which rendered the audit results for 1981 through 1983 potentially ineffective.

The TRT and Region IV reviewed the scope of the QA program audited during 1983. Of approximately 650 safety-related procedures, 165 (25% overall) were audited. In looking at quality procedures, TUEC audited 24% of TUGCO's implementing procedures and 39% of B&R procedures for a composite 32% audit rate. Although audits on a sampling basis are acceptable, there was no evidence that all safety-related areas were audited. The audits did not encompass all aspects of the QA program in order to determine effectiveness.

With respect to audit corrective action followup, it was learned that TUEC QA had not been verifying that corrective action on previous audit findings was accomplished. For example, audit TCP-111, initiated to verify corrective actions on previous audit findings, was started prior to the TRT's review. TUEC emphasized that TCP-111 be considered a "Punch List of Completion Tasks" to verify that corrective action had been implemented and not an attempt to rewrite or change previous audit findings. Another specific example of ineffective followup action was found that pertained to a deficiency identified in audit TCP-23, performed in September 1981. Audit TCP-68, conducted in March 1983, attempted to verify corrective action of TCP-23's audit finding, but logs that would document the corrective action had been destroyed. A new deficiency was written at that time and the response was accepted, but the corrective action implementation is still unverified.

In correlating nonconformance reporting to the audit finding/corrective action reporting tracking system, the TRT noted that during 1983, 18 NCRs identified

the need to retrain construction personnel in the content and requirements of QA procedures. The TRT found that TUEC corrective action request CAR-024, which dealt with inadequate construction training and records, was open for 12 months. After CAR-024 was closed, five other CARs identified inadequate training of construction personnel. The TUEC construction, startup/turnover surveillance group identified the above conditions in CAR-009, dated April 9, 1984, which had not been closed at the time of the TRT inspection. This further supports the TRT finding of inadequate followup and corrective action of audit findings.

The TRT found that TUEC management had failed to periodically review the status and adequacy of their QA program. This was confirmed by Region IV (IR 50-445/84-32). TUEC representatives stated that there have been no regular assessments or reviews of the adequacy of the total QA program by upper management, as required in Criterion II of 10 CFR 50, Appendix B, and as committed in the FSAR.

With respect to follow-up corrective action for previous findings cited against the audit program by NRC and TUEC consultant audit/inspection teams, the TRT found TUEC's corrective action followup to be not fully effective. The Fred Lobbin Report (a TUEC consultant), dated February 1982, identified four major findings: (1) level of experience within the TUGCO QA organization is low; i.e., commercial nuclear plant design and construction QA experience; (2) staffing for the audit and surveillance functions is inadequate; (3) the number and scope of design and construction audits conducted by TUGCO QA to date has been limited; and (4) QA management has not defined clearly the objectives for the surveillance program resulting in a program which, in the author's opinion "is presently ineffective." To date, findings (2), (3) and (4) have not been adequately addressed by TUEC. (Region IV Report No. 50-445/84-32.)

Following the Lobbin Report, the NRC performed a CAT inspection (IR 445/83-18; 446/83-12, dated April 11, 1983) and included a review of the TUGCO audit program at the corporate offices. The inspection included a review of 18 audits (conducted between 1978 and early 1983), auditor qualifications, audit planning and scheduling, audit reporting and followup, and audit program effectiveness. The report concluded that weaknesses existed in the established QA audit program which included the scheduling and frequency of audits, the lack of effective monitoring of the construction program, and the lack of effective resolution of certain audit findings. The inspection also indicated that the QA program should have been more effective.

During the TRT's evaluation of allegations and concerns, it was observed that the audit function did not always identify QA program breakdowns, or if reported, effective corrective action was not instituted to prevent recurrence. Typical examples were: (1) untimely reporting of significant construction deficiencies for 10 CFR 50.55(e) items, (2) QA breakdown in document control for satellite 306 which was not reported to the NRC, and (3) record reviewers were reviewing and accepting documentation for work they previously performed as inspectors.

Based on its findings and observations, the TRT concludes that the QA audit and reporting program has had and continues to exhibit deficiencies. Over a significant period of time, recurring deficiencies include: inadequate staffing during peak periods; failure by management to review the QA program for effectiveness; procedural and implementation inadequacies; questionable qualifica-

tions and capabilities; incomplete assessment of the QA program on an annual basis; inadequate corrective action to prevent recurrence of identified deficiencies and insufficient management direction and understanding. In summation, the QA/QC Group finds the past audit and reporting system less than adequate, and the audit and reporting program at the time of the TRT review was questionable.

#### 4.8 Inadequate Procedures

Criterion V to 10 CFR 50, Appendix B requires that QA/QC procedures be written to prescribe activities affecting quality. The TRT found that procedures in some areas did not comply with this guideline. For example, material control procedures did not adequately address requirements for physical inventory control, material traceability, material handling, and segregation of paints. TUEC requirements for authorized nuclear inspector involvement in the TUEC inspection process were unclear. Quality control personnel inspected without written procedures or formal accept/reject criteria. Some inspection procedures lacked comprehensive inspection and reinspection criteria for inspectors. Requirements for reinspection of repair work were not clear.

The TRT found that construction procedures provided inadequate instructions to craft and QC personnel for installation of temporary supports, steam generator bolting, jam nuts, thread engagement, Richmond anchor bolt inserts, repair of misdrilled holes/plug welding, mixing of paints, and protection of unpainted threads and surfaces. Procedures do not specify design standards for fabricated threads, interchangeability of valve parts, and reactor vessel cleanliness requirements. There were inadequate welding procedures for welding of thin-wall stainless steel pipe for preventing hoop shrinkage. Procedures did not provide clear precautionary directions regarding prohibited construction methods, such as unauthorized welding to rebar, and restricted use of various tools. Requirements to paint the threads of component support bolting contradict requirements of another procedure to maintain threads free of extraneous materials.

In summary, the TRT QA/QC Group concludes that construction and inspection procedures in some areas were inadequate, contradictory, uncontrolled, or nonexistent.

#### 4.9 Overall Assessment and Conclusions

Appendix P consolidates all quality issues identified by all TRT Groups in relation to eight quality attributes. As noted in the introduction, the scope of the TRT review and inspection was limited to the QA/QC concerns raised by the allegations. Appendix P focuses on problem areas that need further identification. This identification of problem areas will facilitate the preparation of a corrective action plan, which should provide reasonable assurance that the facility has been properly constructed.

Based on its assessment of the total TRT effort, the QA/QC Group finds that QA/QC problems at Comanche Peak appear to be the result of the following conditions that existed prior to 1984:

- a. TUEC senior management was not actively involved in site QA/QC activities.

- b. The training and qualification of QA/QC, craft, and other personnel were not administered and monitored effectively.
- c. Design engineering activities were not effective in providing craft and QC personnel with adequate procedures, instructions, and other design documents.
- d. The control of documents, and subsequently of records, was replete with recurrent deficiencies.
- e. Some craft personnel appeared to be insensitive to QA/QC concerns at times, possibly because of lack of training, tight schedules, and excessive schedule emphasis by construction management.
- f. Quality management was lax in its responsibilities to direct and oversee an effective site Quality Program.
- g. Some QC personnel exhibited repeated lapses in effectively executing their responsibilities for inspection activities.

The pattern of failures by QA and QC personnel to detect and document deficiencies suggests an ineffective B&R and TUGCO inspection system. This pattern, coupled with (a) the past problems in the document control system, (b) deficiencies in the QC qualification program, (c) ineffectiveness of the quality audit and surveillance systems, (d) a rudimentary and ineffective trending and corrective action system, (e) QC problems as shown in QA/QC Category 8, AQ-50; and (f) instances of improper workmanship of hardware as found by all of the TRT groups, challenges the adequacy of the QC inspection program at CPSES on a system-wide basis.

Corrective action will require high-level management attention and a new management emphasis on the importance of quality as a vital element of an adequate construction program.

## 5 TUEC ACTIONS

As the TRT QA/QC Group has noted previously, its results are based on a biased sample in the sense that the sample was initially developed from allegations, additional items brought to the TRT's attention, and items found by the TRT. Nevertheless the TRT believes the results are meaningful. TUEC shall evaluate the TRT QA/QC findings and consider the implications of these findings on the quality of construction at Comanche Peak. TUEC shall then submit to the NRC a program plan and schedule for completing a detailed and thorough assessment of the QA issues presented in the enclosure to this supplement. The programmatic plan and the plans for its implementation will be reviewed and evaluated by the NRC staff.

The TRT considers the findings to be generic to both Units 1 and 2, and the program plan and schedule should address both units. This program plan should: (1) address the root cause of each finding and its generic implications on safety-related systems, programs, or areas, (2) address the collective significance of these deficiencies, (3) address the total impact of one discipline-related finding in other disciplines, and (4) propose an action plan that will correct all problems identified and ensure such problems do not occur in the future.

The plan should also assure that the foregoing matters are addressed so as to provide reasonable assurance that no safety-significant deficiencies remain undetected and unresolved. TUEC's examination of the potential quality implications of the TRT findings shall include, but not be limited to the areas or activities selected by the TRT. The program plan must describe the depth and breadth of TUEC's approach in sufficient detail to permit an independent evaluation of the plant. This evaluation must conclude that the plan is comprehensive and self-sufficient and will provide reasonable assurance that the quality of the construction can be demonstrated.

The actions shall also consider the use of management personnel with a fresh perspective to evaluate the TRT's findings and implement corrective actions. TUEC shall consider the use of an independent consultant to provide oversight to the program. TUEC shall also investigate the role of the principal contractor personnel (Brown & Root and Ebasco) in regard to Quality Assurance/Quality Control concerns. Although the TRT QA/QC Group realizes that TUEC is ultimately responsible for the plant, the contractor (constructor) was directly responsible for construction and quality control. TUEC shall also consider the prudence of continuing to rely on contractor management personnel involved in ongoing work and recovery efforts when they are the same people directly responsible for the problems identified herein.

BEFORE THE  
UNITED STATES  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Appeal Board



In the Matter of

TEXAS UTILITIES GENERATING COMPANY,  
et al.

(Comanche Peak Steam Electric  
Station, Unit 1)

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) Dkt. Nos. 50-445-CPA  
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ATTACHMENT II

TO

CASE AND MEDDIE GREGORY'S OPPOSITION  
TO APPEAL OF TUEC AND NRC STAFF

RESTATEMENT OF CASE'S BASES FOR CONTENTION #1.b.2.

In addition to the bases which have already been set forth, the following are also part of CASE's bases for Contention #1.b.2:

Part of CASE's bases, the ASLB's 12/28/83 Memorandum and Order (Quality Assurance for Design) has already been mentioned briefly (Appendix B, page 20, to CASE's 1/31/86 Request for Imposition of Fine, for Suspension of Construction Activities, and for a Hearing on Application to Renew Construction Permit, filed before the Commission), and its overall conclusions were quoted; in addition, the 10/2/85 Board Order has also already been referenced. In the 84-page 12/28/83 Order, the Board discussed in some detail several (but not all) of the specific issues raised by CASE Witnesses Mark Walsh and Jack Doyle (known as the Walsh/Doyle allegations). The 12/28/83 Board Order, almost in its entirety, is part of CASE's bases.

Part of CASE's more specific bases, regarding weld designs on supports at Comanche Peak that did not meet minimum ASME Code requirements for fillet welds, is discussed at pages 29-30 of the Board's 12/28/83 Order:

In our review of other engineering problems raised by CASE, we have become convinced that there are other problems, some of which are discussed later in this memorandum, that would have been addressed in a more timely fashion and might have been resolved more appropriately if applicant had a formal, prompt system for quality assurance of design. An extreme example is that in 1981 the staff conducted an audit of weld designs at Comanche Peak that ultimately led to the discovery of 382 supports that did not meet minimum ASME Code requirements for fillet welds /79/. These changes, which required structural alterations, were documented on CMC's and not NCR's /80/, with the consequence that there apparently was no attempt to identify the cause of this error or to prevent its repetition.

/79/ SIT Report at 51, citing Inspection No. 99900531/81-01 (November 17-20, 1981); see CASE Findings at V-7.

/80/ Id.

Another part of CASE's more specific bases, regarding instability of supports, is discussed at page 23 (and elsewhere) of the Board's 12/28/83 Order:

Instability problems were known to applicant by April 1981. . . there was no prompt effort made to identify analogous problems elsewhere in the plant, there was no trending of similar deficiencies, and there was a breach of applicant's obligation to determine the cause of the condition of instability and to take steps to "preclude repetition," as required by 10 CFR Appendix B, paragraph XVI. [Footnotes omitted.]

(This design issue was also addressed in the context of Applicants' Motions for Summary Disposition and CASE's responses thereto, which are discussed later herein.) In addition, in a February 19, 1985, letter (attached to CASE's 2/25/85 Notification of New and Significant Information and CASE's Supplement to CASE's 10/15/84 Motions and Answer to Applicants' Motion for Summary Disposition Regarding Stability of Pipe Supports), Cygna Energy Services, in a reversal of its previous position, stated:

If individual support stability is not assured, system stability is not guaranteed. The instability of one support can trigger the progressive instability of adjacent supports by causing the limits of the forces and displacements to which the adjacent supports were originally designed to be exceeded. This may result in the formation of plastic hinges in the pipe (due to overload) which in turn may develop into a collapse mechanism.

Cygna's letter and all related documents also are part of CASE's bases.

In addition, the Board's 12/28/83 Order relied, in part, on CASE's 8/22/83 Proposed Findings of Fact and Conclusions of Law (Walsh/Doyle Allegations), which also is an integral part of CASE's bases on design

issues. CASE's Proposed Findings is a 447-page document which provides very specific and indexed detailed bases for the Walsh/Doyle Allegations. The Licensing Board stated regarding CASE's Proposed Findings (page 31 of its 12/28/83 Order):

In addition to questions about the quality assurance program for design, CASE has raised many specific design problems, presented to the Board in detail. CASE's Findings, which contain the discussion of these problems, is a document that is two inches thick and that is filled with technical arguments and citations to codes, regulations and testimony (and to some extra-record material).

There were also several pleadings and other documents regarding various specific points which were filed between the time of hearings on the Walsh/Doyle allegations in May 1983 and the Licensing Board's Order of December 28, 1983 (some of which were also specifically referenced in the Board's 12/28/83 Order) which also form part of CASE's bases (for example: CASE's 11/4/83 Response to NRC Staff's Affidavits on Open Items Relating to Walsh/Doyle Allegations; Board Notification 82-105A, Interaction Between Piping and Pipe Clamps, August 1983, sent to the Commission under cover letter dated September 29, 1983; CASE's 11/4/83 Assessment of Applicability of Board Notification 82-105A to Comanche Peak Steam Electric Station; Affidavit of Dr. Rai Raj N. Rajan, attached to 12/13/83 NRC Staff Motion to Reopen Record to Admit the Affidavit of Dr. Jai Raj N. Rajan; etc.).

Another part of CASE's bases concerns the design of the control room ceiling. In a 3/11/83 letter from CASE President Juanita Ellis to Mr. Richard C. DeYoung, Director of the NRC Office of Inspection and Enforcement, CASE reported concerns about the design of the control room ceiling. The Applicants maintained that the design was acceptable. (The NRC Region IV Senior Resident Inspector - Construction, Mr. Robert Taylor,

concluded that the design was acceptable, in NRC Region IV Inspection Report 50-445/83-24, 50-446/83-15.) However, the NRC's Technical Review Team (TRT) found that the ceiling was not properly designed for seismic and Applicants are now redesigning (or already have redesigned) the control room ceiling; this was discussed in the NRC Staff's NUREG-0797, Supplemental Safety Evaluation Report (SSER) No. 8 dated February 1985 (pages K-83 through K-85), and discussed at pages 7 and 8 of Affidavit of CASE Witness Mark Walsh, attached to CASE's 5/6/86 Additional Response to Licensing Boards' 11/11/85 Memorandum (Statistical Inferences from CPRT Sampling). All of these documents form part of CASE's bases for this particular design issue.

On October 6, 1983, the Licensing Board issued its Partial Initial Decision (Change in Material Properties for A500 Steel) (LBP-83-63, 18 NRC \_\_\_), in which the Board "found that applicant had complied with the ASME Code in its analysis of supports manufactured from A-500 Steel but that it had not demonstrated that its pipe supports have adequate safety margins, considering that there was a 15 percent error in the code allowable for that grade of Steel" (quoted from Licensing Board's 12/28/83 Memorandum and Order (Quality Assurance for Design), page 32).

In May 1984, hearings were held on that portion of Cygna Energy Service's Draft Phases 1 and 2 Report which had to do with cable tray supports (and other matters). In his cross-examination of Cygna's witnesses and his own testimony, CASE Witness Mark Walsh pointed out problems with design of the cable tray supports (which no one else had identified as a problem at that time).

On January 25, 1985, Cygna advised the NRC Staff that it was "withdrawing all Phase 2 conclusions for both technical adequacy and design quality assurance of cable tray support design" (a reversal of its previous position).

On March 28, 1986, NRC Region IV issued Inspection Report 50-445/85-19 (which covered inspections which they made at Comanche Peak during the period of November 18 through December 18, 1985); the report stated, in part (page 1 of cover letter, detailed in the report itself):

The purpose . . . was to evaluate the . . . Unit 1 as-built cable tray inspection program. The inspection identified multiple instances involving the failure to properly inspect and document as-built cable tray attributes. In addition, violations were identified relative to both the failure of the QA programs to establish QA overview and audits of the Unit 1 as-built cable tray inspection program and the use of incorrect weld bevel angles.

The transcripts of those May 1984 hearings, Cygna's letter and other related documents, the inspection report and other related documents are all part of CASE's bases.

Beginning in late spring and continuing during the summer of 1984, Applicants filed 17 Motions for Summary Disposition on the following design issues: A500 Steel; AWS/ASME (Design); Axial Restraints; Cinched Down U-Bolts; Damping Factors; Design/Design QA; Differential Displacement; Friction; Gaps; Generic Stiffnesses; Local Displacements; Richmond Inserts; Safety Factors; Section Property Values; Stability; U-bolts Acting as 2-Way Restraints; and Upper Lateral Restraint. During the summer and early fall of 1984, CASE responded to all 17 of Applicants' Motions for Summary Disposition. Applicants' Motions and their attached affidavits, the few responses made by the NRC Staff, CASE's responses and their attached

affidavits, and other additional responses by the parties all are part of CASE's bases.

Beginning October 6, 1984, CASE filed its own Motions for Summary Disposition, four of which have never been answered by Applicants or NRC Staff (but which CASE has not withdrawn). These four Motions for Summary Disposition are also part of CASE's bases.

On December 18, 1984, the Licensing Board issued its Memorandum (Reopening Discovery; Misleading Statement) in which it found that Applicants had made a false statement in the licensing proceeding and that a proper remedy was to reopen discovery. The Board stated, in part (pages 1 and 2):

. . . we find Applicants' testimony to be misleading, to reflect adversely on the credibility of Applicants' expert witnesses and to be cause for reopening discovery.

The Board also set forth additional specific concerns about the reliability of Applicants' testimony. In its 11/25/85 Memorandum and Order (Reconsideration of Misrepresentation Memorandum), the Board left its initial order in effect but clarified it. Both of these Board Memoranda and Orders and related documents are part of CASE's bases.

On January 30, 1985, Applicants, in a letter to the Licensing Board, attached a copy of their 8-K filing with the Securities and Exchange Commission in which they reviewed recent events in the case and advised that Applicants at that time estimated that Unit 1 of Comanche Peak would probably not be placed in commercial operation before early 1986; they also

asked that the Licensing Board defer further hearings until March 1985 and take no immediate action on Applicants' pending application for authority to load fuel. That letter, the 8-K SEC filing, and related documents are part of CASE's bases.

And on April 18, 1986, the Applicants filed an 8-K report with the Securities and Exchange Commission in which they stated, in part:

As a result of preliminary findings from the ongoing reinspection and corrective action programs at the Comanche Peak [plant] . . . the [Applicants . . . have] concluded that [their] present schedule for commercial operation of Unit 1 by mid-1987 is no longer achievable. [The Applicants] . . . [have] initiated further expansion of its reinspection and corrective action effort to address and resolve the additional deficiencies which have recently been discovered.

[Applicants] . . . now expect[s] that modifications (most of which are minor) will be required on approximately thirty percent of the pipe supports in Unit 1 and has also directed the replacement of containment electrical penetrations in such Unit . . . [Applicants are] . . . unable at this time to predict how much additional time will be required to obtain license approval to permit the operation of Unit 1 or the extent to which presently estimated construction costs will be exceeded . . .

Applicants 8-K SEC report and related documents are part of CASE's bases.

In addition to the preceding specific documents, there are other documents (and their underlying related documents) which are also part of CASE's bases; for example: 9/17/85 Board Memorandum (Cygnia Review of Revised Designs); 10/29/85 Boards' Memorandum and Order (Status of Pending Motions); 11/8/85 Board Memorandum (Withdrawal of Written Filings Motion); Applicants' 11/12/85 letter to the Licensing Board with affidavits attached, correcting and modifying some of the affidavits attached to their withdrawn Motions for Summary Disposition (as requested by the Board); CASE's 12/19/85

Response to Applicants' 11/12/85 Changes to Affidavits in Support of Applicants' Motions for Summary Disposition; etc.

The preceding are only some of the bases for CASE's contention, all of which (with the exception perhaps of one inspection report) CASE believes the Licensing Board in the Comanche Peak proceedings (which is composed of the same individuals who sit on the Construction Permit Board) is well aware (and many of which were in fact authored by that same Board).

In addition, CASE's bases include FSAR commitments by Applicants, all applicable industry codes and standards (such as the ASME, AWS, ASTM, ANSI, etc.), and all applicable NRC regulations. (Although this may appear to be obvious, we restate it here because of the peculiar circumstances at Comanche Peak, including the fact that Applicants' current reinspection program is admittedly being conducted outside the requirements of 10 CFR Part 50, Appendix B.)