

UNITED STATES
NUCLEAR REGULATORY COMMISSION

Before the Commission



In the Matter of)

TEXAS UTILITIES GENERATING COMPANY,)
et al.)

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

Dkt. Nos. 50-445-OL
50-446-OL

CASE REQUEST FOR IMPOSITION OF FINE,
FOR SUSPENSION OF CONSTRUCTION ACTIVITIES,
AND FOR A HEARING ON APPLICATION TO RENEW CONSTRUCTION PERMIT

On August 1, 1985, the construction permit for Unit 1 of the above-identified plant expired. In direct violation of NRC regulations (§50.10), construction continued on the unit for six months, at least until January 27, 1986. TUEC, in its filing dated January 29, 1986, seeking an extension of the completion date of the expired permit, indicates that it has voluntarily halted some but not all construction on Unit 1 but that it may recommence construction without permission of the NRC. The purpose of this filing is to request the Commission to act immediately on four issues related to these events:

1) appropriateness of imposition of fines against TUEC for its six-month violation of §50.10, its continued construction activities, and its reservation of the right to recommence any other construction activities at Unit 1 without a valid permit;

2) whether any construction can continue

at Unit 1, including CPRT work, when no construction permit exists;

3) the existence of a significant hazards consideration related to the proposed continuation of construction at Unit 1;

4) The need for a full adjudicatory hearing on the requested amendment to the expired construction permit pursuant to 42 U.S.C. §2239.

A. Fines.

In its general statement of policy and procedure for enforcement actions, the Commission established a substantial commitment to enforcement of its regulations and to the imposition of fines for willful violations of requirements, including careless disregard of regulations.

The six-month continuation of construction after expiration of its construction permit without even applying for an amendment to the permit is precisely the kind of careless disregard of requirements to which fines should be applied. The admitted continuation of some construction activities and intent to reserve the right to commence other construction activities is the willfulness for which particularly severe penalties should be imposed.

In addition, as the following discussion makes clear, TUEC has extensively violated QA/QC requirements, has failed to properly design the facility and has consistently ignored the warnings from NRC inspections and independent audits to correct

QA/QC and design problems. Even today violations of procedures are occurring in the implementation of the CPRT and rework program. All of this conduct warrants the full imposition of the enforcement authority of the NRC. The gross misconduct of TUEC requires swift, certain, and severe punishment.

B. Halt Construction.

Because TUEC has filed a request to renew its construction permit for Unit 1, the Commission must decide a threshold legal question: whether a request to renew an expired construction permit is in the nature of an application for a new permit subject to the obligatory requirement for a hearing under 42 U.S.C. §2239, or whether it is in the nature of an amendment and subject to the discretionary hearing requirements of §50.92. We believe it is unavoidable that the filing being made by TUEC now, regardless of how it is titled, is an application for a new construction permit. There cannot be an amendment unless there is something to amend. By its terms the Unit 1 construction permit expired six months ago. That permit concluded with the statement that "[t]his permit is effective as of its date of issuance and shall expire on the latest completion date indicated in paragraph 3.A above" (emphasis added). §50.55(b) provides similarly:

If the proposed construction or modification of the facility is not completed by the latest completion date, the permit shall expire and all rights thereunder shall be forfeited: Provided, however, That upon good cause shown the Commission will extend the completion date for a reasonable period of time. 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.

Unlike the statutory and regulatory language, relied upon by TUEC in its application, related to the FCC, the NRC statute and regulations unequivocally require forfeiture of a license unless a good cause finding is made after an application for renewal is filed. The relevant FCC language, relied upon extensively in the cases cited by TUEC, is that the FCC license may be extended "for such further time as the Commission may allow" or for good cause. 47 U.S.C. §319(b). The NRC may only extend for good cause, and unless and until a timely request for such a finding is made the permit is forfeited. This is the clear purport of 10 CFR §2.109 explicitly granting an automatic extension of a license if a timely renewal application is filed.

Unless construction permits are deemed to be mere formalities, their expiration must make a substantial difference. That difference is, at a minimum, that a new permit must be sought to continue construction.¹

The facts already known about TUEC and the work at Unit 1 disclose an unparalleled failure to obey the most fundamental requirements for construction of a nuclear facility. Thus there is a particular need here for the Commission to adhere strictly

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The situation here is markedly different than in the more usual case of an application being filed prior to expiration of the permit but no action being taken by the Staff until after the permit expires. In that case §2.109 authorizes continuation of licenses.

to the legal requirement that a utility without a construction permit must be subject to a construction permit hearing as a precondition to being allowed to undertake construction activities.² Where, as here, there has already been a hearing and decisions on issues which could arise in the new proceeding, the prior decisions would be binding absent the existence of significant new evidence. Such new evidence exists here and is disclosed in four ways:

- 1) inspections and audits of TUEC by NRC and independent organizations;
- 2) decisions and other memoranda of the Atomic Safety and Licensing Board;
- 3) the findings of Staff investigations of allegations by former workers at Unit 1 as detailed in the TRT reports, the SSERs, and the EG&G findings on harassment and intimidation of QA/QC inspectors;
- 4) admissions by spokespersons for TUEC or as contained in deficiency reports, NCRs, or other TUEC (or TUEC-agent) generated

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TUEC seeks to invoke the doctrine of nunc pro tunc to overcome its failure to file the extension request before the permit expired. The doctrine is applicable only where the act in question was actually performed before and mere formalities were omitted. Here the acts in question, timely filing for an extension and conducting construction activities only with a valid permit, were not performed. Nunc pro tunc is not a substitute for compliance with substantive requirements of the NRC. Had TUEC filed the request on time but deleted a required signature by inadvertence, perhaps nunc pro tunc could apply, but surely not here.

documents.

Attached to this letter is a detailed summary of the facts disclosed by these sources, all of which arose since the construction permit was issued.

All of this information demonstrates quite clearly that the findings made in the original construction permit that there is reasonable assurance that TUEC will conduct its construction activities in compliance with the rules and regulations of the Commission (Finding 1.A) and that TUEC is technically qualified to design and construct the proposed facility (Finding 1.F) were erroneous. In addition, contrary to the requirement of the construction permit, TUEC has not constructed Unit 1 in accordance with the principal architectural and engineering criteria commitments contained in the application and the hearing record for the construction permit.

All of the events which have transpired since construction was authorized and which are summarized in the attachment to this letter, if known at the time of the construction permit consideration, would have resulted in a denial of the construction permit. In a closely parallel situation involving the Midland facility, the Atomic Safety and Licensing Appeal Board sent a letter to the then Director of Regulation strongly urging the suspension of construction of the Midland facility because, after final action on the permit application had been taken, it was revealed that "first line quality assurance inspectors were allowing items to pass their inspection which, in fact, did not meet applicable QA standards." Letter from Alan Rosenthal, Jack Buck, and William Parker to L. Manning Muntzing

(11/26/73), p. 1. In that case only one area of plant construction, Cadweld splices, had been found deficient. In the instant case the Staff has concluded in SSER 11 (Appendix P, p. P-35):

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.

There, as here, the issue is whether an applicant is capable of properly implementing a QA/QC program.

The full text of the Appeal Board letter is attached. Virtually every conclusion contained in it can be made in this case many times over. Significantly, the Staff issued an order to show cause why construction should not be suspended in that case, and eventually Midland was abandoned because the utility³ was incapable of building the plant properly. In this case the argument for not allowing construction unless and until a new

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We are not seeking a show cause order here because none is required. In this case no lawful construction can be undertaken because no construction permit exists. Thus construction cannot legally recommence unless and until it is authorized. Whatever special discretion may exist under §2.206 is inapplicable where no permit has been issued. The fact that TUEC did not keep track of its construction permit expiration date is symptomatic of its careless disregard for the Commission's rules and regulations and destroys any possible presumptions in its favor.

construction permit is issued is even more compelling.

C. Significant Hazard Considerations.

Should the Commission treat the TUEC filing as an application to extend the completion date of the expired permit, it still would have to hold a hearing to determine whether to grant the extension. Pursuant to §50.92 and 42 U.S.C. §2239, a hearing is required on every proposed amendment to a construction permit involving a significant hazard consideration. Allowing TUEC, which has had an abysmal construction record, to continue construction would jeopardize the plant by allowing incompetents to construct, reinspect, and repair components essential for safe operation of Unit 1.

In authorizing an extension of the TUEC construction permit in 1981 without making a significant hazard consideration determination and without a hearing, the Staff relied upon facts and circumstances which are not present here. Thus, if the precedent of the prior decision is followed here, a finding should now be made that the proposed renewal of the construction permit does raise significant hazard considerations (i.e., whether TUEC is technically qualified and competent to construct a nuclear plant, whether there is reasonable assurance it will follow Commission regulations in conducting construction, whether it can and will implement a proper QA/QC program, and whether it can and will meet the architectural and engineering commitments it has made in the application, in the hearing record and to the Staff), that a hearing before the ASLB should be conducted and that no construction should be allowed on Unit 1 unless and until

it is authorized by the ASLB.

Unlike the 1981 extension, the present request for renewal is not based upon good cause. Then the need for additional time was caused by factors allegedly beyond TUEC's control, such as delivery delays and regulatory changes. Now the need for further time is a direct result of TUEC's failure to design the plant properly, to properly construct the plant, and to properly implement the QA/QC program. These failures are detailed in Board decisions, in the TRT and SSER findings, and in TUEC's own description of the situation in its Case Management Plan and in its present filing. The persistence of these problems is documented in past NRC and independent audits and in the disclosures and admissions from TUEC that even the current CPRT and rework is not being properly conducted. A significant portion of the work was done without a TUEC QA/QC program in direct violation of Appendix B. Widespread use of illegal "inspection quotas" has infected all of the reinspection and

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TUEC alleges that all CPRT activities are outside the scope of its construction permit and thus it may pursue them irrespective of the status of its permit. This outrageous view challenges thirty years of AEC/NRC practice and challenges the ability of the NRC to ever adequately regulate a nuclear facility. TUEC intends to use the output of the CPRT to support its claim that the plant was properly constructed. It has submitted the CPRT plan to the Staff for review and sought the ASLB approval of the plan. It will eventually attempt to use the CPRT work as a substitute for the Appendix B requirements. If the CPRT is not within the scope of the permit, then all construction can be conducted outside the jurisdiction of the NRC and only the finished product submitted for approval. The scheme of nuclear regulation is to assure NRC control of construction activities, including inspection of construction work, and the completed facility. TUEC's attempt to evade NRC supervision of the CPRT is yet another manifestation of its disregard for both the letter and the spirit of the NRC regulations.

rework efforts as partially conceded by TUEC spokespersons and found by NRC investigators. Major deficiencies in the construction and rework of deficiencies found in the electrical area have been revealed.⁵

TUEC has conceded that the cause of this delay is not related to efforts to answer legitimate safety concerns but is a litigation device intended to be used for purposes of defeating contentions raised by CASE, which contentions TUEC deems to be without merit. In its Opposition to "Motion to Compel Responses to CASE's November 15, 1985, Interrogatories" (1/27/86), p. 18, TUEC states:

CPRT is, to state the matter again, the means by which the Applicants intend to present their case on the issues now before this Board. The argument that CPRT is addressing itself to relevant non-litigation matters cannot be sustained.

This statement should be contrasted to the self-serving statement contained in TUEC's January 24, 1986, letter to Harold Denton (p. 1):

Physical construction on Comanche Peak Unit 1 was essentially completed in early 1985. However, major efforts to reinspect and reanalyze various structures, systems, and components have been ongoing since the fall of

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Although changes have been made in TUEC personnel since 1984, many key people still remain, particularly at the upper management level, at the level of Messrs. Brandt and Purdy and those supervisors working under them. Moreover, recent disclosures about the conduct of CPRT and rework activities disclose that, while some faces have changed, the problems have remained. Illegal inspection quotas, conduct of rework and CPRT activities without a TUEC QA/QC program, deficiencies in the records for cable tray supports, and other plant components and violations of confidentiality by and ineffectiveness of SAFETEAM activities demonstrate that with TUEC no matter how much things change they are still the same.

1984 in order to respond to the questions raised by the NRC Staff's Technical Review Team ("TRT"), by the Board and parties in the ASLB operating license proceedings, and raised by other external sources. The TRT was formed by senior NRC Staff management in March of 1984 to consolidate and carry out the various reviews necessary for the Staff to reach its decision regarding plant licensing. Applicants formed the Comanche Peak Response Team and submitted a Program Plan to respond to the TRT's questions, the ASLB issues, and the other external sources issues.

Which TUEC should the Commission believe? Neither, since there is other evidence of misstatements and misrepresentations by TUEC and its agents. See, e.g., Board Memorandum (Reopening Discovery; Misleading Statement), 12/18/84, pp. 1-2:

. . . we find Applicants' testimony [related to cinched down u-bolts] to be misleading, to reflect adversely on the credibility of Applicants' expert witnesses and to be cause for reopening discovery.

Board Memorandum (Reconsideration of Misrepresentation Memorandum), 11/25/85; In the Matter of William Dunham v. Brown & Root, Department of Labor Docket No. 84-ERA-1, Recommended Decision and Order, 11/30/84, finding as inherently untrustworthy witnesses certain key supervisory employees at the Comanche Peak facility. Id., Slip Op. p. 7.

Admittedly, at this point it is not possible to conclusively determine what is the motive for the delaying events which necessitate the requested renewal of the construction permit. What is clear is that TUEC's averments are inherently subject to question, that the work which is delaying construction has been caused by TUEC's past blunders, and that any extension could not

be for a good cause.

D. Hearing.

Although in this filing we make a substantial showing that the construction permit renewal should be denied, our primary purpose is to establish beyond any question that significant hazard considerations are involved and thus a hearing is required. The distinction between whether a significant hazard consideration exists and whether there is in fact a significant hazard which would warrant rejection of the proposed permit renewal is extremely important. We are not now seeking a ruling on the latter issue at this time. All that needs to be considered now is whether there are legitimate issues that relate to significant hazards, thus requiring a notice of hearing under §2.105. It will be for the ASLB to decide whether the facts warrant rejection of the application. We believe it is overwhelmingly clear that the Staff's own findings, not to mention all the other data and Board orders, disclose a very substantial basis for questioning the technical competence and commitment of TUEC to build a safe nuclear power plant. The SSERs and Board decisions particularly identify safety-related components whose design or construction was improper. Obviously, if an applicant cannot properly build a nuclear plant and if, as here, the findings that underlay the original construction permit

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TUEC must accept direct responsibility for all of these blunders as the overall manager of the plant. In the Matter of Texas Utilities Generating Company (CPSES), LBP-74-88, RAI-74-12, pp. 1047, 55, Finding 23. Moreover TUEC has never indicated that anyone else is to blame.

are no longer valid, that is a significant hazard. In such a case there is no choice but to grant the relief sought here by CASE, make the significant hazard finding, and notice the hearing.

CONCLUSION

This request and its attachments are intended to be included as part of the record to be considered in making the decisions sought here. In addition, the entire record of the operating license proceeding, the TRT, SSERs, and EG&G reports, all transcripts of meetings between Staff and any of the parties, all allegations received by the Staff related to Unit 1 construction and investigations conducted by the Staff into those allegations, all SAFETeam investigations, all NCR and other deficiency papers generated with respect to Unit 1, and any and all other material in the Commission's possession related to Unit 1 are also to be included as part of the record CASE puts before the Commission⁷ for its determination on these requests.

Should the Commission receive filings from TUEC or others relevant to the renewal request or this request, CASE wishes to be promptly notified and copied through its undersigned counsel and reserves the right to submit further data in support of its

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The scope of the record of what the Commission should review in deciding whether a significant hazard consideration exists may be broader than the scope of the record in deciding whether to approve the application. The latter is controlled by the parties and the rules of practice. The former calls upon the Staff to use all knowledge available to it. See Office of Communication of the United Church of Christ v. F.C.C., 425 F.2d 543, 46 (D.C. Cir., 1969).

position at any time.

As the foregoing discussion reveals, the issues relevant to TUEC's request for a permit renewal involve the same facts and issues as some of the matters now pending before the ASLB. There, as here, TUEC's competence in constructing the plant is at issue. There the question of competence affects the quality of what has been constructed. Here it affects whether TUEC can be allowed to continue construction.⁸ In both instances, the record will consist of the same underlying facts. For efficiency, we propose the issues raised by TUEC's application and the issues in the OL proceeding be combined for hearing before the sitting ASLB.

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The Commission decision, Washington Public Power Supply System (WPPSS No. 2), CLI-82-29, 16 WRC 1221 (1982), defined the good cause requirement in the context of an intervenor seeking to relitigate safety and environmental issues disposed of in the original construction permit proceeding. Unlike that case, we are looking at facts which could not have been previously litigated because they arose out of construction activities undertaken after the permit was issued. In this case the proper issue for good cause is the narrow one defined by the regulation -- i.e., did TUEC cause the delay -- and the general issue of whether they should be allowed to continue to construct Unit 1 in light of their past performance in constructing it. It would turn logic on its ear to conclude that the Commission could find good cause for the extension necessitated by the delay for which TUEC was responsible without looking to see if the TUEC responsibility arose from its own incompetence. A utility whose cause for delay is its gross misconduct should have to reapply for a license having lost the presumptive validity of its permit. To the extent CLI-82-29 is deemed in conflict with this analysis, we respectfully submit that it was in error and urge its reconsideration and rejection as applied to this case.

For the reasons given, we request that the relief be granted.

Respectfully submitted,

Anthony Z. Roisman - BPG
ANTHONY Z. ROISMAN
BILLIE P. GARDE

Trial Lawyers for Public Justice
2000 P Street, NW, #611
Washington, D.C. 20036
(202) 463-8600

Counsel for CASE

Dated: January 31, 1986



November 26, 1973

L. Manning Muntzing
Director of Regulation

QUALITY ASSURANCE DEFICIENCIES ENCOUNTERED
AT MIDLAND FACILITY

The Appeal Panel recently received a copy of the November 13, 1973 Notification of an Incident or Occurrence issued by the Directorate of Regulatory Operations in connection with the Midland Plant, Units 1 and 2. This notification relates to a Region III inspection of the Midland facility which took place on November 6-8, 1973 and "identified serious deficiencies associated with Cadweld splicing of concrete reinforcing bars". It is stated that "[t]hese deficiencies involved inadequate procedures for installing Cadweld splices, for material control, and for documenting required quality parameters".

In addition, the notification reveals that the inspectors determined that "inspection techniques were inadequate and acceptance criteria used for quality requirements were being misapplied". We assume that this was intended to be a diplomatic way of reporting that the first line quality assurance inspectors were allowing items to pass their inspection which, in fact, did not meet applicable QA standards.

The notification points out that Consumers Power has suspended all Cadweld splicing operations at the site and that those operations would not be resumed until certain specified corrective action had been taken. It is further indicated, however, that "[o]ther unrelated work will continue at the site".

The Midland construction permit proceeding is, of course, no longer before the Appeal Board which had been assigned to it. Indeed, the period of time allotted for Commission review of the last Appeal Board decision in the proceeding has now elapsed, with the result that there has been final agency action (which is subject, of course, to the outcome

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of the judicial review which is now in progress). Accordingly, the Midland Appeal Board clearly lacks jurisdiction to take official cognizance of the irregularities disclosed by the inspection, let alone issue any orders with respect thereto.

Nonetheless, in view of the record that was adduced during the course of the adjudicatory proceeding as well as of certain rulings which were made therein, the members of the Midland Appeal Board feel constrained to record (1) their extreme dismay respecting this latest development; and (2) their firm belief that more drastic action against Consumers Power and its architect-engineer should be promptly considered. In this connection, had the construction permit proceeding still been before our Board at the time that the results of the November 6-8 inspection were announced, it is a virtual certainty that we would have ordered forthwith a cessation of all construction activities -- to continue in effect at least until such time as properly trained quality assurance inspectors, fully independent of the construction organization, were available on site. We shall briefly outline the reasons why we would have taken that action.

1. As you will recall, in ALAB-106, RAI-73-3 182 (March 26, 1973), we dealt specifically with the contention of one of the intervenor groups (the Saginaw Intervenors) that the evidence of record established that the applicant is "incapable of, and cannot be relied upon to, perform adequate quality assurance and quality control". Based upon our review of the evidence relating to the work at the Midland site performed under an exemption, we made the express finding that "neither the applicant nor the architect-engineer has provided reasonable assurance that the QA program will be implemented properly * * *. They have in this project not demonstrated their concern with maintaining QA programs in synchronization with their construction programs, nor have they demonstrated that they will have properly trained people on site to implement the QA program". Id. at 185. One of the considerations which led to this finding was the disclosure in one inspection report of record that "the QA and QC inspection personnel present at the concrete pour location did not promptly identify and correct apparent deviations from the ACI-301 Standard regarding consolidation of concrete". Ibid.

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Because of the "no reasonable assurance" determination found to be compelled by the record, we gave serious thought to revoking the construction permits which had been issued under the Licensing Board's authorization. We did not do so only because (1) the prior failures of the applicant and the architect-engineer to observe required QA practices and procedures had occurred in 1970 (before the construction work under the exemption had terminated); and (2) we had the solemn assurance of the applicant that all of those prior deficiencies were being rectified as construction was being resumed under the permits. In the circumstances, we thought it would be enough to impose specific reporting conditions which were designed to make certain that the applicant was making good on its promise and that there would be an adequate QA program for the resumed construction.

On the basis of one of the reports called for by ALAB-106, and a number of inspection reports supplied by the staff in response to a later order of the Board (and a request of one of its members), we denied in ALAB-147, RAI-73-9 636 (September 18, 1973), the motion of the Saginaw Intervenor to revoke, or stay the effect of, the construction permits pending a definitive determination that the applicant and the architect-engineer were complying and would continue to comply with the QA regulations in constructing the Midland facility. We found that "there is now a reasonable assurance that appropriate QA action is being taken by the applicant" and also that, apart from a deficiency which we perceived in its QA organization, there was no QA problem pertaining to the architect-engineer requiring a direction of corrective action. Id. at 637, 640 (Fn. 10).

2. Against this background, our present concern should not be difficult to understand: The only reasonable conclusion which we can draw from the disclosures of the November 6-8 inspection is that the assurances which we had received from the applicant were false and that, in point of fact, it and the architect-engineer still have not manifested both an ability and a willingness to take the steps necessary to insure proper QA activities. Indeed, the QA deficiency referred to in the notification bears a startling resemblance to the deficiency referred to in ALAB-106 respecting the QA and QC personnel present at the

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November 26, 1973

L. Manning Muntzing

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concrete pour location (which is mentioned above). It would thus appear, with the benefit of hindsight, that it was not enough for us simply to impose reporting conditions in ALAB-106. It also seems evident that, contrary to our finding in ALAB-147 (which necessarily was founded on the materials then before us), there is not a reasonable assurance that appropriate QA action is now being taken. If anything, there is a solid assurance that exactly the opposite is the case.

3. A few weeks ago, two of the members of this Board requested and obtained a meeting with you and several other regulatory officials to explore the question of the extent to which the QA "track record" of an applicant or architect-engineer is taken into account by the staff in its appraisal of applications for construction permits. While that discussion was wholly generic and intentionally was not addressed to any specific reactor, it obviously has a special significance to the present situation regarding Midland. If we recall correctly, we were told that the point might be reached where the staff would be compelled to conclude that incorrigibility was involved, and then to act accordingly. Whether or not we would agree that a bad "track record" should come into play only in such extreme circumstances, this case would seem to meet your own test. What we have here is a pattern of repeated, flagrant and significant QA violations of a non-routine character -- coupled with an unredeemed promise of reformation.

The staff has dealt affirmatively with this most recently detected serious QA shortcoming by requiring the prompt suspension of all Cadweld splicing pending the taking of necessary corrective action. But there remains the unresolved question as to whether the same or equally serious QA shortcomings may be infecting other aspects of the construction work. It is difficult to understand how any construction activity can be allowed to proceed until that question is settled.

4. We would make only this one further observation. We expressly noted in ALAB-106 that the "staff's enforcement responsibilities are in no way limited by the [reporting] conditions herein prescribed, and the staff is free to take any remedial action over and above these conditions which it may deem necessary". RAI-73-3 at 186.

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L. Manning Muntzing

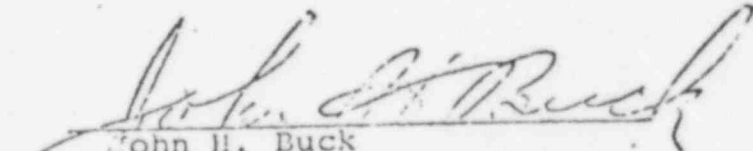
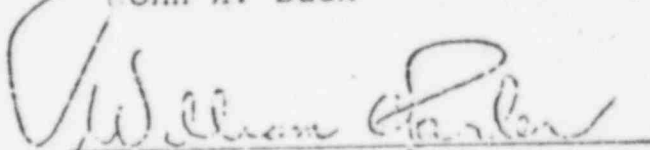
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November 26, 1973

We did not (and, of course, could not appropriately) attempt to direct that, if a particular situation were to arise, the staff should pursue a specific course. Once the adjudicatory proceeding is over, the on-going supervision of construction activities is your function and not ours. But implicit in that statement -- and in the choice we made not to revoke the construction permit -- was the assumption that the staff would not countenance for long a continuation of the deplorable QA performance which the record revealed had obtained during the construction work under the exemption.

(Alan S. Rosenthal)

Alan S. Rosenthal


John H. Buck
William C. Parler

cc: Commissioner William O. Doub



ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

December 3, 1973

Docket Nos. 50-329
50-330

Alan S. Rosenthal, Esq., Chairman
Atomic Safety and Licensing Appeal
Board
U. S. Atomic Energy Commission
Washington, D. C. 20545

John H. Buck, Esq.
Atomic Safety and Licensing
Appeal Board
U. S. Atomic Energy Commission
Washington, D. C. 20545

William C. Parler, Esq.
Atomic Safety and Licensing Appeal
Board
U. S. Atomic Energy Commission
Washington, D. C. 20545

RE: QUALITY ASSURANCE DEFICIENCIES ENCOUNTERED AT
MIDLAND FACILITY

Gentlemen:

This is in response to your memorandum on this subject dated November 26, 1973. We are also concerned as to quality assurance implementation at the Midland facility. It was for this reason that we initiated the action which led to the shutdown of cadwelding at that facility by Consumers Power Company. As a practical matter, the shutdown of cadwelding at this site severely limits Class I construction at the site in that cadwelding must be completed before additional Class I structural work can proceed.

A reinspection of November 20-21, 1973, revealed that that which the licensee believed to be sufficient with regard to cadwelding procedures still was inadequate. This raised doubts about the licensee's overall implementation of its quality assurance program.

We are today issuing to this licensee an order confirming the continuing suspension of the cadwelding and ordering the licensee to show cause why all activities under the construction permits should not be suspended.


L. Manning Muotzing
Director of Regulation

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. (e: basis 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.

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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)

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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 R-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.

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.

**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.

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.

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. Meritt	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. O. 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, Construction 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 IOCFR50 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 IOCFR50 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 QC 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

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.

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

ATI 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. ATI 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

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piping, 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 10CFR50 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 DCA'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 DDAs 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

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 QC DDAs, 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 CPQI-A8, 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

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.

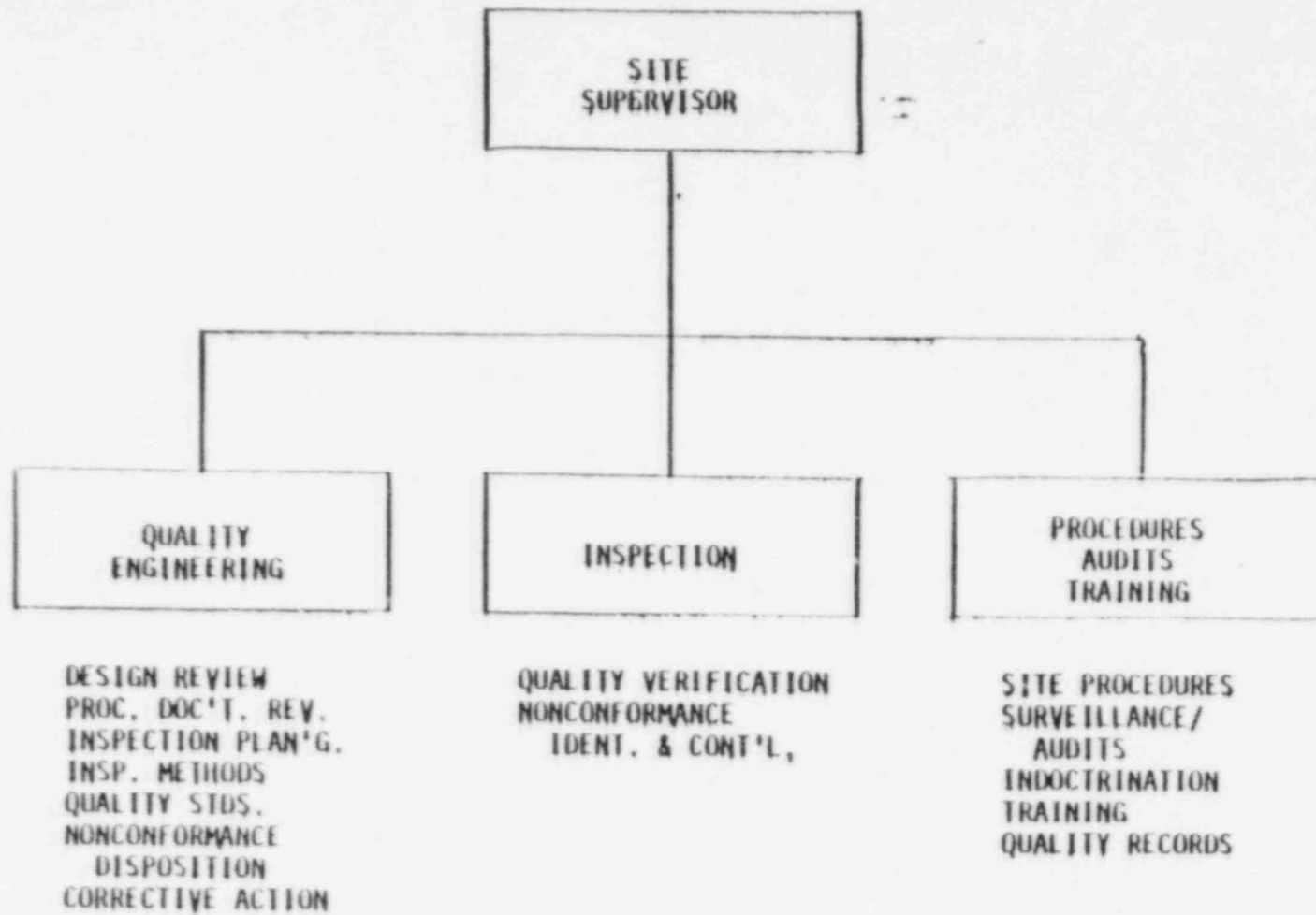


EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



Before the Commission

In the Matter of)

TEXAS UTILITIES GENERATING)
COMPANY, et al.)

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

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

CERTIFICATE OF SERVICE

By my signature below, I hereby certify that true and correct copies of CASE's Request for Imposition of Fine, for Suspension of Construction Activities, and for a Hearing on Application to Renew Construction Permit have been sent to the names listed below this 31st day of January 1986, by: Express mail where indicated by *; Hand-delivery where indicated by **; and First Class Mail unless otherwise indicated.

Administrative Judge Peter B. Bloch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Herbert Grossman
Alternate Chairman
ASLB Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Kenneth A. McCollom, Dean
Division of Engineering, Architecture
and Technology
Oklahoma State University
Stillwater, Oklahoma 74074

Dr. Walter H. Jordan
Carib Terrace Motel
522 North Ocean Blvd.
Pompano Beach, FL 33062

Ellen Ginsberg, Esq.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Robert A. Wooldridge, Esquire
Worsham, Forsythe, Sampels
& Wooldridge
2001 Bryan Tower, Suite 3200
Dallas, Texas 75201

Nicholas Reynolds, Esquire
Bishop, Liberman, Cook,
Purcell & Reynolds
1200 17th Street, N.W.
Washington, D.C. 20036

Stuart Treby, Esquire
Geary S. Mizuno, Esquire
Office of Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docketing & Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Renea Hicks, Esquire
Assistant Attorney General
Environmental Protection Division
Supreme Court Building
Austin, Texas 78711

Mrs. Juanita Ellis
President, CASE
1426 S. Polk
Dallas, Texas 75224

Mr. W.G. Council
Executive Vice President
Texas Utilities Generating Co.
Skyway Tower, 25th Floor
400 N. Olive Street
Dallas, Texas 75201

Mr. Roy P. Lessy, Jr.
Morgan, Lewis & Bockius
1800 M Street, N.W.
Washington, D.C. 20036

Mr. Thomas G. Lignan, Jr.
Ropes & Gray
225 Franklin Street
Boston, Massachusetts 02110

Alan S. Rosenthal, Chairman
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. W. Reed Johnson
Administrative Judge
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Thomas S. Moore, Esq.
Administrative Judge
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Nunzio Palladino, Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Lando Zech, Commissioner
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

James Asselstine, Commissioner
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Frederick Bernthal, Commissioner
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Thomas Roberts, Commissioner
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Anthony Z. Roisman BLG
ANTHONY Z. ROISMAN