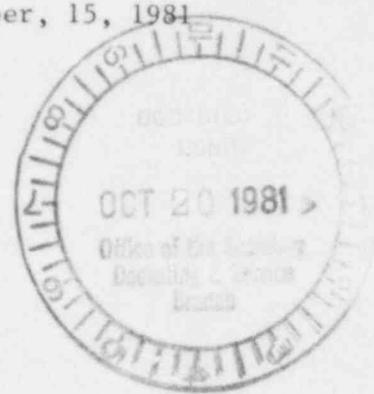




October, 15, 1981

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY & LICENSING BOARD



In the Matter of)
)
HOUSTON LIGHTING & POWER CO.) Docket No. 50-466 CP
(Allens Creek Nuclear Generating)
Station, Unit 1 and 2))

INTERVENOR DOHERTY'S MOTION FOR ADDITIONAL EVIDENCE ON TEXPIRG ADDITIONAL CONTENTION 31 APPLICANT TECHNICAL QUALIFICATIONS.

John F. Doherty, Intervenor in the above proceedings now moves the licensing Board order the Applicant and Staff file additional testimony and present witnesses for cross examination before them in order to collect additional testimony giving information with regard to TexPIRG Additional Contention No. 31, technical qualifications to see the ACNGS is properly constructed.

The additional testimony is sought because of a recently released report on design deficiencies at the South Texas Nuclear Project (STNP), Applicant's other nuclear construction site. The report, completed last May, is said by the NRC project manager for the STNP to have not reached the NRC until approximately ten days ago, when it is reported to have been made public. (See attached "Exhibit A", at Paragraph 11, and "Exhibit B" at Paragraph 4) The report appears extensive in scope. (See attached "Exhibit C").

This Intervenor's motion is predicated on having a complete record with regard to the TexPIRG 31 issue, and on fairness to Intervenor's who questioned witnesses from both Staff and Applicant on the basis that they took all the known and available evidence and information in mind in making their conclusory statements. Thus, the answer in Mr. Gilary's (Staff) written testimony (Testimony, P.6) resting on Mr. Gilray's knowledge, which could not have included the contents of the report, is at least in part based on the idea that having made certain admitted errors, the modifications in quality assurance programs and organizational changes as presented in the PSAR were sufficient to permit HL&P to provide an effective program. With knowledge of the report, testimony of Staff and Applicant might well have differed. Both Staff witnesses testified they were aware of some of the previous Applicant experience in nuclear plant construction (Tr. 18,408, L.6; and 18,414, L. 23) and that their conclusions were based in part on having knowledge of how Applicant dealt with those previous construction problems, as well as the PSAR submittals for ACNGS. This knowledge colored the Staff view that Applicant

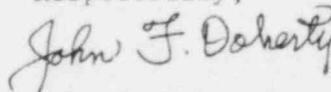
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is technically qualified to design and construct the proposed facility (Testimony, P. 6) because at this stage of the ACNGS licensing process, the assessment of the written submittals of the PSAR alone cannot represent meeting Staff's obligation to the public to conduct a review of an Applicant's prior performance where it is available and relevant to the licensing and to a contention. It follows that since Staff did not have the knowledge that a consultant, hired by the Applicant, had raised questions as to the licensability of the Applicant's STNP, Intervenors could not question Staff's conclusions with regard to whether the PSAR submittals represented a strong enough change in attitude and direction on the Applicant's part to indicate it could safely construct the ACNGS. The same disadvantage hindered the Board for its questions to the Staff's witnesses.

Therefore, this Intervenor moves the Board order that: (1) All parties to this proceeding be supplied a copy of the report; (2) Applicant provide additional testimony as to: (a) What organizational changes it made or will make as a result of the report, (b) How it will modify the design deficiencies so that STNP will be licensable, (c) What modifications, if any, they have made or will make in their supervision of the ACNGS construction in light of the subject report; (3) Staff will present testimony following its review of the report to indicate: (a) Whether its conclusions with regard to Contention 31 remain unchanged, (b) Whether, in its view, using information from the report, Applicant may alter design to provide a plant for which an operating license may reasonably be expected forthcoming, (c) Whether in its opinion the report indicates modifications of the organizational structure and quality assurance/quality control program plans for ACNGS are necessary. In addition, this Intervenor would also move that Intervenors who did not cross examine in the early October session on Contention 31 be permitted to cross examine on this part of the Contention, as the report may have alarmed them more than the previous situation and contention information dealing with the STNP.

Respectfully,



John F. Doherty

Copies of "INTERVENOR DOHERTY' MOTION FOR ADDITIONAL EVIDENCE ON TEXPIRG ADDITIONAL CONTENTION 31, APPLICANT TECHNICAL QUALIFICATIONS" were served on the parties below via First Class . S. Postal Service, this 5th of October, 1981 from Houston, Texas.

Sheldon J. Wolfe, Esq., Gustave A. Linenberger, Dr E. Leonard Cheatum, Administrative Judges; Steven Sohinki, Esq. (Staff); J. Gregory Copeland, Esq. and Robert Culp, Esq. (Applicant); Docketing & Service Branch, USNRC; Atomic Safety Licensing & Appeal Board; The Several Intervening Parties.

Design engineering on nuclear project flawed, firm alleges

By HAROLD SCARLETT
Post Environment Writer

PAGE 1A
10/12/81

Serious flaws in Brown & Root's design engineering on the South Texas Nuclear Project could disqualify the multibillion-dollar nuclear plant from getting an operating license, an independent consulting firm says.

The Quadrex Corp. said it also found defects in design engineering that could impair the plant's reliability to produce electric power.

Quadrex, a nuclear engineering consultant, was hired last January by Houston Lighting & Power Co., the project's managing partner, to review and evaluate Brown & Root's design engineering work.

A three-volume report on its findings laced with highly critical comments about Brown & Root's performance — as submitted to HL&P last May but has just been made public by project opponents.

Quadrex said it found six generic, or general, design engineering problems that "pose a serious threat to plant

licenseability" and four other generic defects that "may have a serious impact on plant licenseability."

But an HL&P spokesman, Don R. Beeth, said HL&P is "confident these concerns will be resolved and the plant will be licensed."

"We surely agree that Quadrex raised some concerns which — if left uncorrected — could affect licenseability," Beeth said. "But we deal with concerns every day which, if left uncorrected, would affect licenseability."

The Nuclear Regulatory Commission's manager for the project, Donald M. Sells, said in Washington he was "personally not too alarmed" about the Quadrex findings.

Sells, however, declined comment on whether the findings may jeopardize an NRC operating license for the nuclear project.

"It's premature to make any judgment on that until the NRC staff has made an in-depth analysis of the Quadrex report," Sells said.

Although the NRC was told of the Quadrex study last May, Sells said,

agency officials did not get actual copies of the findings until about 10 days ago.

The NRC has been producing copies, and they will be distributed to the staff for review this week, he said.

Some top NRC officials were reportedly annoyed that HL&P had not supplied the Quadrex findings earlier. But Sells said it was a report made for HL&P and "there is no reason for us to demand reports made for the company."

A Brown & Root spokesman said the big construction company would have no comment on the Quadrex report until Monday.

HL&P on Sept. 24 removed Brown & Root as the project's design engineer and turned the job over to the Bechtel Power Corp. The utility said Brown & Root's engineering staff was unable to keep construction work moving at a proper pace.

Quadrex said it found no evidence that Brown & Root had any overall, integrated system of design engineering for

Please see Design/page 21A

EXHIBIT A
(CONTINUED OVER)

N-plant

Firm disputes findings

From page 1

"Such problems are identified and corrected as the design proceeds and certainly well before the plant comple-

"But it would have been far more major sections of the plant," he said. "We feel we have caught this matter in ample time to resolve it without major surgery on the plant itself."
Beeth also said HL&P had not attempted to conceal the Quadrex findings. He said 50 copies had been circulating uncontrolled since May in HL&P and Brown & Root engineering departments.
On the lack of any public announcement of the findings, Beeth said: "This was just one of many studies. We make a lot of studies about which we make no public announcement."

Design engineering on N-project flawed, consultants' study says

From page 1

half-finished nuclear project near City.

"There was very little evidence of a well-thought-out and consistent basis for design," Quadrex said. "Much of the plant design basis is rooted solely in engineering judgment."

Quadrex added that in some instances, "design details have been obtained from other (similar) plants and used without confirming their applicability to the STP plant."

The consulting firm said Brown & Root design criteria "reflect industry issues for the 1973-75 time frame" but they do not adequately address more recent developments.

In many instances, Quadrex said, design engineering was based on "normal operation" and added that this by itself "is simply not a sufficient basis for design."

Quadrex said there was little evidence the design engineers had considered such special conditions as partial power, startup, shutdown, refueling, maintenance and accidents.

The consultants said STP will be the first plant to use a Westinghouse reactor with this particular emergency cooling system, and design assumptions for "worst case" accidents thus must be especially complete and accurate.

However, Quadrex said, assumptions regarding positions of doors and equipment hatches in the reactor buildings "seem unrealistic based on plant operating experience."

Quadrex said Brown & Root engineers had wrongly classified some design activities as not safety-related when in fact

they were safety-related.

It also said a safety analysis report on the project was out of date "in a number of areas."

Quadrex further said it found "no evidence" that Brown & Root, in designing the plant, considered ease of maintenance, repairs and inspections once the plant begins operating.

For example, in some maintenance cubicles of the mechanical and fuel handling buildings, repair crews who might be wearing anti-radiation suits would have to work in 104-degree temperatures, Quadrex said.

"Our experience has shown that in-service inspections can require a tremendous amount of structural dismantling, scaffolding erection, surface grinding and insulation removal," Quadrex said, "and these tasks can either be eliminated or simplified if proper access engineering is incorporated."

Lanny Sinkin, a leader of a San Antonio group opposing the project, speculated that Bechtel may have to withdraw as the new construction manager if Bechtel decides it cannot adopt and take responsibility for Brown & Root's design work.

The NRC insisted at a Washington meeting last week that Bechtel adopt the full design if it takes over the project, Sinkin said.

"I would assume that before Bechtel takes on this kind of responsibility, they will want to spend many months reviewing the project — and that's going to mean further delay in the project and cost millions of dollars," Sinkin contended.

It was Sinkin's group, Citizens Concerned About Nuclear Power, that first made the Quadrex report available to the press.

"That HL&P did not detect these design problems during eight years and do something about it," Sinkin added, "surely calls into question their technical competence as operator of a nuclear plant."

Beeth of HL&P, however, pointed out the utility itself voluntarily set the Quadrex study in motion and "I would like to think that speaks well for the character and competence of HL&P."

Beeth said the independent study by the California firm came about at the urging of Jerome H. Goldberg after he joined HL&P in October 1980 as vice president for nuclear engineering and construction.

"We chose Quadrex because they have the skills and talents necessary, and they had no previous involvement with the project," Beeth said.

Beeth said, however, that many of Quadrex's findings "came as no great surprise to us," and HL&P thinks some of the study findings are "incorrect or irrelevant, or based on poorly taken positions."

He said HL&P nevertheless will review and investigate the Quadrex findings "under a high-power microscope."

"We have concerns, but as of this point, we have found nothing which would cause us to feel there are any fundamental flaws or non-fixable errors in the design," Beeth said. "Nor have we found anything that would require significant modification of in-place construction."

Beeth said out of 283 total findings by Quadrex, HL&P considered only two as "reportable deficiencies" under NRC regulations.

The two items reported to the NRC, he said, involved inadequate heating,

EXHIBIT A
(CONCLUDED)

ventilation, air conditioning and cooling outside the reactor buildings, and deficient verification procedures in computer codes.

Beeth said HL&P considered Quadrex findings in 11 general areas as significant.

He said these included the discovery that engineering is still not done on pipe breaks outside containment buildings, nuclear accident analysis, vendor and subcontractor controls, in-service inspection and maintenance problems, and possible licensing problems.

Beeth also maintained the Quadrex findings were not a "last straw" that led to the removal of Brown & Root.

"We were aware of some of these problems before the Quadrex report, and this confirmed our concerns," Beeth said. "What we had to do then was decide on the best way of rectifying the situation."

Beeth described the replacement of Brown & Root as "obviously a major action."

Brown & Root errors noted

EXHIBIT C

Report cites 11 problem areas in design of HL&P N-project

BY CARLOS BYARS
Chronicle Science Writer

Key areas of Brown & Root Inc.'s design of the South Texas nuclear project near Bay City are disorganized and incomplete, a consultant's report says.

The report, made public Sunday, says some of the problems were discovered during a three-month investigation and raised questions about Houston Lighting & Power's ability to obtain an operating license for the project.

HL&P had the investigation performed by a California-based consultant, Quadrex Corp.

The Quadrex report, as summarized by HL&P, pointed to problems in 11 general areas of the plant's design.

Two findings considered most serious are that computer codes used in the design were not verified as to their accuracy or properly revised, and that heating, ventilation and air-conditioning systems were not designed to meet accident conditions.

Both of these items are potential violations of the Nuclear Regulatory Commission's design criteria and have been reported to the NRC, an HL&P spokesman said.

A third finding considered vital to the project is that Brown & Root had not analyzed the effect of an accident on some of the critical piping systems, said Don Beeth, HL&P spokesman on nuclear affairs.

Although this does not need to be reported to the NRC, he said, it is considered a major oversight by Brown & Root.

However, Beeth said, "Nothing has been found which calls into serious question the fundamental design of the South Texas project or which would require significant modification of in-place construction."

Beeth said the report confirms that a great deal needs to be done to bring engineering of the project up to schedule.

The investigation began in January, before it was decided to replace Brown & Root as the architect and engineer of the project.

Although the results of the report were known as early as May, the adverse findings did not trigger the firing of Brown & Root, Beeth said.

However, he said, the report did focus fears on Brown & Root's ability to successfully complete the project on a reasonable schedule.

Brown & Root was recently replaced by Bechtel Corp., architect and engineer of the project, under construction 90 miles southwest of Houston.

In each area of design, Quadrex found problems it considered could affect the licensing or reliability of the plant. Lesser problems or conditions were also enumerated, including items on which Beeth said engineers could be expected to differ.

Some Quadrex findings took issue with how Brown & Root engineers did something, rather than with the result he said.

Conservation in many cases was overconservative and therefore more expensive, the report says. An example of overbuilding cited is the piping support system. Designing these supports to be stronger than necessary may have affected the cost and schedule of the plant, the report says.

However, it says, because parts of the plant were built stronger than necessary at the time, later changes required by the NRC after the Three Mile

Island incident will have little effect; in effect, the South Texas project already meets the newer, tougher requirements.

A summary of the most serious problems pinpointed by Quadrex:

- Electrical — A single failure could disrupt the flow of pressurized air that operates many of the plant's instruments.

- Ventilation — The design did not adequately consider accident conditions.

- Piping — No analysis of the effect of a pipe break outside the reactor containment structure.

Regarding a series of 10 related piping items, the report says, responses to questions indicated "a general lack of expertise with pipe rupture considerations."

- Mechanical — Pumps and valves have been tested by analysis rather than by actual operation under simulated operating conditions.

- Nuclear analysis — This deals with the analysis of what would happen in areas of the plant other than the reactor in the event of a break in a pipe carrying very hot water or steam, causing rising temperatures and pressures in the containment and other buildings.

Quadrex says analyses by Brown & Root were either incomplete or inadequate and the Brown & Root group working in this area did not contribute to the plant's design.

In particular, the group did not control temperature values used in designing equipment and the design approach used in some cases was not in accord with industry standards. Further, the report says, many errors were found in the analysis work that had been done.

- Piping and supports — So little analysis had been done, it was difficult to assess, the report says. It said Brown & Root had not found a way to assess the effect on pipes of water, steam or gas flowing from a broken pipe.

- Radiological controls — This section also said the air supply for instruments could be affected by a single failure.

- Scale model — A review of a scale model of the plant found numerous valves and other pieces of equipment located so that access for operation or maintenance would be difficult or impossible.

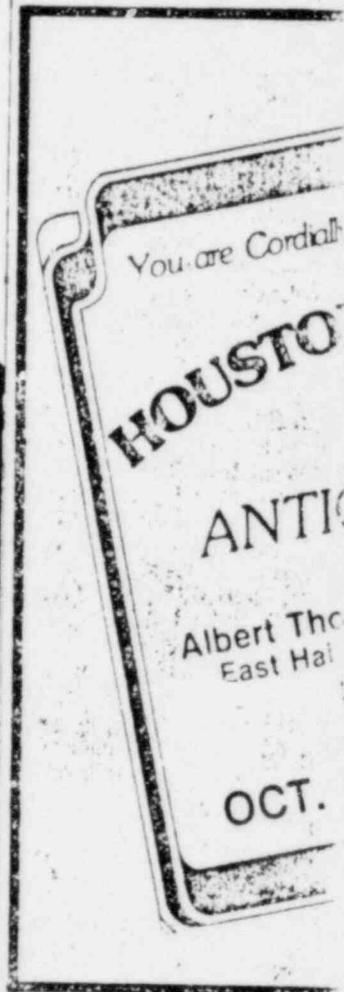
Beeth said HL&P wishes that the problems had been caught sooner but believes they were caught in time to make corrections.

The report says Brown & Root relied heavily on subcontractors and assumed they did their work correctly, Bechtel will not have to do this, Beeth said.

"The findings don't indicate a massive redesign problem," he said.

6 hurt in explosion, fire at fuel plant

COGAR, Okla. (UPI) — An explosion and fire that injured six construction workers at a fuel processing plant caused an estimated \$3.5 million damage to the unfinished structure, an official of the Mustang Fuel Corp., which owns the building, said. A crew was welding in the building and someone opened a gas valve, causing an explosion and flash fire, he said. Five of the workers were hospitalized in serious condition with burns. Another man suffered a cut on the head and a fractured wrist.



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