

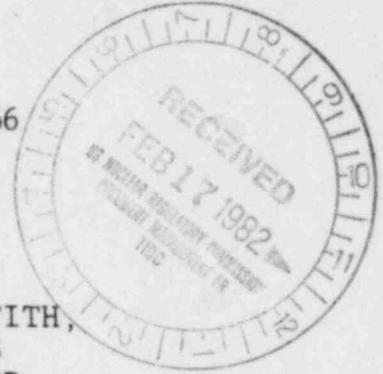
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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



INTERVENORS' CONN, CUMINGS, DOGGETT, GRIFFITH,
JOHNSTON, AND LEMMER PROPOSED FINDINGS
OF FACT AND CONCLUSIONS OF LAW ON SELECTED
ENVIRONMENTAL MATTERS AND ON RADIOLOGICAL
HEALTH AND SAFETY ISSUES

I. INTRODUCTION

Intervenors, CONN, CUMINGS, DOGGETT, GRIFFITH, JOHNSTON and LEMMER, [hereinafter referred to as Intervenors], hereby submit, pursuant to 10 CFR § 2.754, their Proposed Findings of Fact and Conclusions of Law in the form of an Initial Decision on selected environmental matters and radiological health and safety issues and requests that they be adopted by the Atomic Safety and Licensing Board (ASLB) in this proceeding. NRC Staff has included in its proposed findings on environmental matters an accurate statement of the history of this case and to avoid repetition interveners have not included in this document a statement of the case.

Intervenors will address the following environmental issues: Low Level Radiation Health Effect, (Cumings, Con-
tention 9, NRC Staff's Proposed Findings of Fact and Conclusions

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of Law on Environmental Matters [hereinafter referred to as NRC Staff's Proposed Findings] pp. 90-96); Alternatives to the Proposed Project - Coal v. Nuclear (Doggett Contention 1 (b), Board Question 1, NRC Staff's Proposed Findings pp. 96-116); Alternatives to the Proposed Project - Municipal Solid Waste Combustion (TexPirg Contention 5, NRC Staff's Proposed Findings pp. 126-129); Alternatives to the Proposed Project - Energy Conservation and Passive Solar (TexPirg Contention 7, Doggett Contention 1 (a), Cumings Contention 6 (c), NRC Staff's Proposed Findings pp. 130-142).

Intervenors will address the following radiological health and safety issue: TexPirg No. AC31: Technical Qualifications (Applicant's Proposed Findings 208-217).

For the convenience of the ASLB, where appropriate Intervenors will use the same paragraph references as those used by Staff and Applicant in their proposed findings. LOW LEVEL RADIATION HEALTH EFFECTS (CUMINGS CONTENTION 9, NRC STAFF'S PROPOSED FINDINGS PP. 90-96).

157. Cumings Contention 9 alleges that the risk of cancer and non-cancerous effects from Appendix I levels of radiation are considerably greater than the 0.2% value reached by the NRC Staff, thus invalidating its favorable cost benefit balance assessment.

158. The Staff presented testimony by Dr. Reginald L. Gotchy (Tr. 19660). The Applicant presented testimony by Dr. Leonard D. Hamilton (Tr. 19562). Intervenors only evidence was in the form of a sworn affidavit by Irwin J. Bross, PhD in

opposition to a Motion for Summary Judgment.

159. The thrust of the contention and of Dr. Bross' affidavit is that the NRC health effects models used to calculate potential radiological impacts to man (i.e., cancer and non-cancerous s^pomatic effects) have understated the risks from Appendix I levels of radiation.

160. The NRC models are based primarily upon the BEIR Reports (1972 and 1980) and the Reactor Safety Study health effects models (Gotchy pp 5-6). However, a number of studies have criticized BEIR (Gotchy pp. 6-8). These studies are controversial and BEIR III has criticized them in turn (Gotchy pp. 6-13). Both Dr. Gotchy and Dr. Hamilton was also highly critical of these studies, including the Bross material (Hamilton pp. 4-6; Gotchy pp. 8-9).

161. However, on cross-examination Dr. Gotchy admitted that there is "uncertainty about the long-term effects of radiation exposure in human societies" because there are only very limited populations that can be studied. He further states that differences are not so much over what risks have been observed in terms of cancer induction as the projection into the future as to what is going to occur. There are a number of significant uncertainties concerning the Hiroshima and Nagasaki data upon which projections have been based (Tr. 19705-19706). Further studies are being made and Gotchy admits that "we can't be sure" with respect to what these studies will show (Tr. 19710). The Board therefore finds that there are significant scientific uncertainties and reevaluations

present at this time which make the continued validity of the NRC models uncertain at this point.

162. Gotchy testified that there was nothing in Dr. Bross' 1981 Reassessment which would challenge the Staff conclusion with respect to exposure risks. However, Dr. Gotchy's own credibility as an expert is seriously weakened by the nature of his testimony. In discussing Dr. Bross, Dr. Gotchy relates hearsay information concerning the validity of Bross' statistical models but admits he's "not enough of a statistician to argue with those fellows on this point because its a very complex statistical analysis, one that I have never seen before" (Tr. 19716). He admitted he couldn't "remember" why he had used a figure which had caused the Board some "puzzlement" (Tr. 19729).

Dr. Gotchy also caused considerable confusion in his estimates of increased risk being given variously as .009, .0009, and .2. In response to questioning by Judge Linenberger seeking an explanation for the differences Dr. Hamilton states that his and Dr. Gotchy's .009 figure "coincide" without really explaining how (Tr. 19646). They are both supposed to be talking about "incremental increase in lifetime risk of cancer mortality" (Gotchy 24), but neither Dr. Gotchy nor Dr. Hamilton ever clearly explain why Dr. Gotchy talks in terms of 0.2% and a "most probable value" of about 0.009%. Dr. Gotchy further testified that the .0009 on page 18 of his testimony represents a collective risk and the .009 on page 24

represents an estimate of individual risk (Tr. 19737). Moreover, the .0009 figure originally given on page 18 was corrected to read .00009 prior to the acceptance of Dr. Gotchy's testimony (Tr. 19653). No reasonable explanation is given why the collective risk should differ from the individual risk by a factor of 100. The Board finds this analysis confusing at best, and certainly not an adequate rebuttal to the Bross information. Finally, Dr. Gotchy's analysis is further called into question by his forgetting to update his references in his testimony, having taken them verbatim off an old affidavit which was prepared in November, 1980 (Tr.19707).

163. The Board disagrees with Staff and Applicant that NRC health effects models provide a sound and reasonable basis for predicting risk from low level radiation, in light of current reevaluations and the information developed by Dr. Bross and others.

164. We conclude that the Staff and Applicant have not shown that exposure to Appendix I levels of radiation will not result in any significant somatic and genetic effects which could result in an unfavorable cost/benefit balance.

165. In summary, the Board concludes that the Staff has not adequately and reasonably predicted the risks from Appendix I level of radiation in the FES Supplement. The Board is unable to determine from the evidence whether health risks to present day population from cancer, and to future populations from genetic effects will in fact be insignificant

relative to naturally occurring events. As a result, the NEPA cost-benefit analysis may be significantly affected and thus result in an unfavorable NEPA conclusion. Accordingly, the Board finds that Cumings Contention 9 is well taken.

ALTERNATIVES TO THE PROPOSED PROJECT - COAL V.
NUCLEAR (Doggett Contention 1(b), BOARD
QUESTION 1, STAFF'S PROPOSED FINDINGS PP. 96-115)

166. Staff found that coal is a feasible alternative to nuclear energy (Staff Exh. 1, FES, p. 9-6).

167. Staff also found that economically a lignite-fired plant could be competitive (Staff Exh. 1, FES p. 9-7).

168. Environmentally nuclear and coal are equally acceptable (Id.).

169. The FSFES updated and did a more in depth examination of these issues (Staff Exh. 12, FSFES, § S. 9.1.2.3).

170-171. Staff found that although the coal alternative is more harmful than nuclear, either alternative represents a very small incremental risk to the average person (Staff Exh. 12, FSFES, p. S. 9-9).

172. The Staff concluded that economically nuclear was preferable (Staff Exh. 12, FSFES, p. S. 9-10, S.D.-10).

173. The Staff qualified its conclusion by noting uncertainty regarding future construction and fuel costs (Id., p. S.9-10).

174. Applicant also agreed that coal was an alternative to nuclear fuel (App. Exh. 13, ER Supp. §9.2.3).

175. However, Applicant also chose nuclear for environmental reasons. (Id. § S9.3.2.7).

176. Doggett Contention 1 (b) and Board Question 1 questioned the validity of Staff and Applicant's analyses.

177-178. Regarding lignite as an alternative, Staff reexamined the issue and concluded lignite was disfavored for environmental reasons (Staff Coal Testimony p. 10-12).

179-180. Applicant's witness was Dr. Leonard Hamilton.

181-184. Dr. Hamilton's analysis showed that both the coal and nuclear alternatives would have de minimus health impacts (Hamilton Tr 6360, pp. 44-45).

185. Dr. Hamilton's cite specific analysis reached the same conclusion for nuclear and a number of coal-lignite alternatives (Hamilton p. 51).

186. Lignite is economically feasible as evidenced by Applicant's plans to construct a lignite fired facility (Guy Tr. 5148, p. 9).

187. Dr. Lewis J. Perl testified regarding the economics of a lignite plant.

188. Dr. Perl concluded that a nuclear facility would save considerable money over the long run (Perl Tr. 5532, p. 5).

189. Dr. Perl admitted that his analysis was subject to considerable uncertainty (Perl at 6; Tr. 5557-60).

190-191. Based on the foregoing analysis by both Applicant and Staff, the Board finds that lignite is, as a practical matter, environmentally equivalent to nuclear as a fuel. The Board further finds that by Applicant's own admission and actions lignite is a viable economic alternative to nuclear fuel, and that due to the availability of nearly lignite

supplies, the lignite alternative is preferable to nuclear.

192-195. Based on the analysis of information presented regarding coal-slurry transportation, the Board finds that the use of coal-slurry would be environmentally and economically preferable to rail transport. The Board finds that coal-slurry transport is a significant factor in a comparison of coal and nuclear costs.

196. Staff found without merit the allegation that construction costs would escalate faster at nuclear than coal plants.

197. Dr. Perl noted the substantial uncertainties involved in these analyses (Perl 6). Moreover, he testified that studies show that nuclear construction costs increased by 20% more than coal when design changes due to statutory and regulatory changes are included in the computation (Perl 67).

198. Dr. Perl admits that there is no way to guarantee that the alternatives selected will in fact result in the lowest costs.

199. Based on the foregoing, the Board finds that the historical evidence shows that the construction cost of nuclear plants escalates at a significantly greater rate than coal construction. Therefore, the Board finds that the coal alternative is superior to the nuclear option economically.

200-201. Based on the evidence (Staff Coal Testimony 58), the Board finds that uranium fuel prices will escalate faster than coal costs.

202. In conclusion, the Board finds that the environmental impacts of the coal and nuclear alternatives are essentially the same and both alternatives would produce de minimus health impacts.

203. The Board also finds that economically lignite compares favorably with nuclear, particularly in light of the available nearby lignite reserves. The Board concludes that Applicant and Staff have failed to prove that ACNGS is preferable to the coal or lignite alternatives for environmental or economic reasons.

ALTERNATIVES TO THE PROPOSED PROJECT - MUNICIPAL
SOLID WASTE COMBUSTION (TexPirg Contention
5, NRC STAFF'S PROPOSED FINDINGS pp 126-129)

220. TexPirg contends that there is enough solid waste generated in Houston to significantly impact upon the amount of power to be generated by ACNCS.

221. Staff concluded that solid waste combustion was neither practical nor economical (FSFES pp. S.9-5).

222. Nor did Staff believe refuse burning would be significant as a fuel source during the next decade (Id., p. S.9-6).

223. Supplemental testimony was presented by Kim-Elaine Johnson (Tr. 6227). The Board finds that Kim-Elaine Johnson is not sufficiently qualified as an expert on this subject and that her testimony be given no weight.

224-231. Applicant's witness on this contention was Herbert Woodson. It is true that a MSW plant would be insufficient to replace ACNCS. A MSW would have be a significant supplemental energy source (Tr. 5462). Taken together with other alternate energy sources, MSW could be an alternate energy source for ACNCS, obviating the need for ACNCS.

ALTERNATIVES TO THE PROPOSED PROJECT - ENERGY
CONSERVATION AND PASSIVE SOLAR (TexPirg
Contentions 7, Doggett Contention 1 (a), Cumings
Contention 6 (c), NRC Staff's Proposed Findings
pp. 130-142)

232. This consolidated contention alleges that there has not been a dispositive assessment of the energy demand reduction potential that might derive from conservation through conservation retrofitting by Applicant, co-generation, and change in rate structure. In addition, the contention alleged that passive solar energy had not been adequately evaluated.

233. Staff concluded solar energy would not be a viable alternative to ACNGS nor would it obviate the need for ACNGS (Staff Exh. 12, p. S. 9-8).

234. Kim-Elaine Johnson testified on passive solar energy on behalf of Staff. The Board finds that Dr. Johnson does not adequately qualify as an expert on this issue and therefore disregards her testimony.

235. Staff asserts that it is not possible to make quantitative predictions about reductions in power demand because there is a great deal of uncertainty with respect to the effect that energy conservation strategies might have on electrical demand (Staff Exh. 12, §§S.8.2.3 through S.8.2.6). Staff also concluded that regardless of conservation effects, added nuclear capacity is desirable to reduce demand on fossil fuels (Id.)

236. J. W. Dick testified for Staff regarding the potential

effect of direct utility investment in retrofit measures, self-generation by industry, and rate restructure.

237-240. Mr. Dick concluded, with certain reservations, that significant amounts of electricity could be saved through conservation retrofits. (Dick 37-41).

241. Mr. Dick testified self-generation is adequately taken into account by Applicant (Dick 46-47).

242. Rate restructure was seen as having potential for peak load reduction, but with a concomittant need to increase in base load capacity (Dick 47-48).

243. Applicant's witness was Dr. Lewis Perl (Tr. 5532). Dr. Perl admits that there are tremendous uncertainties involved in projecting load demand and cost (Tr. 5564). In fact, he agrees that predictions are subject to a 40% uncertainty (Tr. 5565).

244. Dr. Kent P. Anderson also testified for Applicant (Tr. 5536). He also agrees there are substantial uncertainties in his findings (Tr. 5609, 5625).

245. Dr. Perl admitted that many utilities have examined their own projections and cancelled plans for nuclear construction (Tr. 5591-93). The accuracy of Dr. Perl's projections is somewhat weakened by his reliance upon counsel for the Applicant for important factual data (Tr. 5581). In addition, Dr. Perl admits that his model assumes an important factor length of licensing, to be 27 months, when, at the time of his testimony this 27 months had already been exceeded (Tr. 5578). The Board can only speculate as to the effect of an

additional 12 months which has now been added to the licensing process. Dr. Perl's testimony was taken February 11, 1981.

246-249. The Board finds that the projections of the witnesses Perl and Anderson to be, by their own admission, highly conjectural and speculative. The Board finds unsatisfactory the witnesses' use of models without testimony as to actual data regarding implementation of conservation programs, including solar power use, co-generation, rate restructuring, and direct capital investment in retrofitting. The Board finds that the evidence fails to show that conservation and the related matters raised by this contention as well as other alternative energy sources would not obviate the need for ACNGS. This Board has previously indicated that it would not require a showing that a single alternative could, by itself, supplant the need for ACNGS, but on the contrary, that the alternatives, when taken together, could be shown to supplant the need for ACNGS (Tr. 5334-5335).

TEXPIRG NO. AC31: TECHNICAL QUALIFICATIONS
(APPLICANT'S PROPOSED FINDINGS 208-217)

306. TexPirg alleges that HL & P is not technically qualified to construct ACNGS as evidenced by a number of significant construction problems at the South Texas Project (STP) nuclear plant.

307. Applicant presented two witnesses, George W. Oprea, Executive Vice President for Nuclear Projects, and Jerome H. Goldberg, Vice President for Nuclear Engineering and Construction Staff presented two witnesses: Frederick R. Allenspach who reviewed HL & P's organizational structure and technical qualifications, and John W. Gilray, who reviewed the QA/QC program.

308. HL & P is project manager of STP. The architect engineer was Brown & Root, Inc. On April 30, 1980, the NRC fined H L & P \$100,000 and issued an order requiring HL & P to show cause why construction should not be halted because of problems at STP (Doherty Exh. 4; Tr 18286-87). The key inquiry is whether, HL & P has improved its organizational structure and management capability in order to prevent a reoccurrence of similar problems as ACNGS (Tr. 18351-58; 18481-84).

309. HL & P claims that it has implemented a "major reorganization". Mr. Oprea is now in charge of all nuclear activities. Prior to the change Oprea was responsible for both nuclear and fossil projects. Additionally, HL & P has established the new positions of Vice President of Nuclear

Engineering and Construction, filled by Mr. Goldberg, and Vice President of Nuclear Operations, filled by Jerrold G. Dewease. Both men are said to have substantial experience (Oprea 5, Tr. 18092-3, 18133-42, 18378-81, 18392-96, Allenspach 3, Gilray Tr. 18422-34).

The Board finds no proof that the change in Mr. Oprea's job title will prevent STP type problems at ACNGS. Mr. Oprea has been involved from the inception of STP and the STP HL & P Q/A program (Tr. 18060). It is difficult to see how changing Mr. Oprea's job position will make him any more effective at ACNGS than he has been at STP. There was no testimony that Mr. Oprea's other duties (which the organization change was designed to relieve him of) interfered with his nuclear activities. (Tr. 18061-18062). In fact, Mr. Oprea stated that the elimination of several levels of management between himself and the Q/A manager was not all that significant because he has always been involved in the Q/A program (Tr. 18089). Furthermore, he admits he will not spend 100% of his time on nuclear because he is also a director of HL & P and is involved in strategic planning (Tr. 18123). Mr. Oprea's qualifications are not particularly striking. He admits that he is not qualified by his education, but by 30 years of non-nuclear experience (Tr. 18062). He admits he has not studied construction or civil engineering (Tr. 18065). He has not been close to engineering and design for a number of years (Tr. 18072-73). The Board also has some difficulty with Applicant's and Staff's statement in their proposed findings in light of Mr. Oprea's

testimony. The proposed findings p. 209 state that neither Applicant nor Staff sought to dispute the fact that there have been construction problems at STP citing Tr. 18328. However, Mr. Oprea states that H L & P could not verify all of the non-compliances in the Show Cause Order and that "instead of straining at gnats and splitting hairs, we decided to move forward" (Tr. 18055). He claimed the STP underestimates were due to regulatory changes and an underestimate of the duration of and the uniqueness of the plant construction, (Oprea 15, Tr. 18248). He stated STP deviations were good faith errors (Oprea 15).

The Board recognizes the hiring of Mrs. Goldberg and Dewease is a positive step (Tr. 18066-67, 18080, 18092), but feels that other significant changes will be necessary to prevent problems in this complex undertaking.

310. H L & P makes conclusional statements that its in-house staff will be maintained and managed to adequately to monitor and verify conformance. There is no explanation as to how this will be effectively done or why it was not effectively done at STP.

311. H L & P states it will place primary responsibility for the design and construction of ACNGS on its A/E Ebasco (Tr. 18063). The argument is made that the failures at STP were due to Brown & Root's inexperience, that Ebasco is more experienced, and that therefore there will be no STP type problems at ACNGS (Tr. 18097, 18,230). Unfortunately, this begs the question of how H L & P is going to effectively discharge

its duty of overseeing its A/E.

312. It is true that G E also has extensive experience which should tend to prevent problems. Again, however, the issue is H L & P's own technical qualifications.

313 - 314. H L & P claims it is committed to developing a highly skilled and qualified staff (Tr. 18150-58, 18370-75). However, Applicant's witnesses could suggest no real solution to the problem of turnover in project managers (Tr. 18145-46). There is no requirement in the hiring of engineers that they have any nuclear experience (Tr. 18151). Applicant claims to have implemented certain unspecified hiring incentive. (Tr. 18155). Courses attendance is encouraged but not required (Tr. 18157). There is no testing to evaluate the effectiveness of courses, workshops, and quality assurance indoctrination (Tr. 18161). These facts do not support the H L & P claim of commitment to quality staff.

H L & P also claims to have made substantial improvements in QA/QC organization. Again, there has been a removal of several layers of management to put Mr. Oprea in closer contact with personnel, something which Mr. Oprea said he was doing all along (Tr. 18089).

H L & P has made changes in its QA/QC program. H L & P's commitment to these changes is made questionable in light of Mr. Oprea's statements that the STP QA/QC procedures were not defective, only the execution of the procedures (Tr. 18,169-70). Even more disturbing is the testimony that the proposed

QA/QC plan is very similar to that at STP where admittedly some information did not surface in a timely way (Tr. 18,166). There is no specific explanation as to how the proposed QA/QC changes will result in stronger implementation at the site with regard to day to day construction (Tr. 18095-96). Again Ebasco's experience is touted as a factor, but it is admitted that Ebasco has had harassment of QA personnel similar to that at STP (Tr. 18,102-18106). There was no testimony as to what percentage of audits would be announced versus unannounced (Tr. 18,118). In fact, it was admitted that the proposed audit procedures for ACNGS are essentially the same as those at STP (Tr. 18,119). Mr. Oprea states that there will be no change in the kind of surveillance or monitoring that will be done despite the Show Cause Order of May, 1980 (Tr. 18,227). Much is made of the fact that personnel will develop a variety of personal systems for keeping track of incoming documents and good work habits (tr. 18,170).

315. The Board finds that the evidence shows only that H L & P has recently hired experienced personnel into 2 key upper level management positions. There is no evidence as to actual hiring of other qualified personnel. There is no evidence that H L & P's in-home staff is any better qualified to monitor ACNGS than STP. Applicant's QA/QC program has a number of serious weaknesses and is essentially very similar to that at STP. Accordingly, the Board finds that H L & P has not made adequate adjustments to insure prevention of STP type construction problems and that H L & P is not technically qualified to construct ACNGS.

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Intervenor's Proposed Findings of Fact and Conclusions of Law in the above matter were served on the following by deposit in the United States mail, postage prepaid, this 12th day of February, 1982.

Shelton J. Wolfe, Esq., Chairman

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Mr. Gustave A. Linenberger

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