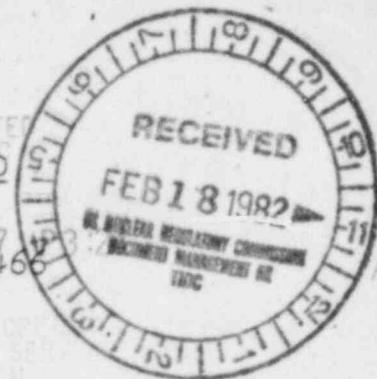


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of,
HOUSTON LIGHTING AND POWER COMPANY
(Allens Creek Nuclear Generating
Station, Unit 1)

Docket No. 50-466



INTERVENOR DR. MARRACK
PROPOSED FINDING OF FACT AND CONCLUSIONS IN LAW
11 FEBRUARY 1982

R. Marrack

Intervenor accepts the NRC Staff's Background statement, page 1-9 of their 8 January 1982 "Findings of Fact and Conclusions in Law" as having no gross deficiencies except in that they failed to note in § 5 that the Board's Partial Initial Decision following the 11 March 1985 public hearing that NRC Staff & Applicant were aware, from that hearing, of significant deficiencies in the FEIS and Environmental Report of the Applicant in this matter. Dr. Marrack drew attention to general deficiencies of the EIS.

No follow-up enquiries were made by the Board, the NRC Staff or Applicant into the specifics of the deficiencies.

Subsequently the NRC Staff chose and the Applicant failed to insist on remedying the FEIS deficiencies.

PROPOSED FINDINGS OF FACT
CONTENTION 75: TRANSMISSION LINES/WATERFOWL

Marrack 2(c); Board Question 4.

"Neither the FES nor the FSFES addresses the impact upon migratory waterfowl along the transmission routes beyond the plant site, nor considers that this impact could be minimized by constructing the power lines to follow the Brazos River to the south of the site, then east and then north to the O'Brien substation."

The face value of the Applicant's Environmental Report, as amended in response to a question from the Staff (Amend. No. 0 11/13/73 p. 5.6 - 2A), states: -

"There are many miles of transmission lines in the Houston Lighting & Power Company system, some of which have been in existence for many decades. Many of these lines cross water bodies, several of which are used by migratory waterfowl. These lines are regularly inspected (for maintenance purposes) and no instances of significant

*DS03
50/1*

bird losses have been reported."

There is no critical assessment of this self serving statement of the Applicant in expert's testimony. A substantial amount of responsible scientific literature was introduced in evidence that there are indeed problems for migrating wildfowl from transmission lines. See also Dr. Reed, p.11, last Answer and Dr. Schlict, Tr 7557; Ex. 17.

The NRC Staff in their "findings of Fact" chose to totally dismiss this evidence and give 100% credence to Staff's and Applicant's witnesses. This is without scientific merit. No critical examination was made of Applicant's methodology or sources for claims of "no impact".

In fact, an air survey from two to three hundred feet above the ground flying rapidly over the transmission lines (Tr 7570,1.6) could not reasonably be expected to detect dead or injured birds on the ground. Especially, as is common knowledge, injured animals commonly seek to hide themselves. That the Applicant's staff were prepared to submit a once a year (Tr 7573,1.5) air survey data as a sound basis for their statement raises questions of veracity.

No empirical evidence was offered and no effort had been made to obtain such evidence in the Brookshire-Fulshire-Katy migratory wildfowl feeding areas, or elsewhere for that matter, in support of Applicant's position and statement.

In short, documentation contradicting Applicant's experts was entered into evidence and raised substantial issues regarding the impact of these transmission lines on migratory wildfowl. The failure of Staff to discuss this evidence in their subsequent "Findings in Fact" and the total acceptance of Applicant's self serving testimony demeans these proceedings.

Perhaps most appalling, however, is the Staff's analysis of the Marrack "Alternate Route". Unlike the characterization in the Staff's "Findings of Fact", no specific route was ever proposed in sufficient detail to permit the detailed analysis the Staff has displayed in their "Findings of Fact". If the Applicant's proposed route had been as critically examined, there would be no controversy here. The obligation of selecting transmission line routes and alternatives with an analysis of the pros and cons lies with the Applicant.

The Contention by Intervenor Dr. Marrack was simply -- "that neither the original EIS nor the SEIS contain sufficient information

to identify this (Transmission line on migratory wildfowl) impact and there is certainly no consideration of alternatives to mitigate this impact." (Brief in Support of Intervenor's Contentions" 24 May 1979, page 2, submitted by Dr. Marrack).

No specific transmission line route was proposed as an alternative. The reason for mentioning a southern route was merely to place the transmission line at the southern limit of the feeding area. Any wildfowl movement out of this area would entail flight with migratory characteristics. (ibid p.4 last paragraph - "The possibility exists that transmission line impacts upon migratory waterfowl could be minimized [mitigated] by following the Brazos River to the South of the site, then turning East and then North to the O'Brien substation. Of course, due to the absence of impact data and full disclosure, no need for such an alternative was identified.") In other words, migratory waterfowl moving out to distant areas would attain substantially greater flight elevation than is commonly the case when they are moving to a different, nearby location, within the general feeding area.

It is noted that many hunters successfully shoot down duck and geese and commonly do this with birds at less than 200 foot altitude. Thus these birds do fly at altitudes less than those the Applicant's expert Dr. Schlicht assigns them -- "fly at much greater heights (hundreds of feet) than that of H.L.& P's transmission towers and their associated electrical lines." (Schlicht at 18; Tr 7650)

Dr. Marrack's Contention 75 was :-

"Neither the FES nor the FSPES addresses the impact upon migratory waterfowl along the transmission routes beyond the plant site, nor considers that this impact could be minimized by constructing the power lines to follow the Brazos River to the south of the site, then east and then north to the O'Brien substation." A general suggestion of transmission line routing is not supported by evidence of scientific fact because, amongst other things, no specific route in this general direction was disclosed by the Applicant as an alternative to their proffered routes and no field studies of phenomena has been done in the specific area.

In particular, the Intervenor would not route a transmission line through bottomland forest. A sensitive siting would place a transmission line adjacent to but not in Bottomland Forest. The wildfowl will have adjusted to tree heights for years.

through the food chain in the sport fishes and cause a human mercury poisoning problem. The Staff's complacency towards this matter of public health in their "Findings of Fact" is deplorable.

Prohibition of fishing and/or confiscation of all fish caught would destroy the only/significant recreational potential, the proposed cooling lake is claimed to offer.

The Board considered the evidence for contamination by Mercury *of* the cooling lake and finds significant mercury contamination is probable, in which event a public health hazard will occur with impairment of the recreational value of the lake.

II. Chlorination

Conceptually the resultant of adding chlorine to "dirty river water" at the range of temperatures which occur in cooling system condensers, such as those proposed for ACNGS, is considered to be "free chlorine" and "combined residual chlorine," a varied mixture of chemicals. The mix depending upon the kinds, the amounts of each and proportions of the organic molecules in the water and the temperature at the time of chlorination. These have not been adequately defined for this proposed cooling lake. In practice with lake waters a large part of the "combined residual chlorine" is chloramines (Saunders Tr 4734, 1.12) which react quantitatively in a test, ^{USING} an oxidative iodine displacement reaction under controlled conditions, to generate a colored compound whose amount is proportional to the amount of chloramines originally present in the water sample being analysed. Some other classes of chlorinated compounds which may be present in chlorinated lake water also can participate in the reactions leading to color formation. The sum of the compounds reacting to give color in the specific quantitative test are referred to as TRC -- Total Residual Chlorine. The standard assay has been in use in public health water quality assessment to determine if sufficient chlorine has been added to kill water-borne bacteria. ^(Tr 4527, 1.1) The test does not quantitate and measure all the chlorine compounds, which, in sum, form the "combined residual chlorine," an entity which is always greater than the TRC (Saunders Tr 4753 1.13); TRC being a subset of chemicals in the "combined residual chlorine."

The NRC Staff's "Finding of Fact" ignores the testimony of TexPirg's expert witness, Dr. Marrack, who has a long experience in analytical chemistry, on non-TRC Reacting Chlorinated Compounds (NTRCC) which make the difference between "combined residual chlorine" and TRC.

Trihaloethanes (Saunders Tr 4750, 1.16) commonly predominate amongst those chemicals which form the NTRCC. This group of compounds

are relatively stable compared with chloramines and will persist in the cooling lake water. They are toxic to fish, especially juveniles^(Tr 4544, 11) and to zooplankton and a matter of concern to the proposed lake's fish productivity. Their toxicity increases with temperature.^(Tr 4545, 15) The FEIS and Supplements did not consider the impacts of this class of compounds generated by chlorination. The NRC Staff's "Finding of Fact" chose to avoid the uncertainties by not mentioning the evidence.

The chloramines which are the major part of the TRC are also toxic to fish, especially juveniles and also to freshwater shrimp and zooplankton. The toxicity studies reported in the FEIS & PSES page S 5.17 are short time^{on} near adult fish studies, for the most part and none involve full reproductive cycles. No significant additional testimony of chloramines^{toxicity} on juvenile forms and long term toxicity was offered (Saunders Tr 4769, 1.7 & Tr 4830 1.2). A sustained yield fishery requires the forage fish to have successful generous reproduction and this also applies to all stages of the food chain of the sport fish, even in a "put & take" managed lake (Tr 4552, 124).

There is no critique of the performance of food chain components or as an overall system in face of a multi-stress (temperature, heavy metals and chlorination derivatives) situation in the NRC Staff's "Finding of Fact". It failed to critically review the evidence^(Tr 4545, 15) in the hearing on these matters and gave 100% credence to the NRC's and Applicant's experts. Again, this is without scientific merit.

The Board finds, on the basis of the testimony, that there is insufficient evidence on the proposed cooling lake's chemical characteristics and the changes with time, to determine that chlorination will not have a significant adverse impact on the lake's fish and impair its recreational fishery potential.

III. Excessive Plant Growth

The Board recognizes that there is no issue over the presence of high nutrient loads and good mixing in the proposed cooling lake and that these will support heavy plant growth. At issue is which plants will predominate and in particular the extent of Algal proliferation. That this lake will have unusually high temperatures compared with lakes in the immediate area, by reason of the proposed power plant hot water discharge, is not contested. Applying the data from EIS Figs 5.2 & Table 5.4 to that in Fig 5.5 suggests with water temperatures in excess of 33 C, much of the time over significant areas of the lake,

algae will be a major component of the plant growth and that^{at} the higher temperatures in the discharge canal and during the hottest spells in the year, Blue-Green Algae will predominate. Some species of these form surface scums (EIS p.66).

The Board notes that the expert witnesses for the NRC Staff and Applicant chose, for all too obvious reasons, to present their experience of^{elsewhere} elsewhere in the U.S.A. without showing they were equivalent in chemical and temperature characteristics to those projected for the ACNGS cooling lake and they ignored the studies from the two nearest power plant cooling lakes, Smithies Lake (Parrish Plant) and Lewis Creek Lake which in many ways parallel those measured characteristics ascribed to the proposed cooling lake.

TexPirg's expert contends that the Lewis Creek Lake has Blue-Green algal blooms from late April or May through early autumn (Dr. Marrack foll. Tr 14891) as observed personally and as reported in a Rice University study which found that water temperature was a main determinant for bloom formation by a species common to the area that forms floating mats and scums. Because this species forms gas bubbles and floats, water turbidity causing loss of solar energy has little impact on the development of this algae as the predominant species. However its presence over extensive areas is aesthetically displeasing and not conducive to water-contact sports. It also interferes with fishing equipment and thus the recreational value of the body of water. In addition, the surface scums impede light penetration, in the same manner as turbidity from suspended particulates, and thus ^{cut}tails phytoplankton development, the base of the food chain on which the recreational fishery depends, causing a restriction in the populations of larger fish and impairing fishing as a recreation.

The Board is also aware, though not part of the contention, that exotic plants Hydrilla and Water Hyacinth are a very significant problem in lakes in the area, impairing marine access and water sports.

The above matters would not be an issue if the S.T.P. site were used for the proposed plant.

Based on the foregoing, the Board finds that the high temperatures of the proposed cooling will cause preferential development of floating algal blooms and impair significantly the recreational water sports and fishing in the proposed cooling lake and also be aesthetically displeasing during the hottest months of the year when most intensive recreational use of the lake can be expected.

CONTENTION 1 -- BARGING

The Dames & Moore report on Transportation of the Reactor Vessel (RPV) was made available in late March 1980 (Applicant Ex. 16) an untimely late date in these proceedings.

This report did not reflect the preexisting data of the Army Corps of Engineers (ACE) on the dimensions of San Bernard River navigation channel or its limits; equally, the Applicant was unaware of this ACE data (TexPirg Ex. 15). This, like other matters, reflect on the basic unpreparedness of the Applicant for managing this project.

An unsurveyed, approximately 1000 meter, river section exists between the upper limit of the ACE maintenance & survey and the proposed Applicant's unloading dock site, ^{1/2} mile 27 (Maurer Testimony Tr 21160-21215). No testimony was submitted showing fully laden barges navigate this uncharted 1000 meter river section above the ACE maintained channel or Phillips Dock at mile 25.3.

The S.T.P. site transportation route is already established as one of the several benefits of this alternat site.

CONCLUSIONS OF LAW

The Board has given careful consideration of all the documentary and oral evidence presented by the parties. Based on our review of the entire record in this proceeding and the foregoing environmental findings and the findings set forth in our previous Partial Initial Decision (2 NRC 776), and in accordance with the Notice of Hearing, the Commission's regulations, the National Environmental Policy Act, as amended, and relevent NRC decisions and case law, the Board concludes as follows:

A. The provisions of Sections 102(2), (C), and (E) of NEPA and 10 C.F.R. Part 51 of the Commission's regulations have not been complied with in this proceeding.

B. The Board has independently considered the environmental, economic, technical and other benefits against environmental and other costs, and has considered available alternatives, and we have concluded that the benefits to be derived from ACNGS do not outweigh its costs. Accordingly, we conclude that the appropriate action in this proceeding is that no construction permit be issued.

It is so ordered.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

HOUSTON LIGHTING & POWER
COMPANY

(Allens Creek Nuclear
Generating Station, Unit
No. 1)

§
§
§
§
§
§
§

Docket No. 50-466

11 Feb 82
M. Marshall

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing
were served on the following by deposit in the United
mail, postage prepaid, or by hand-delivery.

~~Sheldon J. Wolfe, Esq.,~~ Chairman
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dr. E. Leonard Cheatum
Route 3, Box 350A
Watkinsville, Georgia 30677

Mr. Gustave A. Linenberger
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. Chase R. Stephens
Docketing and Service Section
Office of the Secretary of the
Commission
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

J. Gregory Copeland
3000 One Shell Plaza
Houston, Texas 77002
Atomic Safety and Licensing
Appeal Board
U.S. Nuclear Regulatory
Commission
Washington, D. C. 20555

Jack Newman, Esq.
Lowenstein, Reis, Newman & Axelrad
1025 Connecticut Avenue, N.W.
Washington, D. C. 20037

Richard Black, Esq.
Staff Counsel
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

David Preister, Esq.
Assistant Attorney General
for the State of Texas
P. O. Box 12548
Capitol Station
Austin, Texas 78711

Stephen A. Doggett, Esq.
P. O. Box 592
Rosenberg, Texas 77471

Mr. John F. Doherty
4327 Alconbury
Houston, Texas 77021

Robert S. Framson
Madeline Bass Framson
4822 Waynesboro
Houston, Texas 77035

Carro Hinderstein
8739 Link Terrace
Houston, Texas 77025

Ms. Brenda McCorkle
6140 Darnell
Houston, Texas 77074

Mr. W. Matthew Perrenod
4070 Merrick
Houston, Texas 77025

Mr. Wayne E. Rentfro
P. O. Box 1335
Rosenberg, Texas 77471

Mr. James M. Scott
13935 Ivy Mount
Sugar Land, Texas 77478