UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

HOUSTON LIGHTING & POWER COMPANY Docket No.

(Allens Creek Nuclear Generating Station, Unit 1)

AFFIDAVIT OF ROBERT M. REED

STATE OF TENNESSEE

COUNTY OF ROANE

I, Robert M. Reed, of lawful age, being first duly sworn, upon my oath, certify that I have reviewed and am thoroughly familiar with the statements contained in my attached affidavit which addresses interventor D. Marrack's contention regarding impacts on waterfowl of transmission lines for the proposed Allens Creek Nuclear Generating Station. All statements contained therein are true and correct to the best of my knowledge and belief.

Robert M. Reed

Robert M. Reed, Ph.D.

Subscribed and sworn to before me this 30th day of September, 1980.

Betty Jane Cochran

Notary Public in and for
Roane County, Tennessee

My Commission expires 2-21-82

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I am Dr. Robert M. Reed and am employed as a research staff member at the Oak Ridge National Laboratory in the Environmental Impacts Program within the Environmental Sciences Division. I have prepared the terrestrial ecology and land use sections of the Final Supplement to the Final Environmental Statement related to construction of Allens Creek Nuclear Generating Station, Unit No. 1. A current copy of my professional qualifications is attached to this affidavit.

Intervenor D. Marrack contends that the FES and FES Supplement present no consideration of the impacts of the proposed transmission lines on migratory waterfowl and that the analyses of alternative routes are inadequate. The NRC staff has reviewed the analyses presented in the FES, the FES Supplement, and the ER in light of this contention as follows:

Consideration of Impacts to Waterfowl from Transmission Lines

In preparing the FES and the FES Supplement, the NRC staff has considered impacts of the proposed transmission lines on waterfowl in its overall analysis as shown below:

1. The FES calls attention to: (a) the large numbers of waterfowl that winter on the Texas coast, (b) the proximity of the site to rice fields that are heavily utilized by feeding geese, and (c) the fact that all transmission lines to Houston would cross goose-feeding areas (FES, p. 2-12). The importance of the area to waterfowl is also discussed by the applicant in the ER (p. 5.1-21) and the Biological Monitoring Program Report (p. 2.4-17).

2. The FES recognizes that birds routinely collide with powerlines, particularly in times of low visibility and when startled, and recommends that alternate route 2C be used rather than the proposed route 2A to avoid an open water crossing where collisions are most likely to occur (FES, p. 5-19).

3. The FES Supplement notes the heavy use of onsite fields by geese and ducks (p. 5.2-7), records the applicant's commitment to use route 2C (p. 5.3-12), and requires the applicant to follow U.S. DOI guidelines in designing, locating, and constructing the transmission lines (p. 5.4-15).

Evaluation of Alternate Routes

The applicant has considered a proposed route and two alternative routes for each transmission line (FES, Fig. 3.10 and FES Suppl., Fig. S3.9-1). The applicant does not present biological information on the proposed and alternative transmission lines (ER, p. 10.9-1) but

concludes they will have little effect on wildlife. In assessing the operational effects of the transmission lines on bird life (ER, p. 5.6-2), the applicant recognizes the threat they pose to birds flying at night or during poor visibility and points out the problems of providing a quantitative estimate of potential impacts. The applicant concludes on the basis of lack of previous problems with existing power lines that there will be no significant bird losses at the cooling lake (ER, p. 5.6-2A). The NRC staff has previously concurred with the applicant's selection of the proposed transmission line routing (FES, Suppl., p. S.9-16).

An independent review by the NRC staff of source materials other than the ER shows:

1. Transmission line route 1A runs to the south of the large Katy-Brookshire-Hockley duck and goose wintering and feeding areas shown on pages 25 and 27 of the "Texas Outdoor Recreation Plan, Regional Environmental Analysis of the Houston - Galveston Region" and should have little impact on waterfowl using these large areas.

2. Transmission Line Route 2C runs through the southern portion of the Katy-Brookshire-Hockley wintering and feeding area. For much of the route (approximately 70%) through this area, the proposed route parallels an existing 138-kv line.

3. Transmission line route 1A will affect relatively small duck and goose wintering and feeding areas associated with Lake George (i.e., Smithers Lake) which is adjacent to the W.A. Parish substation. This area is already traversed by numerous transmission lines associated with the substation and power plant.

4. The Katy-Brookshire-Hockley wintering and feeding area is in excess of 600 square miles in size. The transmission line route will only cross a small portion of this area. It is not known what proportion of the ducks and geese use this portion of the area, but it is likely that the birds are well-dispersed over the entire concentration area.

5. Most studies which have examined waterfowl mortality resulting from collisions with transmission lines have concluded that such deaths are a minor proportion of nonhunting or total mortalities (Stout and Cornwell, 1976; Banks, 1979). Even though the proportion of deaths may be small, hundreds of birds can be killed by powerlines over a season (Anderson, 1978). Most studies recommend that transmission lines avoid waterfowl concentration areas, particularly those involving open water (Anderson, 1978; Willard, Harris, and Jaeger, 1977; U.S. Dept. of Interior, undated).

6. Alternate transmission routes 2A and 2B described by the applicant would not reduce potential impacts to waterfowl since each traverses the wintering and feeding area. The large size of this waterfowl area limits the possibility of avoiding it altogether.
7. Intervenor Marrack's suggestion that the route be shifted south along the Brazos River would move the transmission lines closer to human population centers and would be likely to affect bottomland forests along the river. These new impacts are likely to offset any gain made by reducing impacts to waterfowl.

On the basis of this review, the NRC staff conludes:

1. Transmission line 2C will cross a major duck and goose wintering and feeding area.

2. Waterfowl will collide with transmission lines, particularly during periods of low visibility or when startled (e.g., by hunters).

3. It is not possible to estimate the number of birds that will be killed by transmission lines, but the number should be only a very small proportion of the total populations using the areas (probably less than 0.1%, Stout and Cornwell, 1976).

4. The alternative routes described by the applicant will not reduce the impacts on waterfowl. Shifting the corridor to run along the Brazos River is likely to cause impacts to bottomland forest and populated areas which must be weighed against any purported reduction of impacts to waterfowl.

5. The staff believes that impacts of transmission lines on waterfowl will be minimized by the routing proposed by the applicant and that no obviously superior alternative routing is available.

References

Anderson, W. L. 1978. Waterfowl collisions with power lines at a coal-fired power plant. Wildl. Soc. Bull. 6(2):77-83.

Banks, R. C. 1979. Human related mortality of birds in the United States. Fish and Wildl. Serv. Spec. Sci. Rept. Wildl. No. 215:1-16.

Stout, I. J. and G. W. Cornwell. 1976. Nonhunting mortality of fledged North American waterfowl. J. Wildlife Manage. 40(4):681-693.

Texas Parks and Wildlife Department, Comprehensive Planning Branch. 1975. "Regional Environmental Analysis of Houston - Galveston Region," Texas Outdoor Recreation Plan, Vol. VI, Austin, Texas, pp. 25 and 27.

U.S. Department of the Interior, (undated). "Environmental Criteria for Electric Transmission Systems." U.S. Government Printing Office, Washington, D. C.

Willard, D.E., J.T. Harris, and M.J. Jaeger. 1977. The impact of a proposed 500 kV transmission route on water fowl and other birds. Pub. Util. Comm. , Salem, Oreg.

PROFESSIONAL QUALIFICATIONS OF ROBERT M. REED

I am employed as a Research Staff Member by the Environmental Sciences Division of Oak Ridge National Laboratory where I am a team leader in the Environmental Impacts Program. My formal education includes an A.B. degree (botany) from Duke University in 1963 and a Ph.D. from Washington State University in 1969. My training at the graduate level was in plant ecology and botany, with a minor in soil science.

Before joining the Laboratory in 1977, I held an appointment in the Department of Biology at the University of Ottawa, Canada. I have taught courses at both the graduate and undergraduate levels, including general biology, botany, general ecology, plant ecology, plant geography, and environmental science. My research has included studies of plant communities, analyses of the effects of SO_2 pollution on forest vegetation, and ecological assessments of natural areas.

I have contributed to environmental impact assessments of siting, construction, and operation of nuclear power plants and to a programmatic assessment of impacts resulting from coal utilization. My responsibilities as team leader have involved coordinating inputs from the Environmental Impact Program staff for impact statements on six DOE coal conversion demonstration plants. In addition, I serve as task group leader responsible for preparing a series of environmental guidance documents to be used by applicants to DOE in preparing proposals and environmental reports. My research and/or assessment activities have been in western, southeastern, and Canadian forest ecosystems.

I am a member of the American Institute of Biological Sciences, the American Association for the Advancement of Science, and the Ecological Society of America.