

POOR ORIGINAL

October 25, 1956

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VISIT OF DUKE POWER CORPORATION, SEPTEMBER 13, 1956

SYMBOL: CA:RHES:CDL

50-269

Present: Duke Power - Messrs. Fiss, Oettinger, Hatley  
SROO - Loren Palmer, Joel Levy  
AEC Washington - C. R. McCullough, C.D. Luke,  
and J. Z. Holland

Duke Power Corporation is considering a 15,000 ekw power reactor, and came to the AEC to determine site criteria.

The 20,000 square mile area served by Duke is concentrated generally from northeast to southwest, along the Southern Railroad. The total load on the system is 2,500 MW, and the last unit to go into operation was 275 MW capacity. The present fuel cost (coal) is 3 mills/kwh, and recent plants have cost an unusually low \$100/kw.

With regard to selection of a site, it was pointed out that the AEC is interested in protecting operating personnel and the public against radiation exposure. Site criteria would include land under control of the corporation, uses of the surrounding area, population density, and other environmental data, such as meteorology, geology, hydrology, terrain, etc. Dr. McCullough pointed out that the old Reactor Safe-guards formula was limited in its application, and that the site for a 15,000 ekw reactor should require about 200 acres. Containment was discussed, including fuel cladding, pressure vessel and building. The containment building might be underground, or above ground as a concrete structure (CP-5) or steel vessel (MIT, KAFL, PWR).

Typical accidents were described, including the possibility of metal-water reaction. Any reactor, with greater than 5,000 kw thermal power, must be cooled after shutdown, in order to remove decay heat. In the event of an accident, the building would be contaminated with fission products. Sufficient shielding must be provided to protect operating personnel and to minimize direct gamma radiation at the site boundary. Since the accident would cause a pressure increase in the building, the structure must be designed for a sufficiently low leakage rate so that the public would not be endangered by inhalation or gamma radiation from the cloud. Also, provisions must be made for protecting streams and underground water supplies from contamination.

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One possible location suggested by Duke Power was several miles west of Durham, in order to be near universities in North Carolina. It was pointed out that while such a location might be considered remote in the beginning, expanding population might easily move in on the surrounding territory. Also, it is considered safer to design a power reactor for continuous production of power, without provisions for research experimentation. Duke Power were considering several other sites which seemed suitable for serious consideration.

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