

January 11, 1990

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
GEORGIA POWER COMPANY, et al.) Docket Nos. 50-424
) 50-425
(Vogtle Electric Generating Plant,)
Units 1 and 2) ASLBP No. 90-617-03-OLA
)
Facility Operating License No. NPF-68)
Amendment No. 31, July 10, 1990)
and)
Facility Operating License No. NPF-81)
Amendment No. 11, July 10, 1990)

AFFIDAVIT OF OM P. CHOPRA

REGARDING HIGH JACKET WATER TEMPERATURE TRIP BYPASS

I, Om P. Chopra, having first been duly sworn, hereby depose and state as follows:

1. I am a Senior Electrical Engineer assigned to the Electrical Systems Branch, Division of Systems Technology, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C.

I attended the Thaper Institute of Engineering and Technology, Patiala, India, and received a diploma in electrical engineering in 1963. I then received a B.S. in Electrical Engineering in 1967 from Howard University, Washington, D.C.

In the position of Senior Electrical Engineer, which I have held since February 1977, I am responsible for performing

technical reviews, analyses and evaluations on electric power systems (onsite and offsite) that supply power to plant safety systems. Prior to this assignment, from November 1974 to February 1977, I was assigned to the Electrical, Instrumentation and Control Systems Branch where I performed technical reviews of instrumentation, control and electrical systems of nuclear power stations. From 1968-74, I was employed as an electrical engineer with Bechtel Power Corporation in Gaithersburg, Maryland, where my responsibilities included design and engineering of nuclear power plants including auxiliary systems design, voltage drop and short circuit calculations, selection and setting of protective relays. My responsibilities also included design of electrical protection schemes and wiring details, of generating stations, transmission and distribution lines, substations and their distribution systems. I am a member of the Institute of Electrical and Electronics Engineers.

2. On December 17-19, 1990, I participated in a site visit to the Vogtle Electric Generating Plant (Vogtle) along with other members of the staff to better understand the Applicants' (Georgia Power Company, et al.) response to concerns raised by the Atomic Safety and Licensing Board during the prehearing conference in regard to the High Jacket Water Temperature (HJWT) trip bypass. During this site visit, I reviewed the HJWT trip bypass to the recommendations of Regulatory Guide (RG) 1.9, Rev. 2, entitled

"Selection, Design, and Qualification of Diesel-Generator Units Used As Standby (Onsite) Electric Power Systems at Nuclear Power Plants."

3. Position 7 of RG 1.9, Rev. 2, recommends that the emergency diesel generator (EDG) be automatically tripped on engine overspeed and generator differential overcurrent. All other EDG protective trips should be handled in one of two ways: (1) a trip should be implemented with two or more measurements for each trip actuation, or (2) a trip may be bypassed under accident conditions provided the operator has sufficient time to react appropriately to an abnormal EDG unit condition. The design of the bypass circuitry should include the capability for (1) testing the status and operability of the bypass circuits, (2) alarming in the control room for abnormal values of all bypass parameters, and (3) manually resetting the trip bypass function.

4. At Vogtle, all the protective trips on the EDGs except engine overspeed, generator differential, low lube oil pressure and HJWT were previously bypassed during an emergency start. The low lube oil pressure and HJWT trips are implemented by three independent measurements for each trip parameter. The actuation of these trips is initiated by two-out-of-three coincident logic.

Due to a continuing problem of spurious trips at Vogtle caused by the Calcon jacket water temperature switches, the Applicants, by letter of May 25, 1990, requested license amendments to change the technical specifications to allow the

HJWT trip to be bypassed upon loss of voltage on the emergency bus concurrent with a safety injection actuation signal. The proposed amendments that allowed the HJWT trip to be bypassed to minimize the potential for spurious EDG trips in the emergency start mode were approved by the NRC staff on July 10, 1990.

5. At Vogtle, the HJWT trip is not automatically bypassed, but rather is removed for emergency starting of the EDGs. The removal of this EDG protective trip at Vogtle has been implemented as follows: Three isolation valves are installed in the three pneumatic sensor lines between the Calcon jacket water temperature sensors and the diesel generator engine control panel. When closed, the valves prevent the pneumatic signal from reaching the EDG control panel and thus prevent the diesel engine from tripping on HJWT. The isolation valves will be manually opened prior to planned starts of the EDG.

6. Removal of the HJWT trip in this manner also removes the capability for alarming the high temperature trip condition in the control room and EDG room for abnormal values of all bypass parameters as recommended by RG 1.9, Rev. 2, Position 7. The Applicants noted, however, that the alarms for HJWT are provided in the control room from different sensors which also monitor the bypassed parameter. These alarms for HJWT include an annunciator window and an audible alarm for each of the following: (1) jacket water inlet temperature at 175°F, and (2) outlet temperature at 190°F. I pointed out to the Applicants that two other alarms -- jacket water temperature at 200°F, which

is activated by actuation of two of these three sensors, and a separate malfunction alarm, which is activated by actuation of one of the three sensors -- would not be activated because the valves in the pneumatic sensor lines would prevent the pneumatic signal from reaching the EDG control panel.

7. The Applicants informed us that a potential design change to bypass the HJWT trip in a manner consistent with other existing protective trips was currently under review. The Applicants are pursuing an improvement to implement an automatic bypass of HJWT on EDG start instead of the current method which requires that instrument sensing line isolation valves be closed. The Applicants expect to develop the schedule for implementation by May 15, 1991.

8. With the implementation of the Applicants' revision of associated procedures and training (see Mr. Correia's Affidavit) to inform operators about the significance of the HJWT setpoint alarm at 190 degrees F as an indication that the EDG jacket water temperature could be above normal ranges, it is my opinion that the HJWT trip bypass at Vogtle will substantially comply with RG 1.9, Rev. 2, and that the License Amendments that are the

subject of this affidavit will provide reasonable assurance of an adequate level of public health and safety.

The forgoing is true and correct to the best of my knowledge and belief.

Om P Chopra

OM P. CHOPRA

Subscribed and sworn to before
me this 17th day of January, 1991

Elizabeth Ann Tipton

Notary Public

My commission expires: 3/1/95

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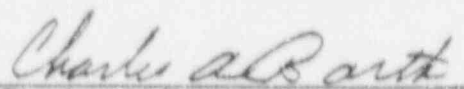
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