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August 9, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of)
)
GEORGIA POWER COMPANY,)
 et al.)
)
(Vogtle Electric Generating Plant,)
 Units 1 and 2))

Docket Nos.

50-424
50-425
(OL)

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

NRC STAFF RESPONSE TO APPLICANTS' MOTION
FOR SUMMARY DISPOSITION OF CONTENTION 7
(GROUNDWATER)

I. INTRODUCTION

On July 15, 1985, Applicants filed a Motion for Summary Disposition of Joint Intervenor's Contention 7 alleging that Applicants have failed to assure that the groundwater below the Vogtle site will not be contaminated. For the reasons presented below and in the attached Affidavit of Gary B. Staley, the Staff submits that Applicants' Motion should be granted.

II. LEGAL STANDARDS GOVERNING SUMMARY DISPOSITION

The Staff previously set forth the applicable legal standards governing motions for summary disposition in its July 26, 1985 "Response to Applicants' Motion for Summary Disposition of Contention 10.3 (Cables in Multiconductor Configurations)" (at pp. 1-3). In order to avoid

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unnecessary repetition, that discussion is incorporated by reference herein. ■

III. APPLICANTS' MOTION

A. Overview

In its Order of September 5, 1984, the Board admitted Joint Intervenor's Contention 7, which reads:

Applicant has not adequately addressed the value of the groundwater below the plant site and fails to provide adequate assurance that the groundwater will not be contaminated as required by 10 CFR 51.20(a), (b), and (c), 10 CFR 50.34(a)(1), and 10 CFR 100.10(c)(3).

LBP-84-35, 20 NRC 887, 898. In admitting Contention 7, the Board indicated that the gravamen of Intervenor's contention was the possibility that an accidental spill of radioactive water at the site could result in contamination of the shallow, and possibly the deeper, aquifers under the site. Moreover, the Board indicated a concern that contaminants might travel from the shallow aquifer to the deeper aquifers and also stated a need to determine whether there were one or two deep aquifers under the site and, if two, whether the deep aquifers are hydraulically connected.

The issue of potential groundwater contamination in the event of accidental releases of radioactivity was discussed in both the Staff's Final Environmental Statement (FES) and Safety Evaluation Report (SER) for the Vogtle facility. As is discussed below, the Staff concluded that releases in the event of design basis accidents would not exceed 10 CFR Part 20 requirements in either the shallow or deep aquifers. The Staff also considered the effects of a beyond design basis event (a core melt

accident), and determined that the Vogtle site is comparable to other licensed sites in terms of the potential effects of accidents upon groundwater.

Before addressing the potential for groundwater contamination at Vogtle, the Staff wishes to comment on the regulatory requirements cited in Contention 7. Section 51.20 requires that the Commission perform an environmental impact statement for various actions; the Staff has performed such an environmental impact statement for the Vogtle facility. Section 50.34(a) describes the required technical contents of construction permit applications; this is an operating license proceeding, and the Applicants have addressed the issue of groundwater in their licensing submittals to the NRC. Finally, Section 100.10(c)(3) states that special precautions should be planned if a "significant quantity" of contaminants might find their way into local water sources. This last regulation clearly requires a threshold finding that "significant quantities" of contaminants be released into local water sources. In our view, the proper focus of this contention is the level of contaminants that might find their way into groundwater in the event of an accident at the Vogtle facility. 10 CFR Part 100 establishes limits for accidental releases. Lower limits are set forth in Part 20 for releases to unrestricted areas during routine operation. As will be shown below, the Staff has compared the releases associated with the enveloping accident for Vogtle (in terms of groundwater contamination) with the limits contained in Part 20. Since the limits for Part 20 are not exceeded in the event of an accidental release, operation of Vogtle insofar as groundwater contamination is concerned will not result in the

exceedance of Part 100 requirements in the event of an accidental release. •

B. Description of the Vogtle Site

The groundwater underneath the Vogtle site consists of both unconfined (water table) and confined (artesian) aquifers. A water table aquifer is one in which groundwater possesses a free surface open to the atmosphere; an artesian aquifer is one in which groundwater is confined under pressure by overlying and underlying aquitards or aquicludes. Staley Affidavit, ¶ 5.

The water table aquifer at Vogtle occurs in the Utley Limestone and Irwinton Sand Member of the Barnwell Group.^{1/} This aquifer is perched atop the Blue Bluff marl member of the Lisbon Formation. There are two artesian aquifers located under the site. The upper of these two aquifers is of the Tertiary system; the lower is the Cretaceous aquifer in the Tuscaloosa Formation. Both of these aquifers are located below the Blue Bluff marl; although they are distinct aquifers, the two confined aquifers are hydraulically connected to each other. Staley Affidavit, ¶¶ 6-7.

The marl separating the water table and artesian aquifers is approximately seventy feet thick. This marl is continuous at the Vogtle site and is classified as an aquiclude (an aquitard slows the flow of

^{1/} A more detailed description of the geology underneath the Vogtle site can be found in the FES (pages 4-11 and 4-12) and the SER (pages 2-22 et seq.).

groundwater; an aquiclude is essentially impermeable to water flow). A number of boreholes have been drilled through the marl at the site. All inactive holes except three have been grouted by pumping cement slurry throughout the hole, assuring that no voids are present. The other three inactive boreholes do not have any record of having been grouted. However, even if not grouted, these boreholes should not be exposed to any possible accidental spill at the site because of their location. Moreover, even if these holes were exposed to contamination, there are no wells between the ungrouted holes and the Savannah River (toward which the confined aquifers flow), and any contamination would be safely diluted by the river before reaching any potable water source. The Staff believes that the existence of boreholes at the site does not affect the impermeability of the marl and the Staff has concluded that any radiation released in surface spills is extremely unlikely to reach the confined aquifers. Staley Affidavit, ¶ 14.

B. Analysis of Potential Accidental Releases

The Staff has performed an analysis to assess the effect of a design basis accidental release of radiation on groundwater quality at Vogtle. This analysis is described in Section 2.4.13 of the SER. It involves the postulated rupture of the Waste Evaporation Concentrate Holdup Tank (WECHT) and subsequent migration of radioactive contaminants through the groundwater pathway. This particular spill evaluation envelopes all other potential design basis accidents in terms of the effect upon groundwater. Staley Affidavit, ¶ 9-10.

Details of the analysis of the WECHT rupture, including the many conservatisms used in the analysis, are contained in the Staley Affidavit (at ¶¶ 9-13) and in the SER (pp. 2-34 through 2-36). This conservative analysis indicated that contaminants could reach the nearest surface spring in fifteen years, but all critical radionuclides would meet 10 CFR Part 20 requirements before leaving the plant backfill. Any contamination would be diluted to well below Part 20 limits before reaching any potable water intake.

The Staff has also considered the effects of a WECHT rupture on the confined aquifers underneath Vogtle. Even assuming some degree of permeability through the marl, all of the critical radionuclides would be reduced to levels well below Part 20 requirements before reaching the upper confined aquifer. Staley Affidavit, ¶¶ 12-13.

In another analysis, the Staff considered the effects of a core-melt accident upon groundwater at Vogtle. This accident is not a design basis event. Details of this analysis can be found at pages 5-49 through 5-55 of the FES. The transmitted fractions for the more important radionuclides at Vogtle were compared to the transmitted fractions for the river site in the Staff's "Liquid Pathway Generic Study" (NUREG-0440). The results indicate that groundwater contamination at Vogtle in the event of a beyond design basis accident would be less than at the generic site considered in NUREG-0440. FES at 5-54; Staley Affidavit, ¶ 16. The contamination of the confined aquifers in the event of a core melt accident would meet Part 20 limits within one thousand feet of the release point, well before any potable wells would be encountered. Staley Affidavit, ¶ 17. This analysis indicates that

Vogtle fares well in terms of potential groundwater contamination when compared to other river sites. Id. at ¶ 16.

The analyses described above show that potential groundwater contamination at Vogtle has been adequately considered, and that the site in this respect is an acceptable one. The Staff has concluded that it is very unlikely that any radioactive releases to groundwater pathways at Vogtle would contaminate the confined aquifers beneath the marl, and that releases to the water table aquifer would not contaminate any existing potable water supplies. Staley Affidavit, ¶¶ 8,19.

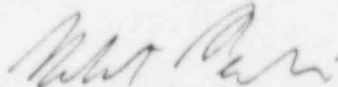
One further point needs to be addressed. Joint Intervenors have previously voiced a concern that groundwater contamination has occurred at the Savannah River Plant (SRP) in South Carolina. From this, they apparently assume that similar contamination will occur at Vogtle. This proceeding is concerned with operation of the Vogtle facility, not SRP; any litigation of groundwater contamination must focus on the Vogtle facility. ^{2/} To date, the Staff has not seen any challenge by Joint Intervenors to the material contained in the SER and FES that would raise a material factual issue appropriate for litigation in this proceeding.

^{2/} The Staff has not performed a detailed study of the potential for groundwater contamination at SRP. Nonetheless, the Staff is aware of two possible significant differences between Vogtle and SRP with respect to groundwater contamination. SRP apparently uses seepage basins and burial grounds; such basins and burial grounds are not used at Vogtle. Moreover, the aquiclude lying above the confined aquifers at SRP may not be continuous throughout the site and is much thinner than the marl at Vogtle. Staley Affidavit, ¶ 18. It has simply not been established that there is any reason to believe that the groundwater situation at SRP is relevant to the issue raised by Contention 7: the potential for groundwater contamination at Vogtle.

IV. CONCLUSION

For the reasons presented above, in the attached Affidavit of Gary Staley, and in the FES and SER, the Staff submits that potential groundwater contamination at Vogtle has been adequately considered, and that the site is an acceptable one in this regard. Joint Intervenorors have raised no factual challenge to the groundwater contamination analyses performed for Vogtle. The Staff therefore submits that Applicants' Motion for Summary Disposition of Contention 7 should be granted.

Respectfully submitted,


Robert G. Perlis
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 9th day of August, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of)

GEORGIA POWER COMPANY,
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(Vogtle Electric Generating Plant,
Units 1 and 2))

Docket Nos. 50-424
50-425
(OL)

OFFICE OF SECRETARY
LICENSING & SAFETY
BRANCH

-CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF RESPONSE TO APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF CONTENTION 7 (GROUNDWATER)" and related documents in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system this 9th day of August, 1985.

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