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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of :
: GEORGIA POWER COMPANY, et al. :
: (Vogtle Electric Generating : Docket Nos. 50-424 02
Plant, Units 1 and 2) : 50-425 02

APPLICANTS' MOTION FOR SUMMARY DISPOSITION
OF JOINT INTERVENORS' CONTENTION 12
(COOLING TOWER DRIFT)

Pursuant to 10 C.F.R. § 2.749, the Applicants hereby move the Atomic Safety and Licensing Board ("Board") for summary disposition in the Applicants' favor of Joint Intervenor's Contention 12. The Applicants base this motion on the grounds that no genuine issue exists to be heard as to any material fact with respect to Contention 12 and that the Applicants are entitled to a decision in their favor as a matter of law on this contention.

In support of this motion for summary disposition of Contention 12, the Applicants rely upon:

(1) Applicants' Statement of Material Facts as to Which No Genuine Issue Exists to Be Heard Regarding Contention 12;

(2) Affidavit of Morton I. Goldman, dated July 8, 1985;

(3) Affidavit of Nora A. Blum, dated July 10, 1985;

(4) Affidavit of Daniel H. Warren, dated July 8, 1985; and

(5) all of the filings in this proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties.

I. Background.

When initially proposed by the Joint Intervenor, Contention 12 alleged that the Applicants had not adequately evaluated "the amount of salt and hydrochloric acid release from the cooling towers" and the resulting consequences to the environment in the vicinity of the plant. The Joint Intervenor predicated this contention upon the estimate made in the early 1970's by the Applicants in section 5.3.2 of the Construction Permit Stage Environmental Report ("CP-ER") of the drift deposition that would result from the operation of the natural draft cooling towers at VEGP and upon the Applicants' intent to inject chlorine into the circulating water system to control biotic organisms. Campaign for a Prosperous Georgia ("CPG") Supplement to Petition for Leave to Intervene and Request for Hearing (April 11, 1984) at 27; Georgians Against Nuclear Energy ("GANE") Supplement to Petition for Leave to Intervene and Request for Hearing (April 11, 1984) at 29.

In their response, the Applicants noted that the fundamental laws of chemistry would prevent any hydrochloric

acid produced by chlorination of the circulating water from being released from the cooling towers since the tower water was alkaline and would rapidly neutralize any such hydrochloric acid. With respect to salt drift from the cooling towers, the Applicants pointed out that at the construction permit stage the Nuclear Regulatory Commission ("NRC") staff had concluded that the drift deposition from the VEGP cooling towers would have a negligible effect upon the surrounding environment. Furthermore, the Applicants, in their Operating License Stage Environmental Report ("OL-ER"), had revised their estimate of the maximum expected drift deposition rate to reflect current design parameters and expected operating conditions. At the time of their response, the Applicants estimated that the maximum on-site drift deposition rate would be 31 pounds per acre per year and the maximum off-site rate would be 21 pounds per acre per year. Applicants' Response to GANE and CPG Supplements to Petitions for Leave to Intervene (May 7, 1984) at 78-80.

Shortly before the Special Prehearing Conference held on May 30, 1984, CPG amended its proposed Contention 12 to delete the references to hydrochloric acid and to substitute instead chlorine gas. Amendment to Supplement to Petition for Leave to Intervene and Request for Hearing (May 25, 1984) at 25. GANE joined in that amendment at the Special Prehearing Conference. Tr. at 87.

In its Memorandum and Order on Special Prehearing Conference Held Pursuant to 10 C.F.R. 2.715a, issued on September 5, 1984, the Board admitted Joint Intervenors' Contention 12, which, as revised by the Intervenors, stated:

The applicant has not properly assessed the amount of salt and chlorine gas release from the cooling towers and the extent of consequent adverse agricultural and environmental damage in the area of Plant Vogtle.

LBP-84-35, 20 N.R.C. 887, 908 (1984). The Board noted that the NRC staff was still in the process of reviewing the Applicants' revised estimates of the maximum on-site and off-site drift deposition rates and expressed a desire for a more definitive estimate of the drift deposition rate and for a determination of whether that amount would be harmful to vegetation. Id. at 910. With respect to chlorine, the Board also indicated a desire for more information on the effects of chlorine. Id.

Subsequent to the admission of Joint Intervenors' Contention 12, the parties have undertaken and completed discovery on that contention. The written discovery pursued by the parties consisted of:

Joint Intervenors' First Set of Interrogatories and Requests to Produce (Oct. 25, 1984) at 15-16.

NRC Staff's Interrogatories to Campaign for a Prosperous Georgia (CPG) and Georgians Against Nuclear Energy (GANE) (Nov. 1, 1984) at 3.

Applicants' First Set of Interrogatories and Request for Production of Documents (Nov. 5, 1984) at 17-20.

Applicants' Response to Intervenor's First Set of Interrogatories and Request for Production of Documents (Nov. 29, 1984) at 90-106.

CPG/GANE's Response to Applicants' First Set of Interrogatories and Request for Production of Documents (Dec. 5, 1984) at (unnumbered pages) 26-32.

CPG/GANE's Response to NRC Staff Interrogatories (Dec. 10, 1984) at 1-2.

Applicants' Third Set of Interrogatories and Request for Production of Documents (Jan. 4, 1984) at 14-18, 27.

Campaign for a Prosperous Georgia/Georgians Against Nuclear Energy Third Set of Interrogatories and Requests to Produce (Jan. 9, 1985) at 4, 8, 14-15, 17.

Letter from T. Johnson to J. Joiner (Feb. 7, 1985) (enclosing supplemental information from Howard Deutsch in response to Applicant's Third Set of Interrogatories) at (unnumbered pages) 4-5.

Applicants' Response to Intervenor's Third Set of Interrogatories and Request for Production of Documents (Feb. 13, 1985) at 10-11, 32-35, 60-65, 72-79.

Applicants' First Amended Response to Intervenor's Third Set of Interrogatories and Request for Production of Documents (April 19, 1985) at 1-8.

Applicants' First Supplemental Response to Intervenor's Third Set of Interrogatories and Request for Production of Documents (July 5, 1985) at 4-6.

On March 25, 1985, the Applicants deposed Dr. Howard Deutsch, whom the Joint Intervenor's had indicated would testify on the subjects of "salt and chlorine drift."

CPG/GANE's Response to Applicant's First Set of Interrogatories and Request for Production of Documents (Dec. 5, 1984) at (unnumbered page) 32.

II. Legal Standards for Summary Disposition.

The admission of a contention for adjudication in a licensing proceeding under the standards enunciated in 10 C.F.R. § 2.714 does not constitute an evaluation of the merits of that contention. Instead, such a ruling reflects merely the determination that the contention satisfies the criteria of specificity, asserted basis, and relevance. The admission of a contention also does not dictate that a hearing be held on the issues raised. Section 2.749(a) of the NRC's Rules of Practice authorizes a licensing board to grant a party to the proceeding summary disposition of an admitted contention without proceeding to a hearing.

That section provides that "[a]ny party to a proceeding may move, with or without supporting affidavits, for a decision by the presiding officer in that party's favor as to all or part of the matters in the proceeding." 10 C.F.R. § 2.749(a). Delineating the standard to be applied by a licensing board in ruling upon such a motion, that section further states:

The presiding officer shall render the decision sought if the filings in the proceedings, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue of fact and that the moving party is entitled to a decision as a matter of law.

10 C.F.R. § 2.749(d).

The standards governing summary disposition motions in an NRC licensing proceeding are quite similar to the standards applied by federal district courts to summary judgment motions under Rule 56 of the Federal Rules of Civil Procedure. Alabama Power Company (Joseph M. Farley Nuclear Plant, Units 1 and 2), ALAB-182, 7 A.E.C. 210, 217 (1974); Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B and 2B), ALAB-554, 10 N.R.C. 15, 20 n.17 (1979). Where, as here, a motion for summary disposition is properly supported pursuant to the Commission's Rules of Practice, a party opposing the motion may not rest upon the mere allegations or denials of its answers. A party cannot avoid summary disposition on the basis of guesses or suspicions, or on the hope that at the hearing the movant's evidence may be discredited or that "something may turn up." Gulf States Utilities Company (River Bend Station, Units 1 and 2), LBP-75-10, 1 N.R.C. 246, 248 (1975). Rather, an opposing party must set forth specific facts showing that a genuine issue of fact exists. 10 C.F.R. § 2.749(b). Where the movant has made a proper showing for summary disposition and has supported his motion by affidavit, the opposing party must proffer countering evidentiary material or an affidavit explaining why it is impractical to do so. Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), LBP-83-32A,

17 N.R.C. 1170, 1174 n.4 (1983), citing Adickes v. Kress & Co., 398 U.S. 144, 160-61 (1970).

The Commission and its adjudicatory boards have encouraged the use of the summary disposition process where the proponent of a contention cannot establish that a genuine issue exists so that evidentiary hearing time is not unnecessarily devoted to such issues. Statement of Policy on Conduct of Licensing Proceedings, CLI-81-8, 13 N.R.C. 452, 457 (1981); see also Houston Lighting and Power Company (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 N.R.C. 542, 550 (1980) ("[T]he Section 2.749 summary disposition procedures provide in reality as well as in theory, an efficacious means of avoiding unnecessary and possibly time-consuming hearings on demonstrably insubstantial issues.")

III. Argument.

The attached affidavit of Daniel H. Warren ("Warren Affidavit") describes the operation of the natural draft cooling towers at VEGP and the manner in which the circulating water will be chlorinated. The affidavit of Morton I. Goldman ("Goldman Affidavit") discusses a study performed by NUS Corporation that modeled the drift deposition from the VEGP natural draft cooling towers and evaluates the maximum additions to the drift deposition resulting from the chlorination of the circulating water. The

methods by which the Applicants derived their prior estimates of the maximum drift deposition rates are depicted in both Mr. Warren's affidavit and the affidavit of Nora A. Blum ("Blum Affidavit"). Finally, Ms. Blum's affidavit reviews the potential effect upon the surrounding environment of drift deposition from the VEGP cooling towers.

The computerized modeling study performed by NUS Corporation for the VEGP cooling towers demonstrates that the Applicants' prior estimates of the maximum drift deposition rate for those towers were overly conservative. The additions to the drift deposition resulting from the chlorination of the circulating water will be minimal. Those studies that have evaluated the effects upon vegetation of salt in general or of cooling tower drift deposition in particular have not found any evidence of harm to vegetation at the drift deposition rates predicted for VEGP.

A. The Drift Deposition That Will Occur
as a Result of the Operation of the
VEGP Natural Draft Cooling Towers.

Units 1 and 2 of the VEGP are each equipped with a natural draft cooling tower. Those towers will cool water heated during operation of the plant by exposing the warm water to cool ambient air in such a way that heat is transferred from the warm water to the cooler air. The operation of the two natural draft cooling towers at VEGP

is described in paragraphs 4 through 11 of Mr. Warren's affidavit. That operation will result in the emission from the towers of water droplets entrained in the warm air rising out of the top of the towers. Those water droplets are commonly referred to as the "drift" from the cooling towers. Those droplets that exit the cooling towers contain the same dissolved solids as the water that circulates through those cooling towers. Those dissolved solids are dispersed into the area around the towers when the droplets either fall to the ground or evaporate. The dispersed dissolved solids are commonly referred to as the "salt drift" from the cooling towers, although only some of the dissolved solids are salts. Warren Affidavit at ¶ 11.

1. The Drift Deposition Rates Predicted for VEGP by the NUS FOG Model.

The Applicants have on different occasions calculated estimates of the drift deposition that will result from the operation of the natural draft cooling towers at VEGP. Early estimates, which are discussed in section III(A)(2) of this motion below, were not developed by modeling the actual performance of the VEGP cooling towers using detailed meteorological records, but were calculated using methodologies designed to produce very conservative estimates that would likely exceed the actual maximum deposition rate. Id. at ¶ 21; Blum Affidavit at ¶ 11.

Subsequent to the admission of Joint Intervenor's Contention 12 by the Board, however, the Applicants retained NUS Corporation to conduct a modeling study of the drift deposition rates that would actually be experienced by the VEGP natural draft cooling towers. Warren Affidavit at ¶ 22.

NUS Corporation predicted the drift deposition rates and patterns to be expected from the operation of the cooling towers at VEGP using the NUS Corporation's FOG computer code. That code calculates the release, plume rise, transport, and deposition of drift droplets from natural draft cooling towers and other heat dissipation systems. Goldman Affidavit at ¶ 10. The calculational procedures utilized by the FOG code are discussed in paragraphs 11 through 13 of Dr. Goldman's affidavit.

In 1983, the adequacy of the FOG model was evaluated by Dr. William Dunn, who had earlier coauthored a study performed for the NRC of mathematical models used to predict cooling tower drift deposition. Id. at ¶ 14. Dr. Dunn concluded that the FOG model fell into the category of those models that he classified as "better performing." Id. at ¶ 15. When he compared predictions made by the FOG model to predictions made by a computer model that he had recently helped develop for the Electric Power Research Institute, Dr. Dunn concluded that overall the predictions were "remarkably similar" even though the two

models used distinctly different methodologies. Id. at ¶ 17.

The information used by the FOG model in predicting drift deposition rates for VEGP is discussed in paragraphs 18 through 25 of Dr. Goldman's affidavit. NUS Corporation used meteorological data recorded at the VEGP site during two separate one year periods. Id. at ¶ 19. For each year of meteorological data, NUS Corporation ran the FOG model twice, once using a conservative droplet mass-size spectrum and once using a realistic droplet mass-size spectrum. Id. at ¶ 26.

The maximum off-site drift deposition rate predicted by the NUS Corporation's FOG model for VEGP is 1.7 pounds per acre per year to the east of the cooling towers. Id. at ¶ 27. Figure 12-4 attached to Dr. Goldman's affidavit depicts that drift deposition pattern. Id. at ¶ 26. As discussed in section III(C) below, a drift deposition rate of 1.7 pounds per acre per year is far below any level that could cause harm to vegetation.

2. The Applicants' Prior Estimates
of Drift Deposition from the VEGP
Natural Draft Cooling Towers.

Prior to the modeling study performed by NUS Corporation, none of the techniques used by the Applicants to estimate salt drift deposition rates for the VEGP natural

draft cooling towers involved modeling based upon extensive site specific data concerning meteorological conditions and the operating characteristics of the cooling towers. For that reason, the Applicants consider their prior estimates of salt drift deposition to be overly conservative and consider the results of the NUS modeling study to be much more accurate estimates of the drift deposition rates that will occur at VEGP. To ensure that no confusion remains concerning the reasons why the Applicants' estimates of cooling tower drift have declined significantly from the construction permit stage, the Applicants will review briefly the manner in which they derived those prior estimates.

(a) Applicants' Estimate at the Construction Permit Stage.

The Applicants initially estimated the salt drift deposition rate for the VEGP natural draft cooling towers at the construction permit stage in the early 1970's. At that time computerized models of cooling tower drift based upon site specific conditions were not widely used and analyses of drift were not very sophisticated. Warren Affidavit at ¶ 15. By simply calculating the drift emission rate and dividing the total amount of drift emitted in a one year period by the amount of land surface within a one mile radius of the towers, the Applicants derived an estimated annual drift deposition rate of 305

pounds per acre per year for two towers.^{1/} Id. The Applicants based that initial estimate upon several unrealistic assumptions that caused it to be far too conservative.

First, in calculating that estimate, the Applicants assumed that all of the dissolved solids contained in the drift would be deposited in the area within a one mile radius of the cooling towers.^{2/} Id. at ¶ 16. Even at the construction permit stage, the NRC staff concluded that this assumption was unrealistic, citing analyses done at other locations that showed drift deposition occurring two to three miles from cooling towers. Construction Permit Stage Final Environmental Statement ("CP-FES"), § 5.5.1.1. Second, the Applicants used a drift rate of

^{1/}At the construction permit stage VEGP was designed to have four units, each with a natural draft cooling tower. The estimated drift deposition rate stated in § 5.3.2 of the CP-ER was 0.014 pounds per square foot per year (610 pounds per acre per year) for four units. The equivalent rate for a two unit plant, as VEGP is now designed, would have been 305 pounds per acre per year.

^{2/}Statements made by one of the Joint Intervenors' representatives, Dr. Howard Deutsch, at the Special Pre-hearing Conference held on May 30, 1985, reflected a misunderstanding of this assumption by the Applicants. Dr. Deutsch stated that "at the construction stage hearing there was a calculation entered in of 305 pounds per acre per year within a certain radius of the plant, and actually we agree that that decreases as you go out farther and farther." Tr. at 88. While Dr. Deutsch is correct that in actuality the drift deposition rate declines as the distance from the cooling tower increases, the Applicants' estimate at the construction permit stage was based upon the assumption that all the dissolved solids would be deposited within a one mile radius of the cooling towers.

0.03% in deriving that initial estimate, which rate corresponded to the drift rate guaranteed in the contract between Georgia Power Company and Custodis-Cottrell (formerly Research-Cottrell), the tower supplier. Warren Affidavit at ¶ 17. Custodis-Cottrell has recently advised the Applicants that subsequent testing and technical analysis cause it to expect that the drift rate for natural draft cooling towers with drift eliminators of the same design as those at VEGP would be 0.004% or less. Id.

In addition to these unrealistic assumptions, other factors caused the Applicants' initial estimate to overstate significantly the drift deposition rate. In calculating the total dissolved solids present in the water from the Savannah River, the Applicants used the maximum level found in sampling programs, which was 76 mg/liter, rather than the average level of 60 mg/liter. Also, the Applicants assumed that the cooling towers would be operated at eight cycles of concentration rather than the expected average operating rate of four cycles of concentration. Id. at ¶ 18.

For these reasons, the drift deposition rate calculated by the Applicants at the construction permit stage was unrealistically conservative. The Applicants did not at that time undertake a more detailed analysis of the cooling tower drift because the deposition rate they initially predicted met, in light of the amount of rainfall

in the area, the then existing irrigation and livestock water supply guidelines. Id. at ¶ 19.

(b) The Applicants' Revised Estimates of Drift Deposition Developed Using a Bounding Technique.

Because no changes had occurred since the construction permit stage that would increase the drift deposition rate,^{1/} the Applicants did not do any further calculations of the drift deposition rate when they submitted the Operating License Stage Environmental Report ("OL-ER") in the fall of 1983. The NRC staff, however, noted that a deposition rate of 305 pounds per acre per year was considered to be in the range that could potentially cause damage to vegetation and asked the Applicants to reassess salt drift. OL-ER, Questions E290.3 and E451.15; Warren Affidavit at ¶ 20.

In response, the Applicants noted the very conservative assumptions underlying their initial salt drift deposition estimate and submitted new estimates, determined using a different methodology, of 31 pounds per acre per year on-site and 21 pounds per acre per year off-site for the maximum drift deposition rates. Warren Affidavit at ¶ 21; Blum Affidavit at ¶¶ 3-7. In response to a subsequent question from the NRC staff concerning the

^{1/}In fact, as noted in footnote 1, the design of VEGP had been changed from four units to two, which would decrease drift deposition by one-half.

calculation of these new estimated on-site and off-site deposition rates, the Applicants further revised those estimates to a maximum on-site rate of 17 pounds per acre per year and an off-site rate of 15 pounds per acre per year. Blum Affidavit at ¶¶ 8-10.

As explained in greater detail in paragraphs 4 through 11 of Ms. Blum's affidavit, the Applicants derived these new estimates not by actually modeling the performance of the VEGP cooling towers, but by predicting maximum drift deposition rates for VEGP based upon extrapolation to VEGP conditions of drift deposition rates estimated using models by other plants having similar cooling towers and meteorological environments. The first set of revised estimates (31 pounds on-site and 21 pounds off-site) was determined using drift deposition rates predicted for four plants, Shearon Harris 1-4, Grand Gulf 1 and 2, Susquehanna 1 and 2, and Beaver Valley 1, and drift deposition pattern information from one plant, Susquehanna 1 and 2. Id. at ¶¶ 5-7. The second set of revised estimates (17 pounds on-site and 15 pounds off-site) resulted from the use of drift rate and drift deposition pattern information from an additional plant and from a reduction in the expected drift rate for the VEGP cooling towers from the rate of 0.015% used in calculating the first set

of revised estimates to 0.008%, based upon information received from the tower supplier.^{4/} Id. at ¶¶ 8-10.

As noted previously, the bounding methodology by which the Applicants derived the revised estimates described above did not entail actually modeling the drift deposition from the VEGP cooling towers, and that methodology was not intended to predict accurately for all conditions the drift deposition rates that will actually be experienced at VEGP. Instead, by using that methodology the Applicants intended to derive an estimate that would very likely exceed, and therefore provide an upper bound for, the maximum deposition rates that would be experienced at VEGP. Id. at ¶ 11; Warren Affidavit at ¶ 21. The results of the computerized modeling study subsequently performed by NUS Corporation demonstrate that these estimates also were overly conservative. When extensive site-specific data concerning meteorological conditions and cooling tower operating characteristics was used with the

^{4/}Paragraph 17 of Mr. Warren's Affidavit describes the Applicants' discussions with Custodis-Cottrell, the tower supplier, concerning the expected drift rate. Subsequent to the preparation of the Applicants' second set of revised estimates (17 pounds on-site and 15 pounds off-site), Custodis-Cottrell advised the Applicants that it would expect the drift rate from towers with drift eliminators of the design used at VEGP to be 0.004% or less. To be conservative, however, the Applicants have continued to use an expected drift rate of 0.008% in estimating drift deposition from the VEGP cooling towers. Warren Affidavit at ¶ 17.

sophisticated modeling techniques developed by NUS Corporation, the maximum expected drift rate for the VEGP cooling towers was found to be 1.7 pounds per acre per year. Goldman Affidavit at ¶ 27.

B. Additions to the Drift Resulting from the Chlorination of the Water Circulating in the Cooling Towers.

In addition to questioning the impact upon the surrounding environment of salt contained in the drift from the natural draft cooling towers at VEGP, the Joint Intervenor in Contention 12 allege that chlorine gas will be released from the cooling towers as a result of the chlorination of the water circulating in the cooling towers. Chlorination of the circulating water will not, however, result in the release of chlorine gas; nor will it increase significantly the dissolved solids dispersed into the surrounding area by drift deposition from the cooling towers.

The process by which the water will be chlorinated and the degree to which chlorination will occur are depicted in paragraphs 12 through 14 of Mr. Warren's affidavit. As discussed in greater detail in Dr. Goldman's affidavit, the injection of chlorine gas into the water circulating in the cooling towers will not cause chlorine gas to be emitted from the cooling towers. Instead, that chlorine gas will have completely hydrolyzed within a few seconds, long before the chlorinated water travels the distance

from the point of chlorination to the cooling towers.
Goldman Affidavit at ¶¶ 28-33.

No conditions will exist in the circulating water system at VEGP that would hinder or reverse this hydrolysis process. Id. at ¶ 31. Because of the magnitude of the hydrolysis constant, no measurable amount of chlorine gas will remain in solution if the pH of the chlorinated water is more than 3.0 and the total chloride concentration is less than 1000 mg/liter. The pH of the circulating water system at VEGP will be maintained between 7.0 and 9.0 and the chloride concentration will be far less than 1000 mg/liter. Id. at ¶ 32. Thus, the water circulating in the natural draft cooling towers at VEGP will contain no measurable chlorine gas that could be emitted from those towers. Id. at ¶ 33.

The chlorination of the circulating water also will not significantly increase the drift deposition from the VEGP cooling towers. Using very conservative assumptions, Dr. Goldman estimates that the chlorination process will result in a maximum additional "chloride" deposition of 0.92 pounds per acre per year. Id. at ¶¶ 34-43. When added to the approximately 8% of the solids in the drift comprised of the chloride ion from the river makeup water (0.14 pounds per acre per year), this results in a total annual "chloride" deposition of 1.06 pounds per acre. Id. at ¶ 43.

C. The Environmental Effects of Drift
Deposition from the VEGP Natural
Draft Cooling Towers.

Even taking into consideration the maximum potential addition to the drift minerals resulting from chlorination of the circulating water, the maximum expected drift deposition rate off the plant site resulting from the operation of the VEGP natural draft cooling towers would be less than three pounds per acre per year. As detailed in paragraphs 12 through 21 of Ms. Blum's affidavit, no scientific study addressing the effects upon vegetation of either salt or cooling tower drift has found any harm to occur to vegetation from a deposition rate of that low magnitude.

Figure 12-10 attached to Ms. Blum's affidavit summarizes the data available from field and greenhouse studies concerning the amount of drift necessary to cause damage to several plant species similar to those found in the vicinity of VEGP. This data represents the results of a wide variety of experimental conditions, including studies performed at Chalk Point that evaluated the effects upon vegetation of cooling tower drift from an operating natural draft cooling tower. Blum Affidavit at ¶ 19. For both crops and native trees, the predicted maximum drift deposition rate for VEGP of less than three pounds per acre per year (which includes the additions from chlorination) is well below both the lowest values at

which leaf damage to vegetation was found to occur in these studies and the highest values at which no effect upon the vegetation was discernible. This conclusion applies to both total dissolved solids and NaCl. Id. at ¶ 20.

The potential for damage to vegetation in the vicinity of VEGP from cooling tower drift would be even less than indicated in Figure 12-10. The experimental results summarized in Figure 12-10 in many instances did not take into account the effect of rainfall, which would further dilute and prevent the accumulation of salt on plant foliage or in the soil. Id. at ¶ 21. Also, the nearest land in the vicinity of VEGP currently being cultivated is at a distance of 1.5 miles from the VEGP cooling towers, and the drift deposition rate at that distance would be significantly less than the predicted maximum rate of less than three pounds per acre per year. Id. Therefore, the available scientific literature fully supports the Applicants' position that the operation of the natural draft cooling towers at VEGP will have no adverse impact on the surrounding environment. That position finds additional support in the NRC staff's generic guidelines for salt drift deposition and the results of its review of the Applicants' drift deposition estimates.

Regulatory Guide 4.11, which addresses the assessment of terrestrial effects of plant operation, concludes that

no need exists for chemical analyses of the soils, plants, and animals in areas subject to drift from freshwater cooling towers, such as the cooling towers at VEGP, when among other conditions, the expected peak deposition beyond the site boundary is less than 18 pounds per acre per year. Regulatory Guide 4.11 at 4.11-7. That amount is well in excess of the maximum predicted drift deposition rate at VEGP of less than three pounds per acre per year.

More specific information concerning potential toxic effects of salt drift is set out in NUREG-0555, which is entitled "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants." NUREG-0555 states that

[d]eposition of salt drift (NaCl) at rates of 1 to 2 kg/ha/mo [11-22 pounds per acre per year] is generally not damaging to plants. Rates approaching or exceeding 10 kg/ha/mo [9 lb per acre per month] in any month during the growing season could cause leaf damage in many species. Deposition rates of hundreds or thousands of kg/ha/yr could cause damage sufficient to require changes of tower basin salinities or a reevaluation of tower design, depending on the amount of land impacted and the uniqueness of the terrestrial ecosystems expected to be exposed to drift deposition.

The predicted maximum drift deposition rate for VEGP is substantially below the level that NUREG-0555 suggests is a threshold for damage to plants.

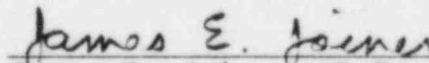
In section 5.5.1.1 of the Operating License Stage Final Environmental Statement ("OL-FES"), the NRC staff

reviewed the different estimated drift deposition rates provided by the Applicants. The overall conclusion of the NRC staff is that the impact of salt drift deposition from the cooling towers at VEGP would be negligible. OL-FES § 5.5.1.1.

IV. Conclusion.

For the reasons stated above, no genuine issue of material fact exists to be heard with respect to Joint Intervenor's Contention 12. Based upon the undisputed facts, the Applicants have shown that the operation of the cooling towers at VEGP will not have any adverse effect upon the surrounding environment. Therefore, the Applicants respectfully request that the Board grant their motion for summary disposition of Contention 12.

Respectfully submitted,



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Dated: July 11, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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	:	Docket Nos. 50-424
(Vogtle Electric Generating	:	50-425
Plant, Units 1 and 2)	:	

CERTIFICATE OF SERVICE

I hereby certify that copies of Applicants' Motion for Summary Disposition of Joint Intervenor's Contention 12 (Cooling Tower Drift), dated July 11, 1985, were served upon those persons on the attached Service List by deposit in the United States mail, postage prepaid, or where indicated by an asterisk (*) by hand delivery, this 11th day of July, 1985.

James E. Joiner
James E. Joiner
Attorney for Applicants

Dated: July 11, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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(Vogtle Electric Generating Plant,)	
Units 1 and 2))	

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