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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BOOKETED
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)

OFFICE OF SECRETARY)
Docket Nos. 50-424 and 50-425)
REGULATORY & SERVICE)
BRANCH)

SUPPLEMENT TO PETITION FOR LEAVE TO INTERVENE AND REQUEST FOR HEARING
Georgians Against Nuclear Energy

Pursuant to an Order dated March 9, 1984 of the Atomic Safety and Licensing Board in the above-captioned proceeding Georgians Against Nuclear Energy (GANE) hereby submits the supplement to its Request for Hearing and Petition for Leave to Intervene filed January 27, 1984. The contentions which GANE seeks to have admitted in this proceeding are as follows:

GANE 1:

Petitioner contends that the applicant has not adequately nor correctly assessed the potential releases of radionuclides from Plant Vogtle during normal transient and accident conditions, nor the somatic, teratogenic and genetic effects of the ionizing radiation. Applicant thus fails to meet the requirements of 10 CFR 50.34, 50.36, 20.103, 20.203 and Appendix I of Part 50 and, further, underestimates the human cost of the project in the cost-benefit analysis required by 10 CFR 51.21, 51.20(b) and (c) and 51.23(a).

Applicant has failed to quantify, to the greatest extent possible, the factors considered in calculating the environmental effects of the project as required by 10 CFR 51.20(b). The Applicant has failed to consider the existing radiological burden people residing in the area. It is well documented that the effects of exposure to low levels of radiation are cumulative (Gofman, J., Radiation and Human Health, 1981, p. 47) routine or accidental radioactive emissions from Plant Vogtle will be added to those of the Savannah River Plant (SRP) ten miles across the Savannah

River. This section fails to discuss the results of studies on releases at the SRP (Atlanta Journal-Constitution, Sept. 12, 1982, p. 1A). The addition of releases from Plant Vogtle must be calculated in balancing the environmental effects of the facility.

The petitioner further contends that in estimating maximum exposure levels from various radioactive substances (FSAR, Table 11.2.3-4), the Applicant has failed to include doses to which pregnant or lactating women would be exposed and projected effects from such doses. Gofman (1971) has found that at crucial points in embryonic development, entire organ systems can be damaged by exposure to radiation (Gofman, J., Poisoned Power, 1971, p. 58). Evidence indicates that embryos are 50 times more susceptible to leukemia or other cancers, when exposed to radiation (Ibid., p. 57) Nursing infants are subjected to similar risks, which are not adequately assessed in the ER in violation of 10 CFR 20.104.

Petitioner contends that the Applicant has failed to thoroughly assess the risk from routine and accidental radioactive releases on the food chain in its assessment of recreation activities (VEGP-OLSER-2,2.1-8 and VEGP-FSAR-2,2.1.3-2) in violation of 10 CFR 20.106 (radioactive effluents to unrestricted areas).

Cesium-137, a major by-product of uranium fission, will be released into the Savannah River mixed with waste water. The Applicant has estimated the number of fish found in stretches of the river proximate to the nuclear plant (OLSER-2, Table 2.1-48,49) and has studied the recreational fishing patterns in the area. Fish readily absorb the radioactive isotope cesium and concentrate it in amounts 1,000 times that found in the water (Ibid., p. 54). An adult man consuming two pounds of fish per year from this stretch of the Savannah River is exposed to cesium-137 levels in excess of the maximum annual allowable amounts (Ibid., p. 140) in violation of 10 CFR 20.106.

Airborne cesium also poses human health dangers via the food chain. As airborne

particles travel and eventually land on pastureland, they are absorbed by grazing cows. The applicant has already determined that the nearest milk cows are only five miles southwest of the proposed plants (FSAR, 11.3.3-4). Commercial milk production from such a site poses significant health risks not assessed by applicant. Based on an accidental release of radioiodine from SRP over a five day period in 1961, the calculated amount of radioiodine found in the cows' milk in the area was nearly the maximum ingestible amount of radioiodine permissible for a child for an entire year (Atlanta Journal-Constitution, Sept. 12, 1982, p. 22A).

GANE 2

Petitioner contends that the Applicant has failed to assess the environmental and public health effects of the addition of Plant Vogtle within 20 miles of the SRP and to quantify this factor in its consideration in violation 10 CFR 20.103, 50.34(a)(4), 51.21, 51.23(b), 104, 105, 106, and 201.

The Savannah River Plant has produced radioactive weapons materials for 32 years. The emissions of large quantities of both planned ^{as} well/unplanned radionuclides into the atmosphere as well as the water in the area is well-documented. Officials of the states of Georgia and South Carolina have repeatedly expressed their concerns over the grave impact that this facility has been and is currently having on the overall environment of this area. Governor Joe Frank Harris as well as former Georgia Governors Busbee and Carter have stated that no more nuclear facilities, including Plant Vogtle, should be allowed to operate in the vicinity of the Savannah River Plant until a study of the cumulative impacts of releases of radioactive effluents from the Savannah River Plant is undertaken.

DOE plans to re-open the aging L-reactor at SRP in order to increase the production of plutonium and tritium for our nuclear defense programs. A federal judge has ordered DOE to perform an Environmental Impact Statement addressing the effect that the plant would have on the air, water, and living species around the facility. The following are responses to the Draft Environmental Impact Statement

(DEIS) by experts in related fields:

Yaron M. Sternberg, Ph.D., Civil Engineering, University of Maryland, states that:

A serious flaw in the Draft EIS is the lack of hydrogeological data for the immediate vicinity of the L-reactor...The DEIS suggests that the geological and hydrogeological conditions at the L-reactor site are similar to those in the F and H areas (Chemical Processing areas). However, there are no data to substantiate this claim...The conclusion that can be drawn based on the data presented is that only sparse data are available for the L-reactor area. The Final EIS must include sufficient data to delineate in detail the geology and the groundwater regime at the site and should explain variations, if any, between previous and present groundwater conditions. Because the Tuscaloosa aquifer is an important source of water, a detailed investigation of this information is essential particularly in view of the fact that in one area this aquifer has already been contaminated...Large volumes of liquids containing nonradioactive waste have been discharged to the F and H seepage basins since 1954 and 1955, respectively. The groundwater is contaminated to a reported 20 meters throughout most of the distance between the basins and seepage springs. The contamination consists of radioactive elements, mercury, and nitrate. The DEIS provides little monitoring data and no information is given on whether remedial action is proposed and, if so, what is the status of the investigation. Serious contamination has been detected in the vicinity of M-area and significant concentrations of organics have been detected in the soils at a depth of about 200 feet...It should be pointed out that these estimates, given in the DEIS, are preliminary, and the total weight may be significantly larger.

Based on the above documented contamination, it is obvious that adding waste to the F, H, & M areas as a result of the startup of the L-Reactor would contribute to further contamination and aggravation of the problem. The above areas should not receive any additional waste loads. Instead, remedial measures should be taken to restore the quality of the groundwater.

Furthermore, seepage basins should not be used anywhere at the SRP for the disposal of any hazardous material because such activity poses a potential serious health hazard to the users of the groundwater." (The L-Reactor Controversy: Comments on the Draft EIS, published by the Natural Resources Defense Council, Winter 1983)

The South Carolina Water Resources Commission states that although the Draft EIS says that local water levels at pumping wells are not expected to continue to decline appreciably, "they have been declining since about 1978 and with increased pumpage both in and peripheral to the plant site, they could continue to decline." (The L-Reactor Controversy: Comments on the Draft EIS)

According to the U.S. Department of Interior, "The operation of the L-Reactor poses unclear risks to groundwater and the preferred alternative (direct discharge of cooling water to Steel Creek and the use of seepage basin for waste disposal)

will have significant and unsatisfactory effects on fish and wildlife resources including their habitat." (The L-Reactor Controversy: comments on the Draft EIS)

The U.S. Environmental Protection Agency says that the DEIS fails to address the impact on the groundwater system from the increases in effluent and waste volumes which will be generated at the supporting facilities when the L-Reactor restarts. The report states that "at the M area, severe contamination in the upper aquifer poses an imminent threat to a deeper aquifer that supplies drinking water to plant employees and off-site communities." Concerning the Low Level Waste Burial Ground, it adds, "The present practice of disposing of low level radioactive waste, in combination with chemical waste, into trenches in the ground does not represent state of the art technology and may violate RCRA requirements. To increase the volume of waste which must be handled by this facility before the decommissioning plan has been developed, is out of logical phasing. Practically speaking, SRP needs to develop a proper disposal facility to handle the present volumes of waste materials before any additional waste is generated." (Supra)

Concerning the L-Reactor seepage basin, the EPA states: "Impacts on the groundwater system from the discharge of contaminated water from the disassembly basin to a seepage basin located near L-Reactor have been discussed in the DEIS. Waste water discharged to this basin is primarily contaminated with radionuclides which contaminate the upper aquifer and eventually discharge to Steel Creek. Alternatives to seepage basin disposal were discussed in the DEIS with the subsequent conclusion that seepage basin disposal is the preferred alternative. As stated before, seepage basins do not represent state of the art disposal technology and may violate RCRA requirements." (Supra)

Dr. Sternberg states on the same subject: "although the DEIS states that present and future contamination of the shallow groundwater between the L-Reactor area seepage basin and Steel Creek is expected (tritium and strontium-90), no monitoring data is available...A detailed quantitative analysis of the present

contamination in the vicinity of the L-Reactor should be addressed in the final EIS." (Supra)

Concerning the fact that cooling water discharges into Syeel Creek will remobilize radioactive cesium deposited downstream from the L-Reactor during previous operations, Charles T. Hess, Ph.D., Department of Physics, University of Maine states, "most of the swamplands up to 7 miles downstream from the plant range from 42-670 (millirems per year) for constant exposure...670 millirems/year even exceeds the DOE restriction on accessible areas near defense plants, a fact which is not stated in the DEIS. These levels exceed the 25 mrem/yr. limit for radiation exposure to the public for outside the fence of a commercial nuclear power reactor...fortunately these areas are not populated 100% by the people using them." (Supra)

Concerning the fact that once the L-Reactor is reactivated and thir cesium will be flushed into the Savannah River, Dr. John M. Croom, Quantitative Applications, Environmental and Statistical Sciences states: "Analysis of data employed in the DEIS for the L-Reactor to estimate parameters (of the model to assess remobilizations of radionuclides and radiocesium) demonstrates that (1) data are insufficient to support parameter calculations, or (2) alternative calculations resulting in much higher impact estimates are as defensible as impact estimates present in the DEIS. As a result, I have no confidence in DEIS conclusions concerning movement of radionuclides now in Steel Creek into the Savannah River. Apparently data do not exist from which radionuclide movement can be estimated. In absence of such information with which impacts to human health can be estimated, cooling water from L-Reactor should not be discharged into Steel Creek." (Supra)

With regards to the safety of the L-Reactor alone, Dr. Frank von Hippel of the Center for Energy and Environmental Studies at Princeton University states "...the DOE's risk assessment should focus principally on the degree of 'defense-in-depth'

designed into L-Reactor's safety systems. From this perspective, the lack of a passive containment building, a standard safety feature of all U.S. civilian power reactors, must be a source of serious concern. A measure of the incompleteness of the L-Reactor risk assessment is the fact that it does not even include accident scenarios which could lead to a full core meltdown with failure of the radioactive gas filtration system." (Supra)

It is clear from the statements of these scientific experts that DOE has not properly assessed the total impact of adding another nuclear facility, the L-Reactor, at the Savannah River Plant, nor have they even assessed thoroughly the impacts that current facilities are having on the air, water and living species of the area. Clearly, since DOE cannot make an accurate review of its own facility, Georgia Power Company cannot possibly make an accurate assessment of the cumulative impact of Plant Vogtle operations upon this already seriously nuclear-impacted area.

If a serious accident were to occur at Plant Vogtle and radionuclides were emitted on and off site, it would be practically impossible to determine how much of any increases in radioactivity in the area surrounding the plant would be coming from Vogtle. If there were an accident at both facilities at the same time or close to the same time, the difficulty once again as to determining which facility is releasing what effluents would be magnified immensely. These scenarios as well as all of the concerns noted by reviewers of the L-Reactor DEIS are not thoroughly addressed in the FSAR. Applicant notes that "the amounts of nuclear materials produced by the SRP are classified information, and that this document represents a best effort at obtaining detailed information for facilities at SRP." Yet Applicant fails to address concerns, including those afore-mentioned, that have been documented in the unclassified information available on SRP operations. A study of cumulative health, safety and environmental impacts of the operation of additional nuclear facilities in the Savannah River area must support Applicant's claim that it can safely operate the proposed Vogtle Plant.

Applicant fails to show that the fear caused by living adjacent to a nuclear facility will not threaten the security and well-being of the community, in violation of various laws and rules and regulations.

Applicant fails to address the psychological impact of the threat of nuclear contamination or nuclear explosion upon the public. Every nuclear power plant daily leaks carcinogenic and mutagenic effluent. These radioactive materials enhance the level of background radiation to which we are constantly exposed, increasing the risk of our developing cancer and the risk that our children and future generations will be damaged or die by genetic mutations.

The average reactor produces some 400 to 500 pounds of plutonium per year. Dangerous for at least 500,000 years, this incredibly toxic substance poses a monumental threat to public health.

Some plutonium, perhaps as much as 2%, cannot be accounted for and presumably escapes into the water, the earth and the air during industrial activities and processing. Seaborg, the isotope's discoverer, has estimated that 1.6 million pounds may be produced by the year 2000. Therefore, we may have as much as 32,000 pounds of these molecules that may be disposed throughout the environment. Dr. John Gofman has indicated that even with 99.99% reliability, 160 pounds of plutonium would still be released, enough cancer doses for almost 15 times the earth's present population.

Psychological stresses and fears pose potential harm to all of us, especially to children and expectant mothers. Childhood fears of nuclear catastrophe may last a lifetime and cause irreparable damage. A parent's preoccupation with the genetic fate of his child living in a nuclear world is certainly understandable.

Plutonium molecules are concentrated by the testicles and ovaries, where inevitably they will cause genetic mutations, which will be passed on to future generations. These molecules are absorbed by infants during the first four weeks of

life (at which time their intestinal walls permit absorption). The extreme susceptibility of infants is compounded by the fact that plutonium becomes concentrated in milk (human or animal). Children who are exposed to radiation while in the uterus have higher rates of leukemia and other disabilities.

The nuclear era is relatively young, approximately 30 years for commercial reactors and 40 years for military production. Since the latency period of cancer is 12 to 40 years and genetic mutations do not often manifest for generations, we have barely begun to experience the effects radiation will have upon us.

Ordinarily, not immediately, but cancer has become one of America's most feared diseases, frequently resulting in a painful and slow death. Almost one third of all Americans now living may expect to contract this ailment. During the '70s alone, 3.5 million people were expected to die from it. And if we should be one of the fortunate ones not to get cancer from this national lottery, then fears and anxieties will threaten the security and well-being of our community, inhibiting parenting of children and agonizing over the fate of our offspring. Proceeding with plans to operate a nuclear power plant in light of the fear on the part of the public would be inimical to the public health and welfare.

GANE 4

The Applicant has underestimated the danger to lives and health of humans, livestock and plants exposed to the electromagnetic radiation of the proposed 500 KV transmission lines from Plant Vogtle in violation of 10 CFR 51.20 & 51.21 and the National Environmental Policy Act of 1969, 42 USC 4321 et seq.

The Pplicant has proposed to build 500 KV transmission lines on 350 feet right-of-ways to transmit power from Plant Vogtle into its existing and expanding grid system. Applicant clearly displays in promotional brochures, i.e., Electrical Transmission: An Environmental Awareness, pictures of gardens, tennis courts, parking lots, golf courses, neighborhood ball parks and playgorunds. This publication claims that to protect the public "high clearances safely free the land beneath the wire for development as recreational, business or residential areas."

The Applicant encourages and offers as a benefit the presence of transmission line easements for property owners adjacent to the lines. Similarly, the effects on residential areas is claimed by Georgia Power company in recent environmental impact studies to be an asset by providing additional space for public use without questioning the safety of such lines.

Growing scientific evidence does not support such a position. Dr. Moreno, a scientist at the Veteran's Administration Hospital in Syracuse, New York, testifying in cases 26529 and 26559 before the State of New York Public Service Commission on "Health and Safety of Extra-High Voltage Transmission Lines", recommended applying the maximum exposure level of 0.01 KV/M for new lines. More intense fields, according to Dr. Morino, would be tantamount to subjecting the people to involuntary human exposure experimentation in violation of the Public Health Laws and fundamental ethics.

In its Environmental Analysis of Plant Scherer and Associated Transmission Lines, applicant contends that a field intensity of 5 KV/M "is of no concern to humans, animals or plants." To those living near these high voltage lines, there is evidence for concern.

Additionally, applicant provides no assurance that this level will not be increased in the future.

There is evidence that "non-ionizing radiations...may be multiplying...so rapidly in the human environment that they...[result] in health hazards in some areas before we are sufficiently aware of the magnitude of the problem."

("Significance of Human Exposure to Low Level Radiation," Morgan, 1978)

Morgan adds, "An overwhelming amount of data already accumulated show there is no safe level of exposure and no dose of radiation can be so low that the risks do not exist." The risks are those of carcinogenicity, teratogenicity, brain damage and behavioral effects such as irritability, loss of memory, loss of reaction time,

changes in heart rhythms (persons wearing pacemakers may be seriously affected by high voltage lines), changes in blood chemistry, stunted growth and loss of appetite. A Colorado study indicated a correlation between leukemia in children and the proximity of the child's home to relatively low voltage transmission lines.

H. Richard Payne, Head of the Environment Radiation Section of the Region IV EPA, stated in a conversation on April 9, 1984 that evidence exists showing an effect on electrical balance in cells from exposure within several hundred feet of high voltage lines.

Robert Helliwell of the Stanford University Radio-Science Laboratory has found that electromagnetic radiation from the Canadian power system was being injected into one of the earth's magnetic ducts. These waves pass into the magnetosphere where their interaction with trapped electrons results in the production of X-rays which give rise to secondary interactions producing ultraviolet light. Dr. Morino warns that the ultraviolet light can increase the incidence of skin cancer and result in global climate changes. He suggests that the scope of these hazards, now unclear, might be so great as to necessitate undergrounding the proposed line.

Applicant has not adequately assessed the alternative of placing the transmission lines underground. Applicant has not adequately examined the most recent health risk data on effects of exposure to high voltage field on plants, animals and humans located adjacent to high voltage lines in violation of applicable laws, rules and regulations.

GANE 5

The applicant has not properly assessed the geology of the site and has not properly considered the geology of the site in the engineering design of the project, especially in light of new data made available by the U.S. Geological Survey. This violates NRC rules on seismic standards described in 10 CFR Part 100, Appendix A, and other applicable laws, rules and regulations.

The U.S. Geological Survey has postulated the existence of the Millett earthquake fault seven miles from the Vogtle reactor site. (U.S. Geological Survey Open File Report 82-156) Petitioner disputes applicant's claim that the fault is not capable.

Further, USGS has pointed out to NRC that "after several years of intensive study in the Charleston region, no geologic structure or feature can be identified unequivocally as the source of the 1886 Charleston earthquake." (letter from James F. Devine, Assistant Director for Engineering Geology, USGS, to Robert E. Jackson, Chief, Geosciences Branch, Division of Engineering, NRC, dated November 16, 1982)

The Charleston earthquake was the second worst recorded in American history and was more intense than the San Francisco earthquake. USGS in 1887 said of the Charleston Earthquake, the "area within which motion was sufficient to attract...attention would be somewhat more than that circumscribed by a circle of a thousand miles radius. Six hundred miles from the origins, the long swaying motion was felt and was often sufficient to produce seasickness (nausea)." USGS reported that the earthquake was felt in the Adirondacks; Ontario, Canada; Michigan; Milwaukee and Green Bay, Wisconsin; and even Cuba. In eastern Kentucky and southeastern Ohio, "chimneys and bricks were shaken down." USGS went on to say, "In all of the large towns within two hundred miles of Charleston, more or less damage was suffered...dams were broken (on the Savannah River and near Barnwell)...At Augusta, 110 miles distant from the epicentrum, the damage to buildings was considerable...(For example) at the Arsenal, the commanding officer's residence was so badly cracked and shattered as to necessitate practical reconstruction...In Atlanta, 250 miles distant, there was no worse injury than falling chimneys and some slight cracks in the wall, but the houses were instantly abandoned in great alarm and confusion by their occupants, and many preferred passing the night in the streets to re-entering their dwellings."

The situation in Charleston itself was, of course, even worse. The words of an eyewitness survivor are particularly relevant to this proceeding:

...It was upon such a scene of calm and silence that that shock of the great earthquake fell, with the suddenness of a thunderbolt launched from the starlit skies; with the might of ten thousand thunderbolts falling together; with a force so far surpassing all other forces known to men that no similtude can truly be found for it. The firm foundation upon which every home had been built in unquestioning faith in its stability for all time was giving way...For a few moments all the innabitants of the city stood together in the presence of death, in its most terrible form...

(Within one minute) Every home in the city had been broken or shattered--and beneath the ruins lay the lifeless or bruised and bleeding bodies of men, women and children, who had been stricken down in the midst of such security as may be felt by him who reads these lines at any remote distance of time or space."

Even if Applicant is correct that the Millett earthquake fault is not capable--a premise Petitioner disputes--the area is of a similar geology to Charleston and therefore poses a risk of a devastating earthquake, perhaps as high as XII on the Mercalli scale.

Petitioner maintains that Georgia Power has not adequately designed Plant Vogtle for such seismic events as are reasonably expected to occur there.

GANE 6

The applicant cannot guarantee the safe operation of the reactor for the life of the plant due to unresolved questions of thermal shock effects on irradiated reactor vessels as required by 10 CFR 50 Appendices A, G, and H and other applicable laws, rules, and regulations.

Thermal shock and the effects of operator response, neutron irradiation, and pressure vessel steel impurities remains an unresolved scientific question. Pressurized water reactors are susceptible to cracking of the reactor vessel due to severe drops in vessel temperature under high internal pressure. Neutron irradiation of the reactor vessel, especially at the midline, weakens the vessel and raises the reference temperature at a rate dependent on the impurities in the steel and welds and the rate of neutron irradiation. Studies by the Oak Ridge National Laboratories showed that conditions created during a routine transient at Rancho Seco reactor near Sacramento, CA might be enough to cause cracks in older irradiated pressure

vessels. Further analysis and model simulations showed that whether pressure vessel ruptures would or would not occur in a Rancho Seco type transient depended on the operator response. If the model assumed correct operator response then the simulations indicated the pressure vessel would not rupture during the life of the reactor. Conversely, if the model assumed incorrect operator response, the reactor vessel would be subject to rupture within 3 or 4 years of start-up. Thus, protection from reactor vessel rupture seems to depend totally on operator response and not on redundant safety features built into the plant (Marshall 1981, 1982).

The reactor vessel for Plant Vogtle contains 0.10-0.12% copper and 0.012 to 0.020% phosphorous (FSAR sec 5.3.1.1) but no discussion is undertaken by the applicant as to the effects of these levels of impurities on accelerated brittleness and increased reference temperature for the pressure vessel. The applicant also does not consider the effect of varied fuel rod geometries on pressure vessel embrittlement. In general, the applicant has not considered the long term safety hazards posed by the problems of thermalshock combined with the effects of vessel material impurities, embrittlement due to irradiation, and the confounding effect of operation error.

In addition to not addressing the safety factors outlined above, the applicant does not address the economic costs of possible solutions to the problems associated with thermal shock. The applicant states that "no special design features...prohibit the in situ annealing of the reactor vessel" (FSAR sec. 5.3.3.1) but do not consider the costs of this process. If annealing is necessary after plant start-up, a shutdown of two years may be necessary (Marshall 1981). The applicant also neglects to mention the economic cost of changes in fuel rod geometry which might be necessary to decrease irradiation of the reactor vessel.

GANE 7

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) & (c), 10 CFR 50.34(a)(1) and 10 CFR 100.10(c)(3).

The groundwater underlying the Vogtle Plant is a valuable resource whose protection has not been (and cannot be) assured by the Georgia Power Company.

Approximately 300 feet below the surface is the Tuscaloosa Aquifer, a permeable sand formation which contains large volumes of excellent quality water. This aquifer is an important regional aquifer which supplies water to many cities and communities across central Georgia and much of the South Carolina coastal plain. In eastern central Georgia, the Tuscaloosa Aquifer is the major source of water for many communities. In Richmond County just north of Plant Vogtle, eighteen Tuscaloosa wells provide water for 15,000 people. In Girard, which is approximately five miles from the plant, and McBean, only thirteen miles away, the Tuscaloosa provides drinking water for most of the community residents.

The Tuscaloosa Aquifer is not the only valuable groundwater resource underlying the plant site. At a depth of approximately 200 feet below surface and a thickness of approximately 100 feet, the sand member of the Lisbon Formation also represents a valuable groundwater resource for the area. Cooling system make-up water wells for the plant which penetrate and are open to both the Lisbon Sand Formation and the Tuscaloosa Aquifer can provide as much as two thousand gallons per minute of excellent quality groundwater. This groundwater is not only important as an existing source of drinking water but it is important to future development which is likely to occur along the Savannah River corridor.

Directly below the surface at the Vogtle Plant is the water table aquifer. While this aquifer is not as areally or vertically extensive as the Tuscaloosa or Lisbon Sand Formations, it is used extensively in Burke County as a source of drinking water for numerous domestic supply wells, as a small scale agricultural supply and for some commercial establishments. To these individuals, farmers and businesspeople, loss of this source of water through contamination from Plant Vogtle

could endanger health and cause economic hardship.

In the case of a release of radionuclides to the ground at Plant Vogtle, the water table aquifer would be the first and the most seriously impacted owing to its close proximity to the surface. In the area of Plant Vogtle, soils are permeable and virtually no runoff of rainwater occurs. Any release of radionuclide contaminated water would seep immediately into the ground and eventually reach the water table aquifer. The sandy nature of the soils and the aquifer material would offer little retention of radionuclides. The radionuclides would migrate with the groundwater and contaminate larger portions of the aquifer.

A significant contamination incident could result in contamination migrating vertically downward from the water table aquifer into the deeper Lisbon Sand Formation and the Tuscaloosa Aquifer. While a clay separating the water table from the deeper aquifers may provide some protection for the deeper aquifers, the 50 feet of hydraulic head on the water table aquifer acts as a vertical force on the groundwater, pushing it through fractures or more permeable sections of the clay. It is known that just south of the plant site, this clay changes into a limestone, becoming part of a major regional water supply aquifer, the Principal Artesian Aquifer.

The Georgia Power Company's record of groundwater protection is not encouraging as demonstrated by events at the Hatch Nuclear Plant. Groundwater underlying Plant Hatch has been contaminated with tritium from a source or sources never fully identified.

GANE 8

Applicant has failed to enforce a quality assurance program in the construction of Plant Vogtle that provides adequately for the safe functioning of diverse structures, systems and components, as required by 10 CFR 50 Appendix B.

The success of a quality assurance program is ultimately tied to the generation of adequate confidence concerning the correct functioning of critical nuclear power

plant systems and components.

Repeated violations of NRC regulations by Applicant in the construction methods applied to pipe-fitting and welds must be interpreted as undermining confidence in the capability of coolant and containment systems to perform their essential tasks.

Although potential deficiencies involving welds in containment liner penetrations had been raised as an issue at least as early as April 29, 1981 (I & E file #X7BG03-M18), problems involving the appropriate inspection of welds have occurred at least as recently as September 1983.

Violation Notification has been issued in several instances related to implementing the required test procedures. As indicated in IR 50-424/33-15 Appendix A, the applicant's construction sheet for examination of reactor coolant pressure boundary welds did not specify the penetrant examination test required by NRC. Such a failure, not simply in the execution of a prescribed test, but the omission of the test from the required procedure, certainly reduces the confidence in the correct functioning of a vital reactor safety system.

Failure to assure that non-destructive testing is conducted consistent with applicable codes led to another violation as reported in IR-50-424 and 50-425. In this instance grit-blasting of the closure head weld cladding of Plant Vogtle Unit 1 (IE X7B610) was performed after liquid penetrant examination of the component. This represented not only a departure from the standard procedure of performing the examination on the component in its finished condition but an unintended method of degrading a critical steam system component after its final installation and inspection. This is much more than a flaw in an isolated procedure; it is a basic failure in established quality assurance methodology.

Any adequate quality assurance program must take into account a broad range of "planned and systematic actions necessary" to establish confidence in the system in question. Any quality assurance program predicated exclusively on the

implementation of dictated procedures without regard to the exercise of critical judgement and standards of professional practice must be considered woefully inadequate. In an examination of welding activities involving steel structures and supports in both Units 1 and 2 of Plant Vogtle, the applicant was cited for failure to include the heat-affected zone (HAZ) of the weld in acceptance radiographs (IR 52 50-424 Appendix A Report Details). In response to the notice of violation, the applicant defended its procedure by replying that the Code "gives no requirement for including the heat-affected zone in the area of interest" (X7B610). This response, which erroneously equates methods of quality assurance with simple compliance to written procedures, was so unacceptable to the NRC that it was directly criticized by Richard C. Lewis even though the violation itself had been withdrawn. In his words,

"Interpretations of the code by 'Code Experts' make your response appear to set aside engineering reason when you consider that, based on failure analysis experience, the technical world realizes that the heat affected zone of a weld is the most critical area of the weldment."

In a related matter on November 18, 1982, welding on sections of the containment dome of Unit 2 was conducted during a "very light misty rain." The welding and site QA supervisors felt that the conditions were suitable for welding since the surfaces of the pieces involved were not completely covered with moisture (425/82-29-02). The inspector, more concerned with the quality of the weld than with the "General Welding Procedure Specification for Shielded Metal Arce Processes," prevailed upon the two to stop the work for the day.

The applicant's disposition to prefer restrictive implementation of prescribed procedures to the more circumspect methods of professional practice does not contribute to confidence in the proper functioning of a completed and operating Plant Vogtle.

In addition to these procedural aspects of quality assurance, there are other questions involving the applicant's "controlling the quality of the ...component or

system to predetermined requirements." In the case of quality control the repeated discovery of inadequacies and defects in the performance of an essential safety subsystem would generate a cause for concern. Furthermore, at some point in time, good quality control practice mandates the abandonment of a suspect manufactured article in favor of a more reliable alternative.

The standby steam generators selected by the applicant for use as an emergency backup power system and manufactured by Transamerica Deloal have been riddled with problems. The applicant was notified of such problems as early as December 1981. That defect involved the governor lube oil cooler assembly and, according to Transamerica Deloal, "could result in engine non-availability." The applicant itself reported a starting air valve assembly problem (X7B603-M29) that also "could result in engine non-availability." Likewise problems with piston skirts, reported in October 1982, in the applicant's own analysis (X7B603-M36) could, postulating a common mode failure, "cause the failure of both engines, resulting in a loss of power to both trains of the emergency core cooling system and most of the emergency safety features equipment."

In a report of a defect in the engine mounted electrical cables submitted to the NRC in September 1983, TD also noted a potential engine performance deterioration.

The applicant's responsibility for quality control extends beyond collection of individual defect notification and corresponding remedial action. By failing to make a general assessment of the suitability of the TD diesel generator system for such an extremely important emergency function, the applicant has brought its own quality control capabilities into question, undermining confidence in the safe functioning of its operating plant in direct contradiction to NRC QA requirements.

The number of past and continuing failures of the Georgia Power/Bechtel QA/QC program represents a pattern which indicates an undue risk to the health and safety of the public. Violations involving activities at times resulted from failure to

provide documented procedures. (For example, Report No. 50-424, 50-425/83-04 regarding concrete QC problems)

The severity of Quality Assurance performance at Plant Vogtle forced a meeting conducted 22 August 1983 at Georgia Power headquarters on the subject of Subcontractor Quality Assurance Performance Allegation by Pullman Power Products quality control personnel about pipe support installation and piping installation as well as job intimidation of quality control workers. Allegations had been made by a Walsh Company boilermaker that improper welding and work practice had occurred. Twenty-three concerns which dealt with twelve separate items were discussed. Defects were found during the reinspection of Pullman Power Products manufactured piping spool pieces. (Letter from James P. O'Reilly to Georgia Power, 28 September 1983, Subject: Summary of Meeting--Docket Nos. 50-424 and 50-425, Vogtle 1 and 2)

Procurement failures continue after numerous I & E Bulletins from past QA/QC inaction. (for example, I & E Bulletin 83-06 "Nonconforming Materials Supplied by Tube-Line Corporation Facilities at Long Island City New York, Houston Texas, and Carol Stream Illinois," Westinghouse NLP Printed Circuit Cards GN-275, dated 11/3/83 and GN-298, dated 12/27/83; Westinghouse DS-416 Reactor Trip Breakers GN-235, dated June 13, 1983; Westinghouse NSSS Protection System, Relay cards, G: 244 dated July 20, 1983; AKR-30 and AKR-50 Electrically Operated Low Power Circuit Breakers; Westinghouse 3" Gate Valve Closure Problem, Westinghouse 4" Gate Valve Closure Problem; Reliance Electric--Cable Terminations; Brown Boveri Electric Inc. 7.5 HK and 15 HK circuit breakers; and American Delaval Backup diesel generators)

Repeated questions have been raised about changes in the Vogtle QAP in addition to the earlier described letter from Richard Lewis of NRC to Applicant. For example, there are questions about the completeness of the Vogtle QAP. (Memorandum from James G. Partlow to Assigned Reviewers, 29 November 1983, Subject: Determination of Acceptability of List of VEGP items under QA Program Questions

characteristics, unusual or novel design features, and principal safety considerations" in its PSAR (emphasis added).

A final safety analysis report (10 CFR 50.34(b)) must contain "a description and analysis of the structures, systems and components of the facility, with emphasis upon the performance requirements, the bases with technical justification therefor, upon which such requirements have been established and the evaluations required to show that safety functions will be accomplished. The description shall be sufficient to permit understanding of the system designs and their relationship to safety evaluations." (emphasis added)

Despite these specific regulatory requirements the applicant has proceeded with the implementation of a novel design without providing information adequate for the minimum evaluation of its safety implications.

For example, in a letter directed to Harold Denton dated October 25, 1983, the applicant proposed to eliminate the need to postulate longitudinal and circumferential pipe breaks in the reactor coolant system primary loop in the design of VEGP. As a modification of an existing design requirement this cannot be considered as anything but novel. Unfortunately, even the minimum information required to understand and assess the safety impact of such a departure from standard design has been eradicated from the Westinghouse Electric Corporation report which provides the impetus for the design decision.

In "Technical Bases for Eliminating Large Primary Loop Pipe Ruptures As the Structural Design Basis for Alvin W. Vogtle Units 1 and 2," an analysis is generated from pipe-loading and fracture-mechanics models. The details of the models have been withheld based upon a claim of propriety by Westinghouse. The sanitization of the report is so severe that even the figures presenting the comparison of the predictions of these models with experimental results have been removed.

It is impossible for anyone to evaluate or understand the impact of such an innovation on the safe functioning of the applicant's operating system.

About Field Change Notices; Request for additional information, letter dated 20 September 1983 from Luster L. Kintner to Doug E. Dutton)

Another threat to the quality assurance, quality control and safety and health of the public is the drug and alcohol use which has been documented and continues to take place on the construction site. The breakdown of the QAP results in situations such as that described in Preliminary Notification of Event of Unusual Occurrence PNO-11-82-115, Subject: Arrest of Contractor Employees on Drug Charges Involving Drug Sales and Use, including marijuana, cocaine and valium.

Other allegations from a former employee pertain to improper QA testing of backfill materials and falsification of backfill QC test results. Four allegations made by a former employee pertain to inadequate concrete QC testing and falsification of concrete QC test records. Two allegations were subsequently partially substantiated.

Four violations were also described in the Systematic Assessment of Licensee Performance Board Assessment July 1, 1981 through October 31, 1983. Valve mispositioning has resulted in a \$40,000 civil penalty. Testing procedures have identified discrepancies involving cadwell operators. Protection of equipment procedures have been neglected. Failure to establish adequate radiography procedures and welding procedures places the integrity of the entire plant in doubt.

The complete failure of the QA/QC program at Vogtle mirrors similar situations at the Zimmer Nuclear Plant and the Byron Nuclear Plant. Plant integrity cannot be assured at Plant Vogtle in view of the large number of violations and inadequacies found to date.

GANE 9

The applicant has failed to submit adequate discussion of novel design features in its preliminary and final safety analysis reports as required by 10 CFR 50.34.

NRC regulations require that Applicant must include "a summary description and discussion of the facility with special attention to design and operating

Models of engineering systems have no intrinsic validity. The utility of the model is only realized in the comparison of its predictions with a body of empirical data. Without such a comparison a model is no more than a method of generating a desired result.

Furthermore, the claim that the results of a model betray a proprietary interest is hard to accept. It is difficult to reconstruct a model of even minor complexity from a handful of numbers. Oddly enough, if one could deduce the form of the model from a small set of predictions the model would probably be so trivial as to have no proprietary value.

The failure by Westinghouse to provide adequate substantiation of its approach and the applicant's insistence on using the resulting claims as a basis for a major departure in the design of a critical safety system is an unacceptable breach of the regulatory code.

GAME 10

Applicant has not shown that safety-related electrical and mechanical equipment and components will be environmentally qualified at the onset of operations and throughout the life of the plant as required by General Design Criteria 1, 2 and 4 of 10 CFR 50, Appendix A and other applicable NRC rules.

The concept of environmental qualification, i.e. that safety systems must be able to survive and perform their functions under accident conditions, is "fundamental to NRC regulation of nuclear power reactors." UCS Petition for Emergency and Remedial Action, CLI-78-6, 7 NRC 400, 408 (1978); CLI-80-21, 11 NRC 707, 710 (1980). Safety is the "first, last and permanent consideration" and can lead to the shutdown of noncomplying plants. Power Reactor Development Corp. v. International Union of Electrical Radio and Machine workers, 367 U.S. 396, 402 (1961).

Applicant has not demonstrated that its present safety systems testing methods, VEGP FSAR Table 3.11.B.1-1, Figures 3.11.B.1-1, 3.11.B.2, are adequate to ensure

effective operation under emergency conditions. For example, in investigating accelerated aging of materials, Sandia Laboratory has found that many materials experience greater damage from lower as opposed to raised dose rates when the total integrated dose is the same. Proceeding International Meeting on Light Water Reactor Severe Accident Evaluation, August 1983, TS-3.1; Industrial Research and Development, June 1982 at 55-56. Particularly sensitive are polymers which are found in cable insulation and jackets, seals, rings and gaskets at VEGP. Current methods of testing have used high levels of radiation or only reported the integrated dose (VEGP FSAR, Table 3.11.8.1-1) and therefore underestimate the effects of the total dose. NUREG/CR-2157, "Occurance and Implications of Radiation Dose-Rate Effects for Material Aging Studies," June 18, 1981. The effects of synergisms, involving the combined effects of radiation, heat and in some experiments oxygen concentration, were also studied at Sandia. The greatest amount of degradation was found upon exposure to heat followed by exposure to radiation (significantly affected by oxygen during a LOCA simulation). NUREG/CR-2156, "Radiation-Thermal Degradation of PE and PVC: Mechanism of Synergisms and Dose-Rate Effects," June 1981.

Sandia has also identified other interesting "anomalies." In tests of EPR cable material, multiconductor configuration performed "substantially worse" than single conductor configurations. Sandia concluded that qualification testing employing only single conductors as test specimens may not be representative of multiconductor performance. Testing of terminal blocks by prior industry standards (function before and after accidents) is not adequate. Instead, applicant must show equipment can function during accident conditions. Simulation of these conditions led to instrument reading errors on high resistance instruments of 15-90%, which were not conservative. This could have led real operators to think that there was adequate subcooling when in fact the degree of subcooling was significantly less. UCS Petition for Emergency and Remedial Action, Supplemental, February 7, 1984.

The results of these reports have not been applied to environmental qualification testing performed and referenced by Applicant to demonstrate compliance of safety-related equipment and components with applicable standards.

Several pieces of equipment specified in VEGP FSAR Table 3.11.N.1-1 as being environmentally qualified may in fact be unqualified. For example, on August 31, 1983, NRC issued a Board notification transmitting a summary of a staff investigation into Franklin Research Center tests on solenoid valves. Over half the valves failed in tests simulating normal and accident conditions. BN 83-128.

Several valves manufactured by ASCO failed early after exposure to 340 degrees F., i.e., they had little or no time to perform their safety function before failing. Over one year earlier ASCO's own testing had shown poor performance of these valves, and had reported this to the EQB. The EQB memo from R. Vollmer to D. Eisenhut (included in BN83-128A) stated the staff "continues to approve" the qualification of valves on the basis of 1978 tests. The applicable standard in 1978 was IEEE 382-1980. The EQB concluded that the early failure of the ASCO solenoid valves makes them unacceptable for use in safety systems and suggested that licensees and applicants be prohibited from using the valves in any application where conditions could be more severe than those reported in the qualification test report. VEGP FSAR Table 3.11.N.1-1 shows the use of twenty-three separate ASCO solenoid valves. The function of some of the valves is not listed and in no case is the qualification reference listed.

Also shown as qualified are forty-three (43) separate motor operators manufactured by Limitorque. The company's own testing, see IE Notice 81-29, EEQN No. 1 (September 24, 1981), had shown motor failure on initiation of steam spray accident profile. An update, IN 82-52, simply noted that "this is an ongoing problem." Westinghouse performed further tests and concluded that "the present motor design will not successfully pass Westinghouse specified test parameters."

The NRC staff has only confirmed that they will pass IEEE 323-1971, a standard explicitly rejected by the Commission in CLI-80-21 as virtually useless.

A critical safety component in LOCA is the post LOCA hydrogen recombiner. One common type of unit manufactured by Rockwell International has recently been shown to have a large number of defective parts. EEQN No. 14 in IN 83-72 (10/28/83). For example, ITT pressure transducers failed typical IEEE 323 environmental qualification testing, i.e., they would not withstand radiation doses of 1×10^7 rad and showed gradual drifting of readings after 1×10^4 rads. Inspection of VEGP FSAR 6.2.5 gives no indication of the manufacturer of the hydrogen recombiner. FSAR 6.2.5.1.1.A states:

All materials used in the recombiners are selected to be compatible with the environmental conditions inside the reactor containment during normal operation or during accident conditions.

However, no specifics can be found. FSAR 6.2.5.4.1 briefly summarizes testing on the hydrogen recombiners in the Westinghouse development program. The effect of radiation was not tested. A hydrogen recombiner containing unqualified transducers was shipped to E.I. Hatch 2.

The applicant has not satisfied 10 CFR 50.48 which requires a showing that safety equipment is capable of surviving a fire in order to shut the plant down. Since the NRC has no testing program to establish that the necessary safety equipment is qualified to withstand the fire environment, there is no assurance that the applicant's equipment can withstand such conditions as high humidity, high temperature, spray, corrosive gas, smoke, all of these probably combined with radiation. Commission meeting of January 6, 1984, Tr. at 36, UCS Petition for Emergency and Remedial Action, Supplemental, February 7, 1984 at 27-29. Without this assurance, Plant Vogtle should not be allowed to operate.

Applicant has not determined that suitable seismic qualifications of safety related equipment have been used in selecting equipment for VEGP. The design criteria and methods for seismic qualification of equipment in nuclear plants have

undergone significant change. Consequently, the margins of safety provided in existing equipment to resist seismically induced loads may vary considerably and must be reassessed. NRC "Unresolved Safety Issues Summary," August 20, 1982.

At the Commission meeting of January 6, 1984, Sandia Laboratories reported numerous "shortcomings" in qualifications methodologies used to test safety equipment. For example, compounded effects (related to the order in which several conditions are tested) can be very important and produce nonconservative results (under testing). A broad range of generally accepted methods was also questioned which included:

- Can gamma radiation adequately simulate the effects of beta radiation?
- Is it necessary to include oxygen in LOCA simulation chambers?
- Under what circumstances is the Arrhenius methodology for accelerated thermal aging valid?
- Are mechanical stresses significant in aging of electrical equipment (cables, seals)?
- Are the procedures of IEEE standards for qualifying specific type of electrical equipment adequate?

These criticisms and questions about current environmental qualification method raise fundamental doubts about the applicant's ability to employ only environmentally qualified equipment in all required applications.

Applicant has not accurately defined the parameters of an accident which would affect the operability of safety-related equipment. Furthermore, Applicant has underestimated the period of time safety-related equipment will be required to operate. S. H. Hanauer, NRC, perceived this issue as a problem shortly following the accident at Three Mile Island Unit 2:

"I think that as a result of the TMI accident we have to rethink:

1. Environmental Qualifications Envelope
2. Things which may have to be qualified

Changes in my thinking include:

1. Core damage is credible
2. Long-term plant operation is essential, initiation isn't enough
3. LOCA and SLB may not give an envelope that includes TMI experience."

—Note from S. H. Hanauer
NRC Assistant Director for Plant Systems
Division of Systems Safety
April 6, 1979

Such thinking was reiterated by Robert Pollard, Nuclear Safety Engineer of the Union of Concerned Scientists:

I think it is clear that what is needed is essentially a reassessment of the environmental qualifications of safety related equipment in light of lessons learned from the accident."

—Special Prehearing Conference, TMI-1 Restart Hearing,
Docket No. 50-289, November 8, 1979, TR at 236.

GAIE 11

Applicant has not considered generic defects in the Westinghouse PWR constitute an undue risk to public health and safety.

Westinghouse PWR steam generator tubes have shown evidence of corrosion-induced wastage, cracking, reduction in tube diameter, degradation due to bubble collapse water hammer and vibration-induced fatigue cracks. Of primary concern is the capability of degraded tubes to maintain their integrity during normal operation and under accident conditions. NRC "Unresolved Safety Issues Summary" August 20, 1982.

The applicant has not considered the possibility of pressure vessel failure, and no protection is provided against reactor vessel failure in the design of the nuclear facility. However, as plants accumulate service time, neutron irradiation reduces the material fracture toughness and initial safety margins. Results from reactor vessel surveillance programs indicate that up to twenty (20) operating PWRs will have materials with only marginal toughness after comparatively short periods of operation. NRC "Unresolved Safety Issues Summary," August 20, 1982.

The applicant has not considered nor is sufficient technical information currently available to deal with a steam generator tube rupture (SGTR) accident as occurred in a Westinghouse Plant at the Borselle Nuclear Power Station. NRC BN 83-151. The TMI-2 accident convinced Westinghouse to change the ECCS actuation logic by eliminating the low pressurizer level trip, and this was implemented by licensees

with Westinghouse plants. However, the recent SGTR accident at Borssele actuated the ECCS which was believed to produce "undesirable attendant problems, such as RCP trip and containment isolation, which would make accident management more difficult." Memo from D. J. Mattson, Director LSI, NRC to D. Eisenhut, Director Division of Licensing, NRC, September 26, 1983. As stated in the above-described memo the NRC staff feels a revision of the ECCS logic to the pre-TMI accident configuration "has the potential to improve the management of SGTR events." However, the staff did not conclude whether this "revision would have an overall net increase or decrease in plant risk."

GANE 12

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

The VEGP FSAR 5.5.1.1 estimates an approximate salt drift of 305 pounds per acre per year (see CPSER 5.3.2) within a one mile radius of the cooling towers, assuming a two-unit operation. Naturally this amount would decrease at greater distances. No mention was made of hydrochloric acid releases, although this point was brought up by NRC staff at the Construction Permit Hearing (personal communication from N. Herring). Hydrochloric acid would be expected to be emitted from these towers, since chlorine is injected directly into the circulating water system, with a maximum system design chlorine rate of 10,000 lb/day. Thus there is the potential for the release of thousands of pounds per day of hydrochloric acid which is not addressed in the FES-CP or OLSEG (see section 3.6.4.2) and could pose a serious environmental problem. In the VEGP-OLSER-Q-E290.3 the rate of salt drift emission of 305 lb/acre/year is admitted to be presently considered in the range of potential damage to vegetation.

GANE 13

Petitioner contends that Applicant's proposed emergency plan fails to ensure

that protective measures can and will be taken in the event of a radiological mishap at Plant Vogtle, as required by 10 CFR 50.33, 50.47, 50.54 and Appendix E to Part 50.

Applicant's Emergency Plan states that the Burke County Civil Defense Director will coordinate emergency operations at the local level. The plan fails, however, to note that Burke County has no full-time emergency manager or office. The County lacks a hot-line system tie-in to the State Emergency Management Office. The Acting Director of Emergency Management of Richmond County, Pam Smith, states that she occasionally has difficulty contacting emergency personnel in Burke County due to the lack of a full-time emergency planner. (Conversation between Dr. Judy Gordon and Ms. Pam Smith, April 4, 1984) Therefore Applicant fails to show that provisions exist for prompt communications among principal response organizations and that each principle response organization has the staff to respond and to augment its initial response on a continuous basis as required by 10 CFR 50.47 (b) (1) and (6). Similarly, the Plan specifies that the Burke County Sheriff's Office will provide traffic control, law enforcement and aid in the event of an emergency. Yet the Applicant fails to show how the limited staff of 28 deputies and one sheriff will be able to effectively handle such a task in light of the hysteria conditions likely to prevail in an evacuation atmosphere.

The Plan states that the Burke County Hospital Ambulance Service will provide ambulance service in an emergency situation, yet the Service maintains only three ambulances. The Burke County Hospital, which the Plan says will handle the treatment of both radiation-contaminated and noncontaminated injuries, has a bed capacity of only 52. Such facilities are unlikely to be sufficient to service a large number of injured in the event of a fairly serious radiological accident or of an accident external to the plant which results in injury to the plant, such as an earthquake or a nuclear attack, where non-plant related injuries will also be rampant. Applicant does not address the fact that in light of its close proximity to Plant Vogtle, the Burke County Hospital might be ordered to evacuate in the event

of a radiation-related accident. Applicant thus fails to show that adequate emergency facilities and equipment to support the emergency response are provided and maintained as required by 10 CFR 50.47 (b)(8).

Applicant fails to show that initial notification of the public within the plume exposure pathway Emergency Planning Zone (EPZ) within about 15 minutes will be possible, as required by 50 CFR App E (IV)(D)(3). Applicant has not shown that the local civil defense offices responsible for notification have the necessary equipment, training and manpower to activate a prompt notification system. Though Applicant lists a number of warning devices that might be implemented such as autos and boats equipped with sirens or loudspeakers, door-to-door contact in remote areas and aircraft equipped with sirens to be used in remote areas, it provides no assurance that such equipment is available to local governments or that personnel will be available to operate this equipment. An adequate county-wide siren warning system which Ms. Smith sees as a top priority in the event of Vogtle operation, would require installation of a minimum of 200 sirens at \$5,000 each, totalling \$1,000,000. The County has lacked the funds to install such a system in the past. (Supra)

In the event of an accident serious enough to require evacuation of all of Richmond County, including the city of Augusta, within 26 miles of the plant, Ms. Smith estimates it would take three days to move out the 145,000 citizens affected. Such a task is not addressed in the Emergency Plan though Applicant should be prepared for the displacement of a significant number of the population outside the EPZ due to predictable public response to a limited evacuation. For example, during the accident at Three Mile Island-2, over 30% of the people living within a fifteen mile radius of the plant evacuated though only a precautionary warning to pregnant women and small children within a five mile radius of the plant had been issued. The possibility for a similar mass exodus is not addressed in the Emergency Plan. The evacuation procedures in neither Burke nor Richmond Counties have been tested.

Yet, exercises are required to evaluate "major portions of emergency response capabilities" and to identify deficiencies "as a result of exercise or drills", by 10 CFR 50.47 (b) (14). The NRC staff has concluded that a successful full-scale exercise is "at the core" of the finding of adequate protection for the public. SECY-82-185, "Final Amendment to 10 CFR Part 50 and the Appendix E: Modifications to Emergency Preparedness Regulations Relating to Low Power Operations", May 3, 1982. The Government Accounting Office has concluded that:

Testing emergency procedures with offsite participation would improve State and local emergency preparedness...The types of deficiencies identified during these [NRC-licensed facilities] drills included:

- inadequate communication between the various agencies participating in the drill, authority for coordinating and implementing emergency measures, and
- inadequate offsite radiological monitoring procedures.

We believe it is better to identify problems in an emergency drill rather than wait until the actual event occurs. Also, by holding nuclear emergency drills, NRC-licensed power plants and local emergency service agencies have been able to resolve some of the problems that were identified.

GAO Report to Congress, "Areas Around Nuclear Facilities Should be Better Prepared for Radiological Emergencies", EMS 78 110, March 30, 1979.

The Applicant fails to explain why the plume exposure pathway EPZ for Vogtle has been set at 5 miles rather than the 10 mile radius recommended in 10 CFR 50.33(y). In light of the severe Pasquille type A weather conditions prevalent in the area, the plume pathway should be wider as opposed to more narrow than generally required. Based on the sensitivity of children (in utero through preschool particularly) the plume exposure pathway Emergency Planning Zone should be larger for pregnant women and children. The Three Mile Island-2 accident caused a statistically significant rise in the rate of infant mortality within 10 miles of the plant. "Management of Radiological Emergencies," Gordon McCleod, M.D., Text of lecture, May 2, 1980. McCleod, formerly Secretary of Health for the state of Pennsylvania, has said:

Any radiological emergency plan and response in Pennsylvania must not overlook population density for at least 20 miles around existing or proposed nuclear reactors.

Applicant has not shown, pursuant to 10 CFR Part 50 Appendix E, IV D.2 and 50.47(b)(6)&(7) that adequate education and notification procedures will be followed during normal plant operation and in the event of an accident at WNP-3. These requirements include "basic emergency planning information", "general information as to the nature and effects of radiation", "signs or other measures...helpful if an accident occurs." 10 CFR Appendix E, IV, D.2. Applicant should be required to utilize such methods as billing or home distribution of public information brochures to supplement emergency information included in phone books as not all residents can be expected to have phones. Provisions for emergency evacuation education of illiterate adults must also be taken.

Applicant's plan states that possible evacuation routes for persons leaving the reactor site are New River Road and Ebenezer Church Road and evacuation will primarily take place in individually owned autos. Applicant cannot claim adequacy of this evacuation plan until it identifies the number of autos to be moved, estimate of evacuation time, and under what conditions company-owned vehicles will be made available for evacuation purposes.

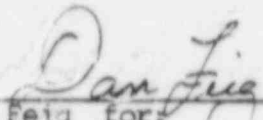
Applicant claims that the Department of Energy (Savannah River Plant Operations Office, Aiken, South Carolina) will provide radiological assistance (advice and emergency action essential for the control of immediate hazards to health and safety) in the event of an emergency at Vogtle. It fails to address the possibility that an emergency situation (for example, an earthquake) which threatens the safe operation of Vogtle might also endanger operations at Savannah River Plant. In this event, not only would Department of Energy officials be prevented from providing aid to Vogtle, other federal, state and local assistance resources would be divided between the two sites. Applicant does not address the impacts of simultaneous evacuation from both plants, or overload of medical facilities and emergency vehicles in the event of injury to persons by the operation of both plants.

Applicant states that estimates of predictions of atmospheric effluent transport and diffusion during and immediately following radioactive releases are based upon the constant mean wind model. Rather applicant should prepare estimates encompassing a variety of wind and weather conditions.

In light of the afore-mentioned facts, Applicant has failed to show that in the event of an accident at Vogtle, adequate notification, communication, education, evacuation, and relocation can take place for permanent, transient, and special populations within the Emergency Planning Zone.

April 11, 1984

Respectfully submitted,



Dan Feig for:

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1130 Alta Avenue
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)

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GEORGIA POWER CO., et al.)

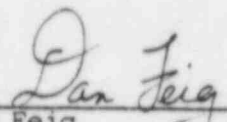
Docket Nos. 50-424 and 50-425

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

~~SECRET~~
DOCKETING & SERVICE
BRANCH

CERTIFICATE OF SERVICE

This is to certify that copies of the foregoing were served by deposit with Federal Express or by hand this eleventh day of April 1984, to all parties in this proceeding.



Dan Feig
Georgians Against Nuclear
Energy