10/09/81

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING EGARD

In the Matter of HOUSTON LIGHTING AND POWER COMPANY (Allens Creek Nuclear Generating Station, Unit 1)

8110140003 811009

PDR ADOCK

Docket No. 50-466

NRC STAFF TESTIMONY OF FALK KANTUR REGARDING EMERGENCY PLANNING [SCHUESSLER CONSOLIDATED CONTENTION 1]

Q. State your name and position with the NRC.

A. My name is Falk Kantor. I am an employee of the U.S. Nuclear Regulatory Commission (NRC) assigned to the Emergency Preparedness Licensing Branch, Division of Emergency Preparedness, Office of Inspection and Enforcement.

Q. Have you prepared a statement of professional qualifications?

A. Yes. A copy is attached to this testimony.

Q. State the nature of the responsibilities that you have had with respect to the Allens Creek Nuclear Generating Station.

A. I have been responsible for reviewing and evaluating the Allens Creek Emergency Plan for conformance with the requirements of 10 C.F.R. Part 50, Appendix E, Part II and the guidance criteria of NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Based on this review, I provided input for a supplement to the Safety Evaluation Report for Allens Creek which is to be issued in October or November, 1981. I am also responsible for addressing those contentions related to the Applicant's emergency planning and preparedness.

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to respond to those parts of Schuessler Consolidated Contention 1 (SSC 1) related to emergency planning. SSC 1 reads as follows:

- I. ACNGS fails to adequately meet requirements of 10 C.F.R. Part 100 regarding siting, for reasons which include, but are not limited to the following: (a) Applicant fails to adequately recognize that metropolitan Houston is the fastest-growing area in the U.S., steadily and rapidly expanding toward the site of ACNGS; (b) The proposed site of ACNGS is not presently sufficiently remote, and will become even less so during its operating life; (c) Traffic congestion at present and for the foreseeable future prevents any effective, timely emergency evacuation of the greater Houston area, or any substantial part thereof; (d) The distance from ACNGS to population center should be much greater than 1-1/3 X LPZ because of special circumstances cited above.
- II. The PSAR fails to meet requirements of 10 C.F.R. Part 50, Appendix E, II, in that it fails to assure the compatibility of emergency plans with site location, access routes, population distribution and land use.
- III. The PSAR and the selection of the proposed site do not properly consider population density, land use, physical characteristics thereby failing to adequately insure low risk of public exposure as required by 10 C.F.R. Part 100.10.

Parts I(a), I(b), I(d), and III of SSC] concerning population density and site suitability criteria of 10 C.F.R. Part 100 have been responded to by the Staff in prior testimony in this proceeding pretaining to population density (Bishop Contention 1). Q. Contention 1(c) states the Allens Creek site fails to adequately meet the requirements of 10 C.F.R. Part 100 because traffic congestion at present and for the foreseeable future prevents any effective, timely emergency evacuation of the greater Houston area, or any substantial part thereof.

What are the requirements of 10 C.F.R. Part 100 regarding evacuation?

A. An Applicant is required by Part 100.10 to specify a "low population zone" for a proposed site. A low population zone is defined in Part 100 as ". . . the area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident." Part 100 goes on to state in the definition of low population zone that . . . "whether a specific number of people can, for example, be evacuated from a specific area, or instructed to take shelter, on a timely basis will depend on many factors such as location, number and size of highways, scope and extent of advance planning, and actual distribution of residents within the area."

Thus there are no requirements in 10 C.F.R. Part 100 to consider evacuation as a protective measure beyond the low population zone (LPZ). The LPZ specified for the Allens Creak site is 3.5 miles in radius.

Q. Has the Applicant considered evacuation as a protective measure?

A. Yes, in response to the requirements of the rule on emergency planning, 10 C.F.R. Part 50 and Appendix E thereto, the Applicant has performed a preliminary evacuation analysis for the plume exposure emergency

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planning zone (EPZ). The plume exposure EPZ for the Allens Creek site is an area 10 miles in radius. It is noted that the 10-mile radius plume exposure EPZ encompasses the 3.5 mile radius low population zone. It includes portions of five counties: Austin, Fort Bend, Wharton, Colorado, and Waller Counties. The plume exposure EPZ for Allens Creek is shown in Figure 1. The ingestion pathway EPZ is an area about fifty miles in radius around the site and is located entirely within the State of Texas.

Q. What are the Commission requirements with respect to emergency plans for a construction permit Applicant?

A. 10 C.F.R. 50.34(a) requires each Applicant for a construction permit to include in the Preliminary Safety Analysis Report (PSAR) a discrossion of preliminary plans for coping with emergencies. The PSAR must contain subjectent information to ensure that the proposed emergency plans for both the site and the EPZs are compatible with the facility design features, site layout, and site location with respect to such considerations as access routes, surrounding population distributions, land use, and local jurisdictional boundaries for the EPZs. The subject areas which must be addressed in the PSAR to meet the requirements for emergency planning at the CP stage are set forth in Part II of Appendix E to 10 C.F.R. Part 50. In response to the requirements of 10 C.F.R. Part 50, Appendix E, Part II, the Applicant filed PSAR Amendments Numbers 55 and 60 dated January 21 and August 21, 1981, respectively.

In the following discussions, the Staff has evaluated the Applicant's submittals and finds that the requirements of 10 C.F.R. Part 50, Appendix E,

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Part II, including sufficient information to indicate the feasibility of meeting the standards of 10 C.F.R. § 50.47(b), are satisfied. The individual requirements of Appendix E, Part II (A through H) will be discussed and analyzed below.

A. Requirement

Describe the "on-site and off-site organizations for coping with emergencies and the means for notification, in the event of an emergency, of persons assigned to the emergency organizations."

Discussion

The Allens Creek emergency organization will initially consist of the on-duty operating staff and will be augmented by off-duty plant personnel, designated Houston Lighting & Power Company corporate personnel, and Federal, State and local response organizations. The Applicant plans to establish an on-site emergency organization to meet the minimum staffing requirements for emergencies of Table B-1 of NURES-0654.* The staffing levels will be met either by augmenting the normal operations staff within the time periods specified in Table B-1 or by increasing the number of personnel on the normal operations staff. An on-call system will be used to contact personnel who are to augment the operations staff. The on-site emergency organization is shown in Figure 2. No constraints have been identified to meeting the staffing criteria of Table B-1.

The Applic of the sidentified the primary responsibilities of the major elements of the onsite emergency organization in the PSAR. The on-duty

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NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Response Plans and Preparedness in Support of Nuclear Power Plants.

Operating Supervisor immediately assumes the position of Emergency Director and is responsible for the initial evaluation of the situation, accident classification, and notification of offsite authorities. The Operating Supervisor serves as Emergency Director until relieved by the individual designated to serve as Emergency Director through the remainder of accident response activities. This individual will most likely be the Plant Superintendent.

The Federal agencies available to provide support in the event of an emergency include the Nuclear Regulatory Commission, the Federal Emergency Management Agency (FEMA), and the Department of Energy. The resources of other Federal agencies would also be available in a serious emergency situation. A national radiological emergency response plan defining the role of Federal agencies is presently being developed by FEMA.

In the State of Texas, State response to any type of emergency is coordinated through the Emergency Management Council (EMC) which is presently composed of representatives from 29 State agencies. The EMC is chaired by the Director of the Texas Department of Public Safety (DPS). The Texas Department of Health is represented on the EMC and is the lead State agency for the coordination of State response to a radiological emergency. In the event of an emergency, the Applicant would contact the State agencies through the DPS which maintains dispatchers on duty 24 hours a day at its State headquarters and district offices. The Applicant will have dedicated telephone lines and backup radio communication to the DPS.

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Local support agencies include the Sheriff's Departments of the five counties within the plume exposure EPZ; i.e., Austin, Fort Bend, Wharton, Colorado and Waller Counties, and the police and fire departments of the nearest community, Wallis, Texas. Other local support services include ambulance service and medical treatment. The Austin County Sheriff's Department will be the principal point of contact for notifying local support organizations. The Sheriff's Office dispatcher is on duty 24 hours a day to receive emergency calls. The Applicant will have a dedicated telephone line with backup radio communication to the Austin County Sheriff's Department. The principal offsite support agencies are listed in Table 1 and the interfaces between the onsite and offsite support organizations are illustrated in Figure 3.

Conclusion

Based on our review, the Staff concludes that the information submitted by the Applicant is sufficient to meet the requirements of Appendix E, Part II, Item A.

B. Requirement

Describe the "contacts and arrangements made and documented with local, State and Federal governmental agencies with responsibility for coping with emergencies, including identification of the principal agencies."

Discussion

In PSAR Section 13.3.2, the Applicant has identified the principal local, State, and Federal agencies with responsibility for coping with emergencies at the Allens Creek plant. In the State of Texas, the local government is responsible for issuing emergency notifications and instructions to the public. The County Judge is the local official responsible for authorizing emergency response and protective actions which are implemented under the direction of the County Sheriff. The principal local support organization is the Austin County Sheriff's Department, the County in which the Allens Creek plant site is located. Other local support agencies inc' ~ the other four county sheriff's departments within the plume exposure EPZ, the Police Department and Volunteer Fire Department of Wallis, Texas, the nearest community to the site, the Austin County Ambulance Corps, and the Polly Ryan Memorial Hospital in Richmond, Texas. The Applicant has been in contact with officials of these organizations and letters of agreements documenting these contacts and the arrangements made are provided in Appendix 13.3A of the PSAR.

The Texas Department of Health, Division of Occupational Health and Radiation Safety, is the lead State agency for responding to a radiological emergency. The Department of Public Safety and the Parks and Wildlife Department will also have a direct response role in the event of an emergency at the Allens Creek plant. These three agencies are members of the Texas Emergency Management Council, an organization composed of representatives from 29 State agencies, which is responsible for coordinating the State response to any type of emergency in the State. The Applicant has been in contact with the three primary State response agencies and has documented the State support in a letter of agreement with the Department of Health as the lead State agency and member of the Emergency Management Council. The

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specific response duties of State and local agencies will be presented in the State and local Emergency Plans prior to commercial operation of the Allens Creek plant.

On the Federal level, the applicant has been in contact with the Nuclear Regulatory Commission, the Department of Energy, and the Federal Emergency Management Agency. Letters of agreement/understanding with the NRC, Region IV office and the Albuquerque Operations Office of DOE are provided in Appendix 13.3A of the PSAR.

Conclusion

The information in PSAR Section 13.3.2 including the letters of agreement in PSAR Appendix 13.3A demonstrate that preliminary contacts and arrangements have been made with the principal offsite support agencies. The Staff therefore concludes that the requirements of Appendix E, Part II, Item B are satisfied.

C. Requirements

Describe "protective measures to be taken within the site oundary and within each EPZ to protect health and safety in the event of an accident; procedures by which these measures are to be carried out (e.g., in the case of an evacuation, who authorizes an evacuation, how the public is to be notified and instructed, how the evacuation is to be carried out); and the expected response of off-site agencies in the event of an emergency."

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Discussion

Emergency conditions will be classified by the Applicant into four standard emergency classes which will cover the entire spectrum of probable and postulated accidents. The four classes are: Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency. State and local emergency plans will utilize the same emergency classification system. The Notification of Unusual Event and Alert classes are intended to provide early and prompt notification to the onsite and offsite emergency response organizations that minor events have occurred or are in progress which could lead to more serious consequences if there is a future degradation in plant status or which might be indicative of more serious conditions which are not yet fully realized. The Site Area and General Emergency classes are intended for more severe situations where some significant releases are likely or are occurring and require immediate action from both onsite and offsite emergency response organizations. The Applicant will develop Emergency Action Level (EAL) criteria for classifying emergencies in accordance with the guidance of Appendix 1 to NUREG-0654. EALs are particular in-plant conditions, instrument readings, and onsite and offsite monitoring results which provide the basis for categorizing the event into one of the four emergency classes.

Onsite protective measures will include exposure control, contamination control, and area and site evacuation. The primary protective measure for onsite personnel not engaged in emergency functions will be prompt evacuation

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from areas which may be affected. During emergency conditions, efforts will be made to keep exposures within 10 C.F.R. Part 20 limits through such measures as respiratory protective equipment, protective clothing, radioprotective drugs or other health physics procedures. Exposure criteria for emergency workers performing critical corrective or lifesaving actions will be developed consistent with Environmental Protection Agency (EPA) Emergency Worker and Lifesaving Action Protective Action Guides.

Emergency planning will include provisions for the prompt notification of appropriate State, local, and Federal response organizations. For all emergency situations, the Applicant will initially notify officials of the State and the Austin County Sheriff's Department. The State response would be coordinated by the Texas Department of Health, the lead State agency for radiological emergency situations. Support activities of the Department of Health will include environmental monitoring, independent evaluation of radiological consequences, and the recommendation of protective actions. The Department of Health will also ensure the activation of appropriate member agencies of the Texas Emergency Management Council.

The County Judge has the statutory responsibility for authorizing emergency operations within each county which are implemented under the direction of the County Sheriff. The Austin County Sheriff's Department will initiate the implementation of protective measures within the 10-mile plume exposure EPZ based on recommendations from the Applicant and the Texas Department of Health. Response duties of the Sheriff's Department will include notification of the public, traffic control, law enforcement, and communication to other local support organizations.

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The principal protective measures to be considered within the 10-mile plume exposure EPZ will be sheltering and evacuation. Sheltering will be recommended for emergency situations where relatively low doses are involved or where a rapid passage of a radioactive cloud is expected. The primary means of evacuation within the plume exposure EPZ will be by private automobile and school buses. The Apple on thas provided a preliminary analysis in Appendia 13.3 B of the PSAR of the time required to evacuate various sectors and distances within the plume exposure EPZ. The evacuacion study is discussed in the response to Item G. Within the 50-mile radius ingestion exposure EPZ, the principal protective measures will involve the control of food and water supplies.

To make the demonstration required by 10 C.F.R. Part 50, Appendix E, the Applicant has committed to meet the criteria in Appendix 3 of NUREG-0654 regarding a public notification system; i.e., a system that will provide both an alert signal and an informational or instructional message to the population on an area wide basis throughout the 10 mile EPZ, within 15 minutes. An evaluation will be made to determine the specific public notification system to be installed. The final system is expected to consist of a combination of alert devices such as sirens in areas of concentrated population and individual alert devices such as tone alert radios or multiple telephone call-up systems in areas of low population density. The Staff considers the employment of some combination of these alert devices to be a feasible approach to meeting the public notification criteria of Appendix 3 of NUREG-0654.

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The Applicant will establish a program for the dissemination of information to the public within the plume exposure EPZ on how they will be notified and what their actions should be in an emergency. This information will be brought to the attention of the public by such means as direct mailing, advertisement in local telephone directories, and posting in public places. Visitors to the Allens Creek Lake and State Park will receive information as they enter the Park describing how they would be notified and what actions they should take in the event of an emergency.

Conclusion

Based on a review of the information submitted by the Applicant, the Staff concludes that the requirements of Appendix E, Part II, Item C are satisfied.

D. Requirement

Describe "features of the facility to be provided for on-site emergency first aid and decontamination and for emergency transportation of on-site individuals to off-site treatment facilities."

E. Requirement

Describe "provisions to be made for emergency treatment at off-site facilities of individuals injured as a result of licensed activities."

Discussion - Items D and E

A first aid room with equipment and supplies appropriate for a major industrial facility will be provided at the plant. Personnel decontamination facilities including showers and sinks which drain to the radiological waste processing system will also be provided. Individuals on the plant Staff trained in advanced first aid and decontamination methods will be available on-site to respond to emergency situations. Emergency planning will also include provisions for the treatment at off-site facilities of personnel injured on-site. Off-site treatment facilities and personnel will be prepared to handle contaminated patients. Preliminary arrangements have been made with the Austin County Ambulance Corps and the Polly Ryan Memorial Hospital in Richmond, Texas, as indicated in letters of agreement in PSAR Appendix 13.3A, for the transportation and treatment of injured persons including those involving radioactive contamination.

Similar arrangements will be made ith a back-up hospital. The Applicant will ensure that equipment and supplies for contamination control and personnel decontamination are available and maintained at each of the off-site hospitals. The medical treatment and ambulance services personnel will participate in emergency drills and exercises with the Applicant.

Conclusion - Items D and E

The Staff has reviewed the information presented in the PSAR on emergency treatment facilities, both on-site and off-site, and concludes that the requirements of Appendix E, Part II, Items D and E are satisfied.

F. Requirement

Describe the "provisions for a training program for employees of the licensee, including those who are assigned specific authority and responsibility in the event of an emergency, and for other persons who are not employees of the licensee but whose assistance may be needed in the event of a radiological emergency."

Discussion

As discussed in PSAR Section 13.3.10, the Applicant will establish an emergency response training program for the plant staff, headquarters support personnel, and local support services personnel. Members of the plant staff and headquarters support personnel will receive training in their specific response functions in the emergency organization. Individuals who will be assigned specific positions of authority and responsibility in the emergency response organization, such as Emergency Director and Recovery Manager, will receive training in all aspects of the Emergency Plan and implementing procedures. Persons working at the plant but not directly involved in lant operations will receive general employee training on such subjects as warning signals, assembly areas, and evacuation procedures.

Training for local offsite response personnel including attendants at the Allens Creek Lake and State Park will include an overview of the Emergency Plan and detailed instructions in the specific functions each organization will be expected to perform. Personnel in the State response organizations will receive training through the Texas Radiological Response Interagency Training Committee. Membership of the Committee will include the Director of Occupational Health and Radiation Control and a representative from each utility operating a nuclear facility within the State. Periodic exercises and drills will be conducted to evaluate the capabilities of emergency response organizations and to develop and maintain individual skills

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Conclusion

The Staff concludes that the Applicant's training program for onsite and offsite personnel as described in the PSAR meets the requirements of Appendix E, Part II, Item F.

G. Requirement

Describe "a preliminary analysis that projects the time and means to be employed in the notification of state and local governments and the public in the event of an emergency. A nuclear power plant applicant shall perform a preliminary analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, noting major impediments to the evacuation or taking of protective actions."

Discussion

The Applicant will have direct communication links, such as dedicated telephone lines and radios, to notify State and local officials. The principal agencies to be initially notified are the Texas Department of Public Safety and the Austin County Sheriff's Department. Both of these organizations maintain 24-hour on duty dispatchers. Backup communication systems will be in place to ensure notification. The Department of Public Safety will in turn notify other State agencies notably the Department of Health which is the lead State agency for coordinating State response to a radiological emergency situation. The Austin County Sheriff's Department will alert the other local response organizations within the plume exposure EPZ. The Staff will require the licensee to have the capatility to notify responsible State and local agencies within 15 minutes after declaring an emergency.

As noted in the response to Item C, the Applicant will ensure that a public notification system will be installed which meets the criteria of Appendix 3 of NUREG-0654; i.e., a system that will provide both an alert signal and an informational or instructional message to the population on an area wide basis throughout the 10 mile EPZ, within 15 minutes. A combination of alert devices such as sirens, tone-alert radios, or multiple telephone call-up systems is being considered.

The Applicant has performed a preliminary analysis of the time required to evacuate various sectors and distances within the plume exposure EPZ based on the permanent and transient populations for the year 1990 and the highway network as it existed in 1980. Evacuation would be accomplished primarily by automobile with school buses used to evacuate tudents. Normal and adverse weather condicions were considered in the analysis with adverse weather defined as severe thunderstorms or fog which would reduce visibility and lower driving speeds. The 10-mile radius study area was divided into sub areas on the basis of geographical, meteorological and jurisdictional considerations. A computer model was used to simulate the evacuation scenarios. The evacuation time estimates ranged from 15 minutes to evacuate the plant staff and permanent populatior within two miles in good weather to one hour and 45 minutes to evacuate the peak population from the 10-mile plume exposure EPZ under adverse weather conditions. No major impediments to the evacuation or taking of protective actions were identified in the evacuation study.

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The Staff has reviewed the Applicant's preliminary analysis of evacuation time estimates and finds that the information presented and methodology employed was in accordance with the guidance of Appendix 4 of NUREG-0654. The Staff has also performed a preliminary analysis of the evacuation time estimates, based on the information presented by the applicant, and finds that the results obtained by the Applicant are reasonable.

Conclusion

Based on a review of the information presented in the PSAR and an independent analys, the Staff concludes that the requirements of Appendix E, Part II, Item G are satisfied.

H. Requirement

Describe "a preliminary analysis reflecting the need to include facilities, systems, and methods of identifying the degree of seriousness and potential scope of radiological consequences of emergency situations within and outside the site boundary, including capabilities for dose projection using real-time meteorological information and for dispatch of radiological monitoring teams within the EPZs; and a preliminary analysis reflecting the role of the onsite technical support center and of the nearsite emergency operations facility in assessing information, recommending protective action, and disseminating information to the public."

Discussion

The Applicant has analyzed the requirements for emergency planning and will establish, as described in PSAR Section 13.3, systems, equipment, facilities and procedures to identify and assess the potential radiological consequences of emergency situations within and outside the site boundary. The Applicant will develop a standard emergency classification and action level scheme based on particular in-plant conditions, instrument readings, and onsite and offsite monitoring results (see the response to Item C for further discussion of emergency classes). The Applicant will have the capability and resources to provide initial values, accident evaluation and continuous assessment throughout the course of the accident. In the event of an actual or suspected release of radioactivity, onsite and offsite monitoring teams will be dispatched to perform direct radiation measurements and obtain samples.

The Applicant will maintain a continuous onsite meteorological measurements program. The program will include equipment and systems to obtain the realtime meteorological parameters necessary for determining atmospheric dispersion conditions. Plant personnel will utilize the meteorological data and radiological monitoring data to develop dose projections. The final Emergency Plan will include specific provisions for recommending protective actions to State and local organizations based on predetermined dose guidelines.

Emergency facilities will be established at or near the site for assessing emergency situations, directing response and recovery efforts, mitigating accident consequences and informing the public. These facilities will include an onsite Technical Support Center, an onsite Operations Support Center, and an offsite Emergency Operations Facility. The Technical Support Center will provide a location for plant management and technical support personnel to function in support of reactor operating personnel in the control room during emergency Conditions. The Operations Support Center will serve as an assembly area separate from the control room and TSC for personnel who

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will support station emergency response operations. The Emergency Operations Facility will serve as a center for the management of overall emergency response operations including the coordination of response activities with Federal, State, and local agencies. The Katy Service Center, a facility owned by the Applicant approximately 19 miles from the site, has been selected as the preliminary location of the EOF. The Staff has reviewed the proposed emergency response facilities for the Allens Creek plant and found them to meet the requirements of NUREG-0718, "Licensing Requirements for Pending Applications for Construction Permits and Manufacturing License," and to be acceptable for the construction permit licensing stage of review.

Conclusion

The Staff concludes that the information submitted by the Applicant is sufficient to meet the requirements of Appendix E, Part II, Item H.

Q. What is the Staff's overall conclusion with respect to whether the information presented in the PSAR meet the requirements of 10 C.F.R. Part 50, Appendix E. Part II?

A. Based on our review of Items A through H described above, the Staff concludes that the Allens Creek PSAR contains sufficient information to ensure that the proposed emergency plans for both onsite areas and the EPZs are compatible with facility design features, site layout, and site location with respect to such considerations as access routes, surrounding population distributions, land use, and local jurisdictional boundaries.

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Q. The onsite and offsite emergency response plan for nuclear power reactors must meet certain standards set forth in 10 C.F.R. § 50.47(b) in order to be granted an operating license. Has the Staff reviewed information presented in the PSAR in order to determine whether there are any unusual or unique circumstances or features with respect to the Allens Creek site that would preclude the development of adequate emergency plans at the operating license stage of review?

A. Yes. 10 C.F.R. 50.47(b) lists sixtee: (16) planning standards which must be met in the emergency response planning for a nuclear power reactor. Specific criteria for these standards are contained in NUREG-0654. The Applicant has responded to each of these standards in PSAR Section 13.3. The Staff has reviewed the information on emergency planning in the PSAR and concludes that the information presented is sufficient in depth and scope for the construction permit licensing stage to indicate the feasibility of meeting the planning standards in the final Emergency Plan. Further, no special or unique circumstances have been identified which would preclude the development of adequate regency preparedness plans at the operating license stage of review.

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OFFSITE SUPPORT AGENCIES

TABLE 1 -

Austin County Sheriff's Department Fort Bend County Sheriff's Department Waller County Sheriff's Department Colorado County Sheriff's Department Wharton County Sheriff's Department City of Wallis Police Department City of Wallis Fire Department Austin County Ambulance Department Polly Ryon Memorial Hospital Texas Department of Public Safety Texas Parks and Wildlife Department No as Department of Health U. S. Department of Energy, Albuquerque Operations Office U. S. Nuclear Regulatory Commission, Region IV Federal Emergency Management Agency



FIGURE 1 - 10-MILE RADIUS STUDY AREA

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PROFESSIONAL QUALIFICATIONS

I am employed as an Emergency Planning Analyst in the Emergency Preparedness Licensing Branch, Division of Emergency Preparedness, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission. I have responsibility for the review and evaluation of radiological emergency plans submitted by reactor applicants and licensees to assure proposed plans meet the regulatory requirements and guidance of the Commission. I a'so function as a Team Leader and Team Member on Emergency Preparedness Teams engaged in the onsite inspections of the implementation phase of licensee emergency programs. I observe nuclear power plant emergency drills and exercises involving State and local government response agencies and participate in interagency critiques.

I received a BS degree in Industrial Engineering in 1958 from the Pennsylvania State University. Upon graduation I entered the U.S. Air Force where I attended the Basic Meteorology Program at St. Louis University in St. Louis, Missouri. Following the completion of this program in 1959, I served as a weather officer in the U.S. Air Force.

In 1963, I began employment with the Westinghouse Electric Corporation at the Bettis Atomic Power Laboratory in Pittsburgh, Pennsylvania. My duties included the design of radiation shielding for nuclear power reactors for both landbased and shipboard applications. I participated in field tests at Federal reactor facilities to evaluate the effectiveness of shield design features on operating reactors.

I entered graduate school in 1967 at the University of Pittsburgh on a U.S. Public Health Service Fellowship and received an NS degree in 1968 in Radiation Health (Health Physics). Following graduation I was employed by the NUS Corporation in Rockville, Maryland, an engineering and environmental consulting organization. At NUS I was involved in the environmental aspects of siting both nuclear and fossil power plant.

I have been a member of the NRC (AEC) Staff since January 1973. From that time until June 1980 I held the position of Site Analyst in the Accident Analysis Branch. My duties included the review and evaluation of the radiological consequences of postulated design basis accidents, the effectiveness of proposed engineered safety features, the population density and growth characteristics in the site environs, and the possible adverse effects on plant safety of nearby industrial, transportation and military facilities. From September 1980 until March 1981 I was a member of the NRC's onsite technical support section at the Three Mile Island facility. I have participated in the detailed review of over thirty nuclear power plant sites with the primary objective being to ensure public health and safety through the application of Commission regulatory requirements and quidance on reactor siting. I have presented testimony at public hearings on licensing proceedings and appeared before the Advisory Committee on Reactor Safeguards.

In addition to my formal education, I have attended training courses sponsored by the NRC on reactor systems and operation. In May of 1979 I attended the course titled "Planning for Nuclear Emergencies" at Harvard University and in September 1980 I participated in the Radiological Emergency Response Operations training course at the Nevada Test Site.

I am a professional member of the Health Physics Society and the American Meteorological Society. I am a member of the Air National Guard and hold a current accreditation from the U.S. Air Force as a weather forecaster.