

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)
KANSAS GAS and ELECTRIC CO., et al) Docket No. STN 50-432
(Wolf Creek Generating Station, Unit 1))

TESTIMONY OF CRAIG WINGO, MARY MARLEE CARROLL AND
RICHARD J. LEONARD, FEDERAL EMERGENCY MANAGEMENT AGENCY
(Contentions 11 and 17 a, d, e, and f)

I, Craig Wingo, Chief, Field Operations Branch, Radiological Emergency Preparedness Program, State and Local Programs Support Directorate, Technical Hazards Division, am employed by Federal Emergency Management Agency, Washington, D.C. I, Mary Marlee Carroll, Senior Technological Hazards Specialist, and I, Richard J. Leonard, Community Planner, both are employed by the Technological Hazard Branch, Natural & Technological Hazards Division, Federal Emergency Management Agency (FEMA), Region VII, Kansas City, Missouri. In our respective positions we are responsible for providing assistance to State and local governments in the preparation of Radiological Emergency Response Plans (RERPs), reviewing those RERPs to assure compliance with NUREG-0654, FEMA REP 1, Revision 1 (1980) (hereinafter referred to as "NUREG-0654"), 44 C.F.R. Part 350, 48 Fed. Reg. 44332 (September 28, 1983), and the Standard Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants, FEMA 43 (hereinafter referred to as "FEMA 43").

This testimony is provided at the request of the Nuclear Regulatory Commission (NRC) Staff pursuant to the Memorandum of Understanding (MOU) between FEMA and the NRC, as revised on November 11, 1980, 45 Fed. Reg. 82713, and incorporated in FEMA regulations at 44 C.F.R. 350.3 (f) which states:

Notwithstanding the procedures set forth in these rules [44 C.F.R. Part 350] for requesting and reaching a FEMA administrative approval of State and local plans, findings and determinations on the current status of emergency preparedness around particular sites may be requested by the NRC and provided by FEMA for use as needed in the NRC licensing process. These findings and determinations may be based upon plans currently available to FEMA or furnished to FEMA by the NRC through the NRC/FEMA Steering Committee (emphasis added).

FEMA's testimony is based upon a review of the following documents:

1. State of Kansas, Annex A to Assistance R, Nuclear Emergencies of the State Disaster Emergency Plan (September, 1983) (hereinafter referred to as the "State Plan")
2. Coffey County Contingency Plan for Incidents Involving Nuclear Power (Revised September, 1983) (hereinafter referred to as the "County Plan").
3. Coffey County Emergency Preparedness Office Contingency Plan Implementing Procedures, Numbers 1 to 31 (September, 1983) (hereinafter referred to as "CPIP No. ____").
4. "Final Design of Alert and Notification System for Wolf Creek Generating Station", Wyle Research Laboratories Report, WR 82-36 (hereinafter referred to as "WR 82-36").

This testimony incorporates comments from the Regional Assistance Committee (RAC), an interagency committee chaired by FEMA with members from seven Federal agencies including the NRC, and an in depth review of

by the Technological Hazards Branch of FEMA Region VII against the criteria of NUREG-0654 and 44 C.F.R. Part 350, and a review by Mr. Wingo against the criteria of NUREG-0654 and FEMA 43.

Our testimony with regard to Contentions 11 and 17 a, d, e, and f follows.

CONTENTION 11. a.

The County Plan is deficient because it is not possible under the plan to notify 100% of the population within five miles of the site within a fifteen minute period, and it is not possible to assure 100% coverage within 45 minutes for those persons who do not receive the initial notification and are within the ten mile EPZ. The evacuation time will therefore be longer than estimated.

RESPONSE:

The assumption contained in the contention regarding 100% notification is incorrect. NUREG-0654 states in Section B of Appendix 3, for alert and notification systems:

The minimum acceptable design objectives for coverage by the system are:

- a) Capability for providing both an alert signal and informational or instructional message to the population on an area wide basis throughout the 10 mile EPZ, within 15 minutes.
- b) The initial notification system will assure direct coverage of essentially 100% of the population within 5 miles of the site.
- c) Special arrangements will be made to assure 100% coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure EPZ.

NUREG-0654 also states in Appendix 3:

The design objective for the system shall meet the acceptance criteria of Section B of this Appendix. This design objective does not, however, constitute a guarantee that early notification can be provided for everyone with 100% assurance or that the system when tested under actual field conditions will meet

CONTENTION 11. b.

The sirens that are installed for warning purposes will not cover the entire emergency planning zone under all circumstances. The evacuation time will therefore be longer than estimated.

RESPONSE:

FEMA recognizes that licensees can employ a number of means to alert the public. The means to alert is at the option of the licensee. A fully effective alert and notification system may include a combination of means such as fixed sirens, mobile sirens vehicles, tone alert radios, aircraft, and automatic telephone dialers.

This contention assumes that alert and notification will be accomplished by the use of sirens only. This is not the case. The County Plan, sec. 3.2, Appendix H, and WR-86 indicate that the alert and notification system is composed of fixed sirens, tone alert radios, and other means of notification in recreational areas. The County Plan also establishes a procedure for compiling a list of individuals who, due to hearing impairments, will require personal notification. The system is designed to meet the coverage objective set forth in NUREG-0654, Appendix 3.

CONTENTION 11. c.

Coffey County does not have sufficient sirens needed to warn people in the event of an emergency. Twenty will be required.

RESPONSE:

See response to Contention 11. b.

CONTENTION 11. d.

The ability of the public to hear the warning sirens will be more adversely affected by weather conditions than the plan contemplates.

RESPONSE:

The process proposed in Appendix A of WR 82-36 for computation of siren sound propagation and predicted siren coverage is consistent with the requirements of NUREG-0654, Appendix 3. FEMA-43 states that the "average summer daytime condition" may be utilized as the design basis for siren systems. The summer daytime condition is considered conservative by FEMA and other federal agencies for acoustical design purposes. FEMA does not expect systems to be designed to be effective in all weather conditions, rather, the system is to be designed to provide a reasonable assurance that the public can be alerted in most cases.

CONTENTION 11. e.

There is no provision about how to make the warning if one or more of the sirens fail to operate.

RESPONSE:

FEMA-43 requires that once a siren system is installed and operational there should be a test and maintenance program for the system. The program should include regularly scheduled testing of the siren system including silent, growl, and full-scale tests. Silent tests should be conducted at least every two weeks. Growl tests should be conducted at least quarterly and when preventative maintenance is performed. Full-scale testing should be conducted at least annually and as required for formal exercises. The

maintenance of the system should include prompt repair of any components which do not perform as expected during the tests. The program should include records of tests and repairs performed.

The operability of the siren system will be considered acceptable when an average of 90% of the sirens can be shown to be functional over a 12 month period as determined by a simple average of all of the tests conducted. A 90% operability average over a long period of time is expected to provide a reasonable assurance that the public will be alerted. Under this concept any one of the seven sirens proposed for Wolf Creek could randomly fail to operate during no more than 70% of time for of the total tests and maintenance program to be acceptable. However, if the records of the test and maintenance program show that the same siren is continually failing appropriate corrective measures will be sought by FEMA. This concept is believed to provide a reasonable assurance that the system will operate effectively.

CONTENTION 11. f.

Due to insufficient staffing, Coffey County cannot make the initial notification of an emergency in the required time. Although 67 personnel are required to perform this function, only 10 Sheriff's Department personnel and 3 Burlington Police are presently available.

RESPONSE:

The contention assumes that some form of notification is to used that involves a great number of personnel. This is not born out by the County Plan. The County Plan, sec. 3.2, pp. 3-3 and 3-4, details the Sheriff's responsibility for alert and notification. He has no function

that requires utilizing a large number of persons to provide notice. The County Plan, sec. 3.2, does require individual notification of persons who are hearing impaired. This is the responsibility of the Emergency Preparedness Coordinator who will use County Engineer personnel in New Strawn and persons under the direction of the Fire Leader in Le Roy and Burlington to notify these individuals. A list of hearing impaired will be prepared in advance of an emergency by the County Health Nurse with the assistance of others, County Plan sec. 3.2, p. 3-4.

Thus, contrary to the assumption of the contention, the County Plan provides for notification through fixed sirens, tone alert radios, EBS, and individual alerting of pre-identified individuals.

CONTENTION 11. g.

The Coffey County Sheriff's Department does not have sufficient equipment for warning people in the event of an emergency requiring an evacuation. In order to provide for proper notification and communication, the following is required: vehicles with loudspeakers - 57; and tone alerts for each home - 3500.

RESPONSE:

See response to Contention 11. f.

CONTENTION 11. h.

Tone alerts have not been made available to County residents who will not be able to hear the sirens when they are evacuated [sic]. The County Plan does not indicate how many tone alerts will be required. The evacuation time will therefore be longer than estimated.

RESPONSE:

WR 82-36 addresses this contention as follows:

3.2.2 Tone Alert Configuration

Under the final system design, tone alert receivers would be used to alert residents of areas not covered by the warning sirens. A structure count was provided to Wyle by Kansas Gas and Electric for the 5-mile subzone. During the site visit, structures were counted in the EPZ. Estimates of the number of structures have also been developed from the population estimates shown in Table 2-2, the USGS topographical maps, and discussions with local officials.

Based on the available information approximately 750 residential structures in the EPZ lie in the area not covered by the warning sirens as defined in Section 3.2.1. Twelve commercial receivers will be needed to cover all of the recreational, educational, and institutional buildings in the EPZ.

The County Plan restates this information regarding the number of tone alerts required in Appendix H. If the survey covered the entire County and not just the 5-mile subzone then this contention is answered.

CONTENTION 11. i and 11. j.

The County Plan makes no recommendation about how an up to date listing of those needing tone alerts will be maintained. The evacuation time will therefore be longer than estimated.

There is no provision for testing or maintenance of the tone alerts. The evacuation time will therefore be longer than necessary.

RESPONSE:

FEMA-43 addresses the tone alert requirements as follows:

At a minimum an effective and continual program should be established that encompasses the following:

- ° The program should offer the tone alerts radios to the public in geographic areas where needed and make the "best effort" attempt to place the radios. This program should include a record system (register) that contains an accurate list of

addresses (names are optional) in geographic areas where tone alert radios are needed. Addresses where radios are offered to residents and refused should be noted.

- ° A maintenance program offering annual operating checks should be available at least annually to all residents in areas where tone alert radios are needed. The maintenance program and the register program mentioned above may be integrated.
- ° Tests of the tone alerting features are desired at least monthly. The final determination of testing frequency will rest with the appropriate local government officials. The results of these tests do not have to be monitored. The purpose of these tests is to offer the public a means to self-test their receivers.
- ° Written guidance should accompany the radio. It should address (1) its general use, (2) self-testing frequency and method, (3) suggested placement to facilitate monitoring, (4) the maintenance program, and (5) telephone numbers for repair or replacement. This information should be provided as a reminder to each tone alert radio holder annually. This public information program may also be integrated with the register and maintenance programs mentioned above.
- ° Determination should be made that the broadcast medium for initiating the tone alert signal has adequate availability (24 hours a day, 7 days a week), signal strength, and signal quality.

Appendix H, p. H-8, of the County Plan provides a description of how the tone alert program will be administered. However, additional information will be required in order to bring it in to compliance with FEMA 43.

CONTENTION 11. k.

The County Plan is deficient because it does not make any provision for notifying persons who because of occupation, deafness, or other reasons, cannot hear the sirens or the tone alerts. The evacuation time will therefore be longer than estimated.

RESPONSE:

The County Plan does "make provision for notifying persons who

because of occupation, deafness, or other reasons, cannot hear the sirens or the tone alerts." County Plan, sec. 3.2, p. 3-4, states that: "Preidentified residents of the effective 10-mile EPZ who are unable to hear (due to deafness, etc.) the tone alert radios or sirens are notified individually." Notification is the responsibility of the Emergency Preparedness Coordinator who will use County Engineer personnel in New Strawn and persons under the direction of the Fire Leader in Le Roy and Burlington to notify these individuals. A list of hearing impaired will be prepared in advance of an emergency by the County Health Nurse with the assistance of others, County Plan sec. 3.2, p. 3-4.

CONTENTION 17.

a. The County Plan is deficient because the federal and state agencies responsible for John Redmond Reservoir do not have plans for distributing emergency planning information, evacuation confirmation, access control, and warning and notification of the transient population at the reservoir.

d. The County Plan does not provide how the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and Kansas Fish and Game Commission will notify persons within their respective jurisdictions. The evacuation time will therefore be longer than estimated.

e. The U.S. Corps of Engineers, the U.S. Fish and Wildlife Service, and Kansas Fish and Game Department cannot educate the transients around the John Redmond Reservoir about evacuation and emergency plans, cannot provide adequate warning when there is an accident, and cannot evacuate up to 10,000 transients at the reservoir because each of the agencies does not have sufficient staff.

f. The State and Federal agencies that have the responsibility for emergency planning and evacuation at John Redmond Reservoir would need 40 or 50 people to make the additional warning, confirm the evacuation, provide transportation for those without it, and direct traffic. Intervenors do not know how many of these people are available.

RESPONSE:

The John Redmond Reservoir has a potential for a transient recreational population in the summer months. The campgrounds within five miles of the plant will be covered by a siren for alerting. However, the parts of the Reservoir outside the 5-mile area should be treated as an institutional area under the control of the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and Kansas Fish and Game Commission. Draft procedures

for these agencies are presented in the County Plan, Appendix I, p. I-1, As the plan indicates these procedures are currently being reviewed by the responsible agencies. Thus far only the Kansas Fish and Game Commission has signed a Letter of Agreement committing itself to the plan, County Plan, Appendix D, p. D-11.

To evaluate the adequacy of these procedures a description should be available of how individuals in the recreation areas can be provided an alert signal within 45 minutes. FEMA 43 requires institutional alerting system should encompass the following elements in order to have and effective and continual program:

- ° Specifications of those organizations and the individuals within those organizations by title, who are responsible for activating each existing institutional alerting system.
- ° Description of the procedures to be employed to notify individuals (by title) that the alert and notification system is to be activated.
- ° Distribution of special information to notify those individuals of their responsibility to activate the existing institutional alerting system, including, where appropriate (e.g., hotels, motels, shopping centers), guidance on the most effective method of alerting systems activation or other supporting information (e.g., public information stickers, posters).

The procedures outlined in Appendix I of the County Plan appears to address these three items. However, further information is required on how the 45 minute notification criteria is to be met. Appendix H of WR 82-36 briefly addresses this aspect and states that the Corps of Engineers estimates that 50 to 60 minutes are required to cover and notify the portion of the Reservoir under their jurisdiction. The Kansas Fish and Game Commission estimates 60 minutes in WR 82-36 but modifies this to 45 minutes in their Letter of Agreement in Appendix D, p. D-11, of the County Plan. The U.S. Fish and Wildlife Service, according to WR 82-36, estimate that 45 minutes would be required for their section of the Reservoir. All of these times need to be reduced in order to satisfy NUREG-0654.

STATEMENT OF PROFESSIONAL QUALIFICATIONS
CRAIG WINGO

10/81 to Present

Chief, Field Operations Branch, Radiological Emergency Preparedness Program, State and Local Programs Support Directorate, Technical Hazards Division, Federal Emergency Management Agency, Washington, D.C.

Directs the operation of the branch responsible for assessing the capabilities of State and local governments to respond to radiological emergencies. The principal mission of this branch is the administration, resource planning, and budgeting of the Radiological Emergency Preparedness Program (REPP). The branch provides review and oversight of the ten FEMA regions in evaluation of State and local radiological emergency preparedness plans, conducting off-site exercises as required by 44 C.F.R. Part 350, and preparation of off-site findings for use by the Nuclear Regulatory Commission (NRC) in licensing hearings.

The branch is also responsible for development of the Exercise Evaluation and Simulation Facility, a computer system designed to develop technical models for evacuation, dose assessment, and sound propagation, and an extensive accident assessment information data base.

Mr. Wingo assisted in the development of 44 C.F.R. Part 350 which delineates the procedure for formal approval of State and local emergency response plans. He is the primary FEMA official responsible for the development of the "Standard Guide For the Evaluation of Alert and Notification Systems for Nuclear Power Plants", FEMA-43. In this role he worked closely with Federal and State agencies, utility trade associations, and public interest groups to develop a comprehensive evaluation program.

In addition to the aforementioned, Mr. Wingo conducts liason with the Federal Radiological Preparedness Coordinating Committee, the National Emergency Management Association, the Conference of Radiation Program Control Directors and other groups regarding REPP policy and site specific licensing activities.

5/75 to 10/81

Federal Insurance Administration, Federal Emergency Management Agency.

Administered the programmatic and technical functions of the flood hazard analysis program within the National Flood Insurance Program involving the identification of risk areas in communities across the country. Administered technical support contracts and frequently participated in meetings with State and local officials, land developers, engineers, and attorneys to resolve technical hazard analysis issues.

3/74 to 5/75

Civil Engineer, Ben Dyer Associates, Greenbelt, Maryland.

Responsible for the engineering, design, and economic evaluation of land development proposals for clients.

Education and Training

6/83 Planning For Nuclear Emergencies, Harvard University, School of Public Health.

10/81 Orientation Training in Radiological Emergency Preparedness Planning.

6/74 B.S. Civil Engineering, University of Maryland.

Registered Professional Engineer, Commonwealth of Virginia.

Maryland Society for Professional Engineers.

Chi Epsilon, National Civil Engineer Honorary Society.

STATEMENT OF PROFESSIONAL QUALIFICATIONS
MARY MARLEE CARROLL

9/83 to Present

Senior Technological Hazards Specialist, Natural and Technological Hazards Division, Federal Emergency Management Agency, Region VII, Kansas City, Missouri.

Ms. Carroll supervises the Radiological Emergency Preparedness (REP) aspects of the Natural and Technological Hazards Division for Region VII. In that capacity she oversees and participates in the review and evaluation of State and local Radiological Emergency Response Plans (RERPs) against the guidelines set forth in NUREG-0654, FEMA REP 1, Revision 1, FEMA regulations as set forth in 44 C.F.R. Part 350, and other FEMA guidance documents. Ms. Carroll duties include: serving as a member of the Regional Assistance Committee (RAC); providing technical assistance relating to development of RERPs, policy development, and legislation related to REP to State and local governments; coordinate REP exercises for fixed nuclear power facilities within Region VII; coordinate, monitor, and evaluate State and local emergency planning and preparedness and prepare findings for the Regional Director pursuant to 44 C.F.R. Part 350; provide lists of plan and exercise deficiencies to State and local governments and monitor their efforts to correct those deficiencies; provide expert testimony at the request of the Nuclear Regulatory Commission on the current status of emergency plans; provide expert assistance to agency counsel relative to develop of contentions, response to discovery and similar issues; serve as a member of the Regional Emergency Response Team (ERT) and on the inter/intra regional disaster response team.

10/81 to 8/83

Community Planner, Natural and Technological Division, FEMA, Region VII.

Ms. Carroll carried out the same functions listed under her current position under the supervision of the Senior Technological Hazards Specialist. In addition Ms. Carroll was qualified as and provided expert testimony before the Atomic Safety and Licensing Board Panel in the Callaway proceeding.

8/79 to 10/81

Emergency Management Specialist, FEMA, Region VII.

Managed the Temporary Housing Assistance Program in Region VII. Ms. Carroll's responsibilities included policy development; developing Agency standard operating procedures for disaster activities related to the Program; recruited and trained staff for disaster operations; developed and administered training programs in a variety of program areas; responded to numerous disasters and performed a number of functions including establishment of disaster field offices, and serving as Disaster Assistance Center Manager to coordinate interagency disaster relief efforts.

7/72 to 8/79

Temporary Housing Specialist, Department of Housing and Urban Development, Kansas City, Missouri.

During the course of her employment with one of FEMA's predecessors Ms. Carroll responded to over 35 disasters and performed a variety of increasingly more responsible positions, including both pre-disaster

planning and field operations during disasters.

Education and Training

1983-83 Community Planning (6 credits) Park College, Kansas City, Missouri.

1983 Senior Officer Nuclear Accident Course (SONAC) Albuquerque, New Mexico.

1982 Alert and Notification Workshop, Washington D.C.

1982 Radiological Monitoring Course, Kansas City, Missouri.

1981 Orientation Training in Radiological Emergency Preparedness
Planning, Battle Creek, Michigan.

1979 M.B.A., Rockhurst College, Kansas City, Missouri.

1971 B.A., Rosary Hill College, Buffalo, New York.

STATEMENT OF PROFESSIONAL QUALIFICATIONS
RICHARD J. LEONARD

7/83 to Present

Community Planner, Technological Hazards Branch, Natural & Technological Hazards Division, Federal Emergency Management Agency, Region VII, Kansas City, Missouri.

Mr. Leonard reviews and evaluates State and local Radiological Emergency Response Plans (RERPs) for fixed nuclear facilities in Region VII. This includes review of the RERP's, evaluation, and reporting on the adequacy of RERP exercises, coordinating the preparation of interim and final findings on the adequacy of RERP's with the Regional Assistance Committee (RAC) and State and local governments. He is also responsible for preparation of testimony for near term operating licensing hearing. Mr. Leonard is a member of the Regional Emergency Response Team (ERT).

11/80 to 6/83

Community Planner/ Civil Engineer, Natural & Technological Division, FEMA, Region VII.

Served as coordinator for the National Flood Insurance Program. Scheduled and conducted meetings involving State and local officials, the public, insurance agents, lending institutions, and developers for presentation of flood plain management regulations, flood hazard reports, and risk analysis. Served as member of the Regions Hazard Mitigation Team and performed other duties during disasters as assigned. Represented the Division on matters requiring engineering expertise.

12/77 to 11/80

Regional Representative, FEMA, Region VII.

Mr. Leonard was assigned by the Regional Director to serve as a special assistant to monitor and augment coordination of all FEMA regional programs and activities within the State of Kansas in order to promote the intergration of divisional programs to consistent with the precepts of comprehensive emergency management. Reported directly to the Regional Director.

3/75 to 12/77

Hydrologist, United States Geological Survey, Water Resources Division.

Conducted detailed hydrological studies for the Department of Housing and Urban Development of various drainage areas within the State of Missouri.

1/74 to 7/74

Volunteer Engineer, Peace Corps, Washington, D.C.

Worked as a Peace Corps Volunteer providing engineering assistance to the Venezuelan government.

Education and Training

- 1983 Organizational Behavior, Park College, Parkville, Missouri.
- 1982 Introduction to Management, Park College, Parkville Missouri.
- 1973 B.S. Civil Engineering, University of Missouri, Columbia, Missouri.

Registered Professional Engineer, State of Missouri.

Member of the National Society of Professional Engineers.

Member of Tau Beta Pi, National Engineering Honor Society.