May 20, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

EFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
UNION ELECTRIC COMPANY	)	Docket No. STN 50-483 OL
	)	
(Callaway Plant, Unit 1)	)	

APPLICANT'S MOTION FOR SUMMARY DISPOSITION
OF REED CONTENTION 9
(RADIOLOGICAL EXPOSURES)

Pursuant to 10 C.F.R. § 2.749, Union Electric Company ("Applicant") moves the Atomic Safety and Licensing Board for summary disposition of Contention 9 advanced by intervenor John G. Reed. As shown below, summary disposition is appropriate because there is no genuine issue of material fact to be heard with respect to Contention 9. Accordingly, Applicant is entitled to a decision in its favor on Contention 9 as a matter of law.

This Motion is supported by Applicant's Statement of Material Facts on Reed Contention 9 As To Which There Is No Genuine Issue To Be Heard (Radiological Exposures), Applicant's Memorandum of Law In Support of Motions for Summary Disposition

on Emergency Planning Issues ("Memorandum of Law"), the Callaway Plant Radiological Emergency Response Plan ("RERP"), the Missouri Nuclear Accident Plan-Callaway ("State Plan"), the Callaway County/Fulton Radiological Emergency Response Plan ("Callaway/Fulton Plan"), the Montgomery County Radiological Emergency Response Plan ("Montgomery Plan"), the Osage County Radiological Emergency Response Plan ("Osage Plan"), the Gasconade County Radiological Emergency Response Plan ("Gasconade Plan"), the Affidavit of Roger E. Linnemann, M.D. on Reed Contention 9 (Radiological Exposures) ("Linneman-9"), and the Affidavit of Roger E. Linneman, M.D. on Reed Contention 10 (Medical Treatment) ("Linneman-10"), all filed simultaneously herewith, as well as the pleadings and other papers filed by the parties in the proceeding.

I. Procedural Background

Mr. Reed's Contention 9 states:

> Means for controlling radiological exposures of local emergency workers has not been established as required by 10 CFR, Part 50, Section 50.47(b)(11).
>
> A. Montgomery emergency workers are provided dosimeters before going on duty and such are read after returning to the EOC after said duty is performed (page 18-3, SOP). Worker could have exceeded a lethal radiation dose during his or her shift and would not become aware of such exposure until after his or her duty shift was completed.

B. Emergency workers will be monitored for contamination at the EOC (page 18-3, SOP). Failure to monitor for contamination at a site near where duty is performed results in the spread of such contamination to areas outside of the immediate EPZ boundary and can result in added contamination of persons at the EOC which is over 20 miles away from the Union Electric Company's plant. Montgomery County EOC is some 21 air miles from the plant, Gasconade County EOC is approximately 19 air miles from the plant, Osage County's EOC is 20 miles, more or less, from the plant, and Callaway County's EOC is about 11 miles from the plant. These distances are based upon anticipated sites of proposed EOCs in the Off-site plan and SOPs.

C. Instructions specifically directed to all emergency workers must be included in plans/SOPs to provide guidance on what actions to take when radiological monitoring equipment readings reach critical readings (in Roentgens per hour), so that they easily understand what they must do and why it must be done.

D. All radiological readings or established levels should be reduced to values in Roentgens or Roentgens per hour because all monitor equipment in the hands of the workers are designed to measure radiation levels or exposure in terms of Roentgens or Roentgens per hour (R/hr). To include measurements in Rems or counts per minute (CPM), while more technically appropriate, perhaps, tends to confuse the emergency worker and deny him information he may need to protect himself and his co-workers. The plan should be readily understandable by any emergency worker if it is to be effective over time; in addition it should be clear and concise (see NUREG 0654, page 29, line 8-12).

Final Particularization of Reed's Amended Contentions 1, 2 and 3, filed October 1, 1982. Neither Applicant nor the NRC Staff posed an objection to Contention 9, which was admitted to the proceeding by Board Memorandum and Order dated December 7, 1982.

II. Governing Legal Standards

The regulatory requirement governing Contention 9 is 10 C.F.R. § 50.47 (b)(11), which requires that "[m]eans for controlling radiological exposures, in an emergency are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides." This regulatory requirement is further delineated in NUREG-0654/FEMA-REP-1 (Rev. 1), "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (Nov. 1980) ("NUREG-0654"). NUREG-0654 is not binding on the Commission; however, its criteria constitute recommended planning standards.1/ Section II.K of NUREG-0654, after repeating as a planning standard the wording of 50.47(b)(11), includes the following recommendations applicable to offsite plans:

> 3.a. Each organization shall make provision for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident including volunteers. Each organization shall make provisions for distribution of dosimeters, both self-reading and permanent record devices.

1/ See Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 N.R.C. 1211, 1460 (1981), aff'd, ALAB-698, 16 N.R.C. __, slip op. 13-15 (Oct. 22, 1982).

b. Each organization shall ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers involved in any nuclear accident.

III. Argument

The standards governing summary disposition motions in an NRC proceeding are set forth in Applicant's Memorandum of Law. In summary, where, as here, a properly supported motion for summary disposition is made, the party opposing the motion must come forward with substantial facts establishing that a genuine issue of fact remains to be heard. In the absence of such a showing, the movant is entitled to a decision in its favor on that contention as a matter of law.

Applying the foregoing standards to this case, it is clear that Applicant's motion for summary disposition on Reed Contention 9 should be granted. Applicant does not contest the need for means of controlling radiological exposures to emergency workers, which is the subject of Reed Contention 9. But it is clear from the radiological emergency response plans for the four counties in the Callaway Plant plume exposure emergency planning zone ("EPZ"), and the affidavit of Dr. Roger E. Linnemann on the issue of radiological exposures, that more than adequate arrangements for protecting workers from radiological exposures have been made. Accordingly, there are no

material issues in controversy with respect to protecting workers from radiological exposures.

A review of the radiological emergency response plans for the four counties in the EPZ establishes that adequate means for protecting emergency workers from radiological exposures have been developed. The State and county plans contain thorough and detailed provisions for protecting workers from receiving excessive radiological exposures during the performance of their duties. Radiation survey equipment and personnel dosimeters are identified for use; protective action levels are specified; procedures are in place for self-monitoring, monitoring upon conclusion of duties, decontamination, and data recording; and responsibilities for planning and response activities are clearly delineated. See State Plan, Annex D, Section B, "Permissible Radiation Exposure to State and Local Emergency Workers"; Annex D, Attachment 6, Section F; and Annex A, Bureau of Radiological Health ("BRH") section; County plans at Annex J, "Radiological Exposure Control for Emergency Workers."

The sufficiency of the plans for protecting emergency workers from radiological exposures is confirmed by Dr. Roger E. Linnemann in his affidavit on Reed Contention 9. Dr. Linnemann is a medical doctor with particular expertise in the area of radiological health. Dr. Linnemann also is the

Vice Chairman of Radiation Management Corporation ("RMC"), a consulting firm that provides medical expertise and support in the event of an accident involving injury to workers at nuclear power plants. RMC's Emergency Medical Assistance Program provides 24-hour emergency support to some 20 nuclear power plant sites throughout the country. The Callaway Plant will participate in this program. Linnemann-10, ¶¶ 1, 18; RERP, § 5.3.5.

Subsection A of Reed Contention 9 claims that the emergency plans require that dosimeters for emergency workers be read before and after going on-duty, but fail to provide for preventing over-exposures to workers during the tenure of their emergency duties. To begin with, the plans provide for mission planning and supervision so as to avoid emergency workers contacting high levels of radiation. Section I.4.(c) of Annex J of the county plans requires supervisors of emergency workers to arrange and plan missions to insure that exposure for emergency workers is kept as low as reasonably achievable. Section I.4.(b) requires these supervisors to prohibit individual participation when Protective Action Guides ("PAG's") are reached, except upon approval by the party responsible for lifesaving activities. Section III.B. of Annex J designates that supervisors of emergency response personnel, at all levels, have the responsibility to minimize radiological

exposure accumulated by their personnel, and lists six ways emergency supervisors should seek to minimize exposures to workers, consisting of sheltering, respiratory protection, evacuation and access control, rotation, radioprotective drugs, and mission planning. "During a radiological emergency," notes the State Plan, "it is of utmost importance to conserve the services of radiological monitoring teams by avoiding exposure to more than allowable doses. Within the limits of practicality, exposure of monitoring personnel will be kept to a minimum." State Plan, Annex D, Section B. These explicit provisions eliminate the concern expressed by Mr. Reed in Contention 9.A that emergency workers will be operating under conditions where they would be unknowingly exposed to lethal radiation doses.

The intent of these planning provisions is substantiated by Dr. Linnemann. "[I]t is highly unlikely that any emergency worker would unknowingly receive a significant, much less lethal, dose of radiation. . . . [T]he EOF will have a total assessment of the area's radiation contamination and exposure and will maintain constant communication between emergency worker teams. Emergency workers would be directed to stay away from areas with unexpectedly high levels of radiation." Linnemann-9, ¶ 3.

Furthermore, Section III.C of Annex J of the county plans, and Annexes A and D of the State Plan satisfy the central concern of Contention 9.A, which is that workers will unknowingly receive lethal radiation doses because of a failure to monitor their dosimeters except before and after their emergency duties. Section III.C.2 of Annex J states that "emergency workers will be instructed to read and record dosimeter data upon receiving the instrument, at least once every 30 minutes thereafter, and upon returning the instrument." Annex D, Section B, and Annex A, BRH Section at B.5 and Attachment A3B of the State Plan likewise contain explicit provisions for requiring emergency workers to self-monitor for contamination at 30 minute intervals. Moreover, Mr. Reed has acknowledged that training can provide the necessary means to ensure that emergency workers would read their dosimeters intermittently to avoid over-exposure to radiation. See John G. Reed's Responses to Applicant's Revised Interrogatories, November 12, 1982, interrogatory answer #54. In short, Reed Contention 9.A has been fully satisfied.

Contention 9.B argues that the offsite emergency plans fail to preclude the spread of contamination to areas outside the EPZ boundary because emergency workers will only be monitored at the county emergency operations centers ("EOC's"). The assumption underlying Contention 9.B is that emergency

workers, upon leaving their duty within the EPZ, will travel directly to the EOC with significant external contamination on them and will spread such contamination to others. The present emergency plans, however, as well as the testimony of Dr. Linnemann, indicate that there has been careful and prudent planning for radiological monitoring of emergency workers and controlling the spread of contamination. Contrary to Mr. Reed's assumption concerning the exit of emergency workers from the EPZ going directly to the EOC with significant external contamination, the plans call for all emergency workers at the end of the emergency to report directly to predesignated decontamination stations for survey and decontamination. See county plans, Annex J, Section III.D.2.; State Plan, Annex D, Attachment 6 at F.4. These stations will be outside of the affected area. Id., Attachment 6 at F.1.

To the extent Contention 9.B seeks to have emergency workers monitored directly proximate to duty stations, this would be poor planning, for to attempt to conduct final surveys and decontamination of workers within the EPZ would result in the more dangerous and immediate threat of workers receiving even greater radiological exposures. As Dr. Linnemann attests, the first priority in a radiological emergency is to avoid external exposures from gamma radiation, with survey and decontamination a secondary priority. Linnemann-9, ¶ 4. This

secondary priority is satisfied by requiring emergency workers to report directly to the nearest decontamination center at the conclusion of the emergency, thereby minimizing the spread of contamination. Id. The State and local government decision to monitor and decontaminate emergency workers at predesignated decontamination stations outside the EPZ, then, is based on a clear perception of protective priority supported by expert opinion that the essential need is to remove workers from areas of possible further contamination.

Not only has there been prudent planning for the logistics of monitoring and decontaminating emergency workers, but careful provisions have been made as well for controlling the spread of contamination. In Missouri, BRH has the primary responsibility for decontamination activities, and the State Plan contains extensive provisions for thorough and safe decontamination. See State Plan, Annex D at Attachment 6, Decontamination Procedures. The State Plan states that "[d]econtamination stations will have provisions for showering and replacement of contaminated clothing. Contaminated clothing will be isolated at decontamination stations in securely closed containers until BRH determines the best method for decontamination or disposal." Id. at F.2. The State Plan similarly contains detailed provisions governing the monitoring and decontamination of emergency supplies, equipment, instruments and vehicles.

In short, the specific and detailed provisions of the State Plan regarding monitoring and decontamination of emergency workers ensure that contaminated workers will not exit uncontrolled beyond the EPZ in such a way as to carelessly spread radioactive contamination. Given the reasoned and supported judgment of the State and counties as to where it would be most effective to monitor and decontaminate emergency workers, and given the detailed and extensive procedures in place for insuring that contaminated workers will be properly controlled, isolated, monitored and decontaminated, there is no basis for the unsubstantiated preference of Mr. Reed that radiological monitoring should take place within the EPZ, where individuals could be subject to much greater radiological hazards.

Contention 9.C states that instructions must be included in the plans to indicate actions emergency workers should take when radiological monitoring equipment readings reach a critical level. The county plans now explicitly state that workers will leave the risk area upon receiving a critical reading. County plans, Annex J at Section III.E.2. As Dr. Linnemann points out,

> all off-site emergency workers will be adequately equipped with radiation instrumentation and trained to use the instruments and interpret the results. The readings of the instrumentation will be in milliRoentgens or Roentgens (mR or R) per hour. A self-reading low range dosimeter

> such as the CDV-138 (0-200 mR), a self-reading high range dosimeter such as the CDV-742 (0-200 R), and the thermoluminescent dosimeter (TLD) are standard civil defense instrumentation which is used at many off-site locations around nuclear power plants in this country. . . . The guidelines for emergency worker exposure provide that if contamination is present or exposure reaches 0.5 mR above background, emergency workers are directed to the nearest decontamination center. Also, as previously stated, workers will be taught to use self-decontamination procedures.

Linnemann-9, ¶ 5 and attached Exhibit B, Emergency Response Worker Training. Once again, the concern expressed by Mr. Reed's Contention 9 is explicitly fulfilled by the present emergency plans.

Finally, Reed Contention 9.D argues that all radiological readings and established levels should be reduced to values in Roentgens or Roentgens per hour and that measurements in Rems should not be included so as not to confuse emergency workers. Mr. Reed is concerned here about different nomenclature confusing emergency workers. As the affidavit of Dr. Linnemann attests, "[t]he worker will be taught, for the purposes of emergency work, the principles of Roentgen/hour to Rem/hour equivalents. For all practical purposes, for the types of radiation encountered in a nuclear power plant, the differences between these two measurements are insignificant. They will also be taught the significance of different dose-effect relationships." Id. at ¶ 5. Thus, contrary to Mr. Reed's

assertion, there is no reason why the use of rems would be inherently confusing to emergency workers. Given the training program planned, quite the opposite conclusion is reached - that emergency workers trained to understand Roentgen/hour to Rem/hour equivalents will be better equipped to respond appropriately and intelligently in a radiological emergency.

IV. Conclusion

Detailed and thorough plans have been developed for the State of Missouri and the four EPZ counties fulfilling the regulatory requirement that "[m]eans for controlling radiological exposures in an emergency, are established for emergency workers." 10 C.F.R. § 50.47 (b)(11). The plans have extensive provisions identifying responsibilities, concepts of operation, equipment and resources, training, guidelines and procedures for monitoring and decontamination activities directed towards protecting workers from radiological exposures. The NUREG-0654 recommended criteria for the provision of dosimeters, the determination of doses, and the maintaining of dose records for emergency workers have clearly been fulfilled. In the case of each of the subcontentions of Contention 9, the concerns expressed by Mr. Reed have been explicitly and adequately satisfied. Explicit provisions for self-monitoring of dosimeters, instructions and training for protective response,

monitoring of workers, provisions mitigating the spread of contamination and training ensuring workers understand and can apply Roentgen/Rem equivalences are all featured in the current emergency plans. The allegations of Mr. Reed in Contention 9 thus constitute "demonstrably insubstantial issues" which should be decided on a motion for summary disposition and which should not be the subject of an unnecessary and time-consuming hearing. Accordingly, Applicant's motion for summary disposition should be granted.

Respectfully submitted,

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