



KANSAS GAS AND ELECTRIC COMPANY

GLENN L. KOESTER
VICE PRESIDENT - NUCLEAR

January 12, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

KMLNRC 83-002

Re: Docket No. STN 50-482

Ref: Letter dated 12/6/82 from BYoungblood, NRC, to
GLKoester, KG&E

Subj: Additional Information for the Review of the Wolf
Creek Emergency Plan

Dear Mr. Denton:

The Referenced letter requested additional information concerning the Wolf Creek Generating Station Emergency Plan. Transmitted herewith are responses to all the informational requests except for Item D.1. A response to Item D.1 will be forwarded to the NRC by January 21, 1983.

Many of the attached responses refer to additional detail being provided in the next revision of the Plan or in the Emergency Planning Implementing Procedures (EPIPs). Present plans call for the next Plan revision to be submitted to the NRC in April 1983, and the EPIPs to be available for NRC review in June 1983.

The attached information will be formally incorporated into the Wolf Creek FSAR in Revision 10. The information is hereby incorporated into the Wolf Creek Generating Station, Unit No. 1 Operating License Application.

Yours very truly,

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PDR ADOCK 05000482
F PDR

GLK:bb

Attach

cc:JHolonich (2)

Division of Project Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

TVandel/SSchum

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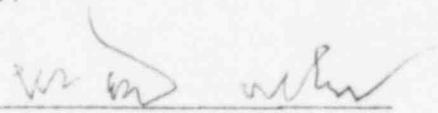
OATH OF AFFIRMATION

STATE OF KANSAS)
) SS:
COUNTY OF SEDGWICK)

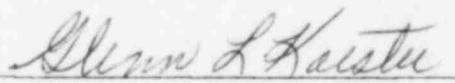
I, Glenn L. Koester, of lawful age, being duly sworn upon oath, do depose, state and affirm that I am Vice President - Nuclear of Kansas Gas and Electric Company, Wichita, Kansas, that I have signed the foregoing letter of transmittal, know the contents thereof, and that all statements contained therein are true.

KANSAS GAS AND ELECTRIC COMPANY

ATTEST:



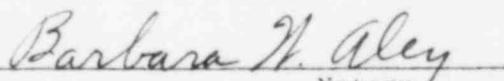
W.B. Walker, Secretary

By 
Glenn L. Koester
Vice President - Nuclear

STATE OF KANSAS)
) SS:
COUNTY OF SEDGWICK)

BE IT REMEMBERED, that on this 12th day of January, 1983, before me, Barbara W. Aley, a Notary, personally appeared Glenn L. Koester, Vice President - Nuclear of Kansas Gas and Electric Company, Wichita, Kansas, who is personally known to me and who executed the foregoing instrument, and he duly acknowledged the execution of the same for and on behalf of and as the act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the date and year above written.


Notary



My Commission expires June 30, 1983

The following comments apply to the Wolf Creek Generating Station Emergency Plan and identify, in parenthesis, the applicable evaluation criteria of NUREG-0654, Revision 1.

A. Assignment of Responsibility (Organization Control)

Q.A.1 Figure 1.3-3 illustrates the interrelationships between the corporate and onsite organizations. However, the diagram seems to indicate that control of the emergency response is at the corporate level rather than the EOF. In addition, there is inconsistent language in the plan that indicates someone other than the DEP is to have complete control (e.g., Rev. 9 p. 0.0-3, where it says that the Vice President - Nuclear "will...recommend...protective actions; and p. 1.3-3, where it indicates that the DEM has responsibilities of "protective action [recommendations]) (A.1.c).

R.A.1 Control of the WCGS emergency response occurs from the plant site at all times. Originally the effort is directed from within the plant by the shift supervisor acting as the Duty Emergency Director (DED). Upon arrival of more senior managers, this responsibility is transferred, ending with the station superintendent acting as the DED. Should the event continue to escalate, the DED continues his role of directing in-plant activities and reports to the Duty Emergency Manager upon his arrival at the EOF. At this point, the DEM is responsible for management of the entire response effort.

Figures 1.1-2 through 1.3-3 will be revised for added clarity. Reference to the Vice President - Nuclear on pp. 0.0-3 of the Plan was made to demonstrate the high level of corporate involvement in the overall response effort; however, the immediate decisions pertaining to the event will be made by the senior person onsite.

Q.A.2 The DED appears to be the individual responsible for the overall management of licensee emergency response. Because this function is to be handled from the EOF, the licensee's emergency response concept should reflect this [see NUREG-0696] (A.1.d).

R.A.2 Refer to the response for Question A.1. The DED is responsible for management of the response initially; however, in the case where the event escalates to include offsite consequences, the DEM assumes responsibility for the overall effort and the DED concentrates upon resolving in-plant problems.

SNUPPS-WC

- Q.A.3 The manning of all the communication links are not specified (e.g., RADIAC). Also the Plan does not indicate that the Kansas Highway Patrol will notify Coffey County if the sheriff is not available (A.1.e).
- R.A.3 Communication links at the Coffey County Sheriff's Office and State EOC are manned continuously. Primary and backup communication links exist between WCGS and the Coffey County Sheriff's office to assure that contact with the Sheriff's office can always be achieved.
- Q.A.4 Letters of agreement for all organizations potentially involved are not in place (e.g., Kansas H.P. and Kansas DOT). Where an agreement letter is not required because the response functions of an organization are covered by law, there is need for a signature page. As an alternative to a signature page the Plan should cite applicable statutes governing the responsibilities of offsite organizations involved in the emergency response (A.3).
- R.A.4 Letters of agreement are being developed and will be provided. Agreements for state and/or county agency support are under jurisdiction of the state and county emergency response plans. These documents reflect statutory obligations and are approved by the Governor or county commissioners. Further commitment via signature pages in the Wolf Creek Plan is redundant and inappropriate as a private concern cannot enter into agreements with a governmental agency beyond the agency's statutory authority.

B. Onsite Emergency Organization

- Q.B.1 There appears to be inconsistencies in the plan involving the description of the emergency coordinator's responsibilities. These should be eliminated from the plan [see A.1.d] (B.2).
- R.B.1 The Duty Emergency Director (DED) position is initially assumed by the Shift Supervisor, who will be on shift at all times, and who is a licensed SRO. The Shift Supervisor is the senior management individual onsite during backshifts and non normal working days and has the management responsibility and authority to immediately and unilaterally initiate required emergency actions. The Plant Superintendent (or Call Superintendent if the Plant Superintendent is unavailable) will assume the DED position after arrival and after proper turnover of information. Should conditions escalate such that the EOF is activated, the DEM, after arrival and after proper turnover of information, will assume overall emergency management responsibilities from the DED. These responsibilities of the DED and DEM are presented in Sections 1.2.1 and 1.3.2, respectively.
- Q.B.2 The plan should provide information detailing the criteria used for transfer of responsibility between the Plant Superintendent and the Call Superintendent (B.3).
- R.B.2 During an emergency, the Shift Supervisor initially assumes the responsibility of DED. The Plant Superintendent, upon his arrival, will relieve the Shift Supervisor of DED responsibilities. If the Plant Superintendent is unavailable, the Duty Call Superintendent will assume this function until the Plant Superintendent is available. The transfer of responsibility will be performed with verbal turnover and through a review of the logs, records and other documents related to the emergency. These requirements will be detailed in the station EIPs.
- Q.B.3 The DEM's (emergency coordinator) responsibilities not to be delegated, are not specified (B.4).
- R.B.3 The DED and DEM in various stages of an event have overall responsibility for the execution of the Emergency Plan as described in the response to Question B.1. The DED's or DEM's responsibilities which may not be delegated will be clearly defined in the next revision of the Plan. These responsibilities are:

SNUPPS-WC

- a. Decision to notify offsite emergency authorities.
- b. Making protective action recommendations as necessary to offsite emergency authorities.
- c. Classification of emergency event.
- d. Determining the necessity for evacuation of personnel onsite.
- e. Authorization for emergency workers to exceed 10 CFR 20 radiation exposure limits.

Q.B.4 The minimum staffing requirements, found in Table 1.1-1 of the plan, should either conform to Table B-1 of NUREG-0654 or provide alternative means of performing the required functions in a timely manner (B.5).

R.B.4 KG&E's shift complement was reviewed by the NRC's Management Structure and Technical Resources Review Team in January 1982 to the Table B-1 requirements. KG&E committed in letter KNLNRC 82-165 (dated 2/25/82) to a 10 man shift complement to document commitments made verbally to the Review Team. The Team was made up of individuals from NRR and Region IV.

All functional areas necessary to respond to emergencies are covered by our 10 man crew as shown in Table 1.1-1 with some functional areas being provided by personnel assigned other functions as is allowed by Table B-1. The Review Team concurred that the 10 man crew provided the necessary expertise and personnel needed to initially respond to transients or off-normal conditions. This is documented in Section 13.1.3.4 of the Wolf Creek SER (NUREG-0881).

Manpower additions of 11 and 15 personnel are recommended in Table B-1 to be accomplished in 30 and 60 minutes, respectively, after emergencies are declared. KG&E's commitment in Table 1.1-1 is to provide a total of 13 personnel within one hour and another 15 within two.

During backshifts, weekends and holidays, responding to plant situations with the number of personnel suggested by Table B-1 in such a short amount of time is not feasible at Wolf Creek. The requirements of 10 CFR 100 encourage remote siting of nuclear power plants. Wolf Creek is very remotely

SNUPPS-WC

sited with a population density of only 13 persons per square mile within 10 miles of the plant. The largest city within 50 miles is Emporia with a 1978 population of 26,000. Ottawa is next largest with 11,000 population in 1978. The majority of the incorporated places within 50 miles have less than 1,000 people. The road miles to Emporia and Ottawa from Wolf Creek are about 40 and 46 miles, respectively.

A majority of the present Wolf Creek employees live in these cities. There is not a volume or variety of housing available within a thirty minute drive of the plant. The requirement to site a plant in a remote location and then mandate that people respond to the plant in 30 minutes creates unachievable and conflicting objectives.

KG&E has evaluated demography of the Wolf Creek employees and the tasks necessary to be performed post-accident. Using the expertise available, KG&E in Table 1.1-1 has increased the first complement of personnel (i.e., those that arrive within 1 hour) beyond the number suggested in NUREG-0654 to 13. Some employees chose to live close to the plant but the majority did not. A few could respond within 30 minutes but not all areas of expertise are available in sufficient numbers to allow the 24 hour-per-day coverage year round.

The EOF Coordinator position has been added to the Table B-1 suggested manning levels to accomplish the initial activation of the EOF and begin coordination of offsite activities. This position was established so that if conditions warrant EOF activation and emergency support personnel are dispatched from the corporate headquarters, then EOF facilities will be in a fully operational status and be functioning prior to their arrival. The EOF coordinator reports to the DED until arrival of the DEM at the EOF. The corporate offices are located in Wichita which is over 121 road miles from the plant.

Again, as with our personnel available to respond within 1 hour, only sufficient numbers of personnel with specific expertise are living close enough to the plant to commit to having full Table B-1 response capability from site based personnel within 2 hours with home office assistance being available within 4 hours.

SNUPPS-WC

The following paragraphs present a detailed discussion of each Table B-1 functional area and demonstrates that required functions will be performed in a timely manner.

1. Major Functional Area of Plant Operations and Assessment of Operational Aspects:
 - a. Table B-1 identifies position title of Shift Foreman (SRO): At WCGS this individual is titled Supervising Operator and will hold an SRO License.
 - b. Table B-1 identifies position title of Control Room Operator: At WCGS these individuals are titled Reactor Operators and will hold RO Licenses.
 - c. Table B-1 identifies position title of Auxiliary Operators: At WCGS these individuals are titled Nuclear Station Operators. There will be four on shift versus the two indicated in Table B-1.
2. Major Functional Area of Emergency Direction and Control:
 - a. *Note: The EOF Director referred to by the *** note in Table B-1 is the DEM as identified in the Plan. The DED is the senior manager onsite at the time of the emergency and is responsible for the minute-to-minute facility operation. The Shift Supervisor initially assumes the responsibility of DED until relieved by the Plant Superintendent or Call Superintendent.
 - b. Table B-1 identifies position title as Shift Technical Advisor, Shift Supervisor, or designated facility manager: At WCGS the Shift Supervisor initially assumes the responsibilities and position of DED until relieved by the Plant Superintendent or Call Superintendent. Additionally Shift Supervisors and Supervising Operators are qualified to the STA level. Therefore, there will not be an STA assigned to a shift unless the designated Shift Supervisor or Supervising Operator does not meet the requirements of the STA.

3. Major Functional Area of Notification/Communication:
 - a. Table B-1 does not identify the position title for this function and states in the **** note that it may be performed by engineering aide to the Shift Supervisor. For WCGS the position title has been identified as Emergency Communicator. This position may be performed by shift personnel assigned to other locations.
 - b. Table B-1 identifies one on shift, one additional within 30 minutes, and two additional within 60 minutes. For WCGS there will be one on shift, two additional within one hour and one additional within two hours. The overall required number of four is the same as Table B-1.

4. Major Functional Area of Radiological Accident Assessment and Support of Operational Accident Assessment:
 - a. Table B-1 identifies position title of Senior Manager: At WCGS this position is filled within one hour by the EOF Coordinator, whose duties and responsibilities are identified in the Plan. Additionally, within four hours post-notification time, two additional individuals will be available, one of whom will be the DEM.
 - b. Table B-1 requires one individual with Senior Health Physics expertise be available within 30 minutes. For WCGS this individual will be available within one hour due to living distance from the station as was described above.
 - c. Table B-1 under Position Title or Expertise refers to HP Technicians and Rad/Chem Technicians: At WCGS these positions are filled by HP personnel and Chemistry personnel. These personnel will be trained in all aspects of their respective areas, HP or Chemistry, that are necessary during the first hour of an event. Again the time frame for capability for additions is due to the geographical locations of residences from WCGS.

SNUPPS-WC

5. Major Functional Area of Plant System Engineering, Repair and Corrective Actions:
 - a. The only difference in this area from Table B-1, other than the time frames for Capability for Additions, which has been previously explained, is the ** note beside the one on shift individual. This note refers to the basis that the Shift Supervisor and Supervising Operator will meet the requirements of the STA. In the event they do not meet the requirements, an STA will be assigned to that shift.
6. Major Functional Area of Protective Actions (In-Plant):
 - a. Table 1.1-1 in the Plan will be revised to reflect 2** on shift HP Personnel as is indicated in Table B-1.
7. Other:
 - a. Firefighting - Fire brigade manning per the Technical Specifications is maintained at all times. Local support agreements will be in place prior to plant operations.
 - b. Rescue and First Aid - On shift personnel will be available for these functional areas. Local ambulance and medical support agreements will be in place prior to plant operations.
 - c. Access Control and Personnel Accountability - per the WCGS Security Plan.

Thus, the overall totals for personnel for WCGS in Table 1.1-1 of the Plan meet or exceed the requirements of NUREG-0654 Table B-1.

- Q.B.5 Diagrams of the interfaces between onsite and off-site organizations and suborganizations need more detail (B.6).
- R.B.5 More organizational diagrams have been developed for inclusion in the next Plan revision.
- Q.B.6 Additional information is required concerning the kinds of supplies and equipment for which the DEM is logistically responsible (B.7.a).

SNUPPS-WC

- R.B.6 Supply and equipment logistics are the responsibility of the Administrative Resources Manager (ARM) who reports to the DEM. Requests for all materials and services associated with event response are processed by the ARM, who also is responsible for verification of receipt and distribution.
- Q.B.7 It is not clear whether the DEM is the official interface with government authorities (B.7.c).
- R.B.7 Initially the DED, until the EOF is fully activated and manned by the DEM, is the management level interface with government authorities. Following arrival of the DEM, he assumes these responsibilities. Clarification will be provided in Section 1.3.2, of the next Plan revision.

C. Emergency Response Support and Resources

Q.C.1 The specific individual who will request federal assistance is not identified (C.1.a).

R.C.1 Request for federal assistance is made by state officials in accordance with the Kansas Disaster Emergency Plan, Annex A to Assistance R, Reference Sections 1.4.1.3 and 1.4.1.2.1. KG&E requests will be made by the DEM through the state officials.

Q.C.2 Federal resources and their times of arrival at various facility sites are not given (C.1.b).

R.C.2 Federal resources which may be utilized during an event at WCGS and their response times are as follows:

Dept. of Energy:	
Albuquerque Operations Office	- 48 hours
Nuclear Regulatory Commission:	
Region IV	- 12 "
Federal Emergency Management	
Agency: Region VII	- 4 "

Descriptions of the agency's capabilities are provided in 44 CFR 351, NUREG-0845, NUREG-0728, NUREG-0729 and NUREG-0730. Additional information is provided in Supplement CC, Letters of Agreement of the WCGS Emergency Response Plan.

Q.C.3 Additional information concerning the resources available to support the federal response is needed (C.1.c).

R.C.3 The federal response is supported by the TSC and EOF where space and equipment have been provided for key federal personnel as per NUREG-0696. Descriptions of these command posts and occupancies are provided in Sections 4.1.1.2, 4.1.1.4 and Table 4.1-1 of the WCGS Emergency Plan. Telecommunications equipment as described in Section 4.2 of the Plan is available to personnel at these centers. Parking lot space adjacent to the EOF provides an area for the location of federal response vehicles with power and sanitary services available at the EOF. Open fields beyond the parking lot provide access for helicopters and the Burlington Municipal Airport is available for light plane traffic.

SNUPPS-WC

Additional state and county facilities are provided and described in the State and County Plans to augment the facilities of the licensee.

- Q.C.4 Onsite laboratories are identified; however, information about their capabilities is not specified. Also, offsite (support) laboratories and their capabilities are not adequately discussed (C.3).
- R.C.4 Onsite laboratories consist of a radiochem (hot) lab, radwaste lab, and turbine building chemistry lab located in the powerblock. A bioassay lab, chemistry lab and an environmental counting lab are located onsite. The laboratories and analytical equipment meet state certification requirements for NPDES water quality analysis and are capable of processing a wide range of samples including highly radioactive contaminated samples via the self-contained post-accident sampling system and low level environmental samples via high efficiency intrinsic detectors. More detail of the plant's laboratories is provided in Section 12.5.

In addition to the onsite laboratories, an environmental laboratory exists offsite at the EOF for the processing of routine and emergency field samples. The State of Kansas Bureau of Radiation Control maintains complete laboratory facilities in Topeka which are available to further augment the processing of emergency samples should it be necessary.

WCGS laboratories are available 24 hours per day. State laboratories are available upon request.

- Q.C.5 Some letters of agreement are not present for contractors, utilities, etc. With regard to the letters contained, neither the text of the plan nor the letters contain sufficient detail about the kind of assistance or capabilities to be provided (C.4).
- R.C.5 Supplement CC provides a list identifying the organizations, facilities, etc. which have been selected to support an emergency response at WCGS. Contractor, utility and vendor support is covered via the INPO Generic Services Agreements. Update of the letters is being performed and the new editions will be provided in the next revision to the Plan.

D. Emergency Classification System

Q.D.1. The emergency classification scheme does not conform to the criteria of NUREG-0654, Appendix 1. Numerous initiating conditions are absent and also absent are most of the actual plant system parameters. The licensee's plan should be upgraded to conform with NUREG-0654 (see also NUREG-0818 for guidance) or describe an alternative scheme that meets the intent of the planning standard.

R.D.1 Response to be provided later.

E. Notification Methods and Procedures

- Q.E.1. Mutually agreeable bases for notification of response organizations consistent with the EAL scheme, as set forth in NUREG-0654 Appendix 1, should be presented in the plan (E.1).
- R.E.1 Procedures for notification and verification of messages are provided in the EIPs. As presently established, the DED is responsible for notification of local authorities in the event of an Unusual Event, Alert, Site Area or General Emergency. Notification message forms have been developed and are included in the EIPs for all the above emergency classifications. The notification form contains information for verification of the message. The primary method of notification for local and state officials is through the Coffey County Sheriff's office which is manned on a 24-hour basis. Additionally, the DED notifies KG&E System Operations, who in turn notifies Corporate personnel, Wolf Creek Management Personnel and the NRC. Follow-up notification forms have also been developed and are included within the EIPs.
- Q.E.2 Additional detail (beyond a reference to a notification procedure) identifying the means for alerting, notifying, and mobilizing response personnel is needed (E.2).
- R.E.2 See the response to Question E.1.
- Q.E.3 The contents of initial emergency messages should include information about recommendations for protective measures (E.3).
- R.E.3 The contents of each initial emergency message include information about recommendations for protective measures, class of emergency, whether a release is taking place, and if offsite assistance is required (ambulance, fire department or sheriff). The emergency message forms are included in the EIPs.
- Q.E.4 Additional detail (beyond a reference to an emergency procedure) identifying the kind of information contained in followup emergency messages is needed (E.4).
- R.E.4 The contents of each follow-up emergency message includes information about, or have sufficient space for, recommendations for protective measures, class of emergency, support requests, meteorological conditions, dose projections/measurements, release

SNUPPS-WC

data, sample data, response actions in progress at the plant and accident prognosis evaluation. The emergency message forms are included in the EIPs.

Q.E.5 The plan should include an adequate description of the administrative and physical means for prompt alerting of all individuals within the EPZ (to include testing of the prompt notification system) (E.6).

R.E.5 Supplement EE of the Plan provides a description of the alert and notification system. Presently this supplement is under revision as the alert system has been upgraded. The revision will be provided with the next update of the Plan.

The latest system plans call for seven sirens at high population areas and approximately 700 tone alert radios to cover low population zones. The Coffey County Sheriff will activate the system following consultation with KG&E and state personnel when possible. Negotiations with county and city officials indicate that maintenance and administrative control of the systems components will be the responsibility of that governmental entity in which the siren resides, as they will additionally be used for fire and adverse weather alerting locally. Complete cycle tests will be performed annually during the exercise; however, siren function verification will occur more frequently during their secondary fire and weather usage.

Q.E.6 Although county and State plans contain messages intended for the public, these messages or sufficient detail describing their contents should be included in the plan (E.7).

R.E.6 Meetings to develop messages for the public have been held with county and state public information personnel. Standardized written messages will be developed for the following: announcement of site area and general emergencies, shelter advisories, respiratory protection, evacuation of pregnant women and preschoolers, the use of radioprotective drugs, evacuation information and evacuation routes. KG&E, county and state public information personnel will release these messages jointly. Copies of the standard messages appear in the State and County Plans and in the Wolf Creek EIPs.

F. Emergency Communications

Q.F.1 Table 4.2-1 needs to be clarified and made consistent with Section 4.2 of the plan (F.1.b).

R.F.1 Section 4.2 and Table 4.2-1 are under revision to incorporate the latest communications changes. Present design provides for a primary telephone link and backup radio link between the EOF and county and state EOCs. Clarification of Table 4.2-1 will be made in the next Plan revision.

Q.F.2 The provisions for communication between the licensee and State/local EOC's are inadequate. Further, clarification about the communication capabilities between the licensee and their offsite/onsite radiological monitoring teams is needed (F.1.d).

R.F.2 The EOF has been designed to meet NUREG-0696 communications recommendations as well as provide for primary land line and backup radio communications to the county and State EOCs.

The Radiological Monitoring Teams are outfitted with portable radios which are capable of communicating with the plant and EOF from any point within the 10 mile EPZ. The EOF serves as a central dispatch for all outgoing and incoming county, state and utility communications to the teams.

Section 4.3.2.2 of the Plan will be revised to provide this information.

Q.F.3 Because the plan does not clearly identify where in-plant radiological monitoring teams are to assemble, it cannot be determined if adequate communication with this assembly point is established (F.1.f).

R.F.3 The TSC and EOF maintain regular and dedicated telecommunications with the NRC. See Section 4.2.1.3.3. These communication systems include connection to the NRC EMS and Health Physics Network.

Radiological monitoring teams are initially dispatched from the TSC until activation of the EOF is effected, therefore, communications links are always available between the NRC and radiological monitoring teams.

Q.F.4 Clarification is needed about the communication link between the licensee and mobile medical facilities (F.2).

R.F.4 Mobile medical assistance is alerted and called to the plant via telephone or radio via county sheriff office relay. Once the ambulance is released from the plant, a call is made to alert the recipient hospital. The need and establishment of a field hospital is highly improbable; however, if this is necessary, portable radios from KG&E or the state will be distributed to provide communication to the EOF.

G. Public Education and Information

Q.G.1 The dissemination of public information (i.e., how the public will be notified and what their actions should be) is described in the plan as a future event (i.e., "will be established"). The licensee should describe what is planned (G.1).

R.G.1 Section 5.4 of the WCGS Plan will be revised. As discussed in the response to Question E.6, meetings with county and state public information personnel have been held to establish the mechanism for disseminating information to the public. Present plans call for educational information on radiation, protective measures, information contacts and special needs of the handicapped to appear annually as an attachment to the county's telephone directories. Additionally, a leaflet expanding upon this information will be sent out annually as an enclosure to each resident's county tax packet. The public recreational areas of John Redmond Reservoir and the U.S. Fish and Wildlife Refuge will be provided information boards repeating this information and containing leaflets for transient population coverage. Periodic meetings have been scheduled to cover special interest groups.

The text of information provided has not been developed but information on radiation is expected to come from established industry sources such as AIF. The contact for additional information is the County Emergency Preparedness Office and KG&E's Education Center (visitors center) representative. Protective measures reflect those of the County Plan and handicapped special needs are coordinated through the County's Emergency Preparedness Office.

Q.G.2 Additional information (beyond "posting in public areas") describing the public information program directed at permanent and transient individuals within the EPZ is needed (G.2).

R.G.2 See response to G.1. Further public awareness will be mediated through the annual exercise and its accompanied high degree of publicity, periodic alert system tests and meetings with special interest groups.

Q.G.3 Coordinated arrangements for dealing with rumors need to be clarified (G.4.c).

R.G.3 Rumor control is provided initially through the training and public information programs which have

SNUPPS-WC

been designed to educate the public and make them less susceptible to rumor development. Once an event occurs, rumor control is affected through the county EOC which serves as a central point for public inquiries. Identified rumors are forwarded to the EOF where Emergency Broadcast System (EBS) and commercial media releases are jointly issued by a team of licensee, county and state media information personnel.

H. Emergency Facilities and Equipment

Q.H.1 The plan should indicate whether personnel required for the TSC are capable of bringing this response facility to full operational status within 30 minutes. Also, the plan does not indicate the measuring capability of radioiodine monitoring equipment in the TSC (H.1).

R.H.1 If an emergency condition requires activation of the TSC during normal working hours, the TSC will be up to full operational status well within the 30 minute time frame. If the condition requiring the TSC activation occurs other than normal work hours which requires personnel to report in from offsite, the present plans are for reporting personnel to initially report to the offsite education center, and as plant/site conditions allow to progress to the TSC. Due to the location from the site of some of the personnel assigned to the TSC, it or the EOF should be fully manned and activated within a 60 minute time period following notification. This 60 minute period is the maximum anticipated with many key personnel available within 30 minutes. The EPIPs provide guidance for activation of the TSC, OSC and EOF.

The offsite education center contains the EOF. Critical information and communications equipment available at the TSC are also available at the EOF. Thus, by offsite individuals reporting initially to the EOF prior to progressing to the TSC, there is no delay in establishing communications or evaluating information and plant conditions.

The measuring capability of the radioiodine monitoring equipment in the TSC provides a minimum designed detectable level of $1.0 \text{ E-}07 \text{ uCi/cc}$ radioiodine.

Q.H.2 Alternate onsite OSC locations (in the event of OSC evacuation) should be discussed in more detail (H.1).

R.H.2 Alternate onsite OSC locations are selected by the Duty Emergency Director in the event the OSC becomes uninhabitable. The selection of an alternate OSC is dependent upon conditions at the time. Other onsite buildings which could be selected as an alternate OSC include the Administration Building and Warehouse. Additionally, the DED may have a few essential individuals report to the TSC with the remaining personnel from the OSC reporting to the EOF.

Q.H.3 Clarification is needed as to whether the EOF ventilation system incorporates a HEPA filtration apparatus. Additional information concerning the radiation monitoring capability (especially radioiodine) should be provided. Also, discussion of the staffing capabilities needed to ensure full functional operation within 1 hour after activation is needed (H.2).

R.H.3 The EOF ventilation system incorporates a HEPA alternative system. Radioiodine monitoring with a minimum detectable level of $1.0 \text{ E-}07 \text{ uCi/cc}$ is provided at the EOF.

The corporate emergency support organization will be activated during any Site Area or General Emergency and may be activated during an Alert if deemed necessary. The EOF will be activated in the event of a Site Area or General Emergency. In the event of a Site Area or General Emergency, or if the DED or DEM has directed the EOF be activated, the individual assigned as EOF Coordinator will report to the EOF within one hour of its activation. His responsibilities and duties are delineated in the EPIPs. The DEM will direct the notification of corporate personnel who are to man the EOF as per the EPIPs. The EOF manning by corporate personnel will be completed within four hours of EOF activation.

Q.H.4 Radiological and process monitors used in the EAL scheme should be identified by location, type, range, set points, etc. (H.5).

R.H.4 Radiological and process monitors used in the EAL scheme and their specifics are provided in Table 2.2-3. The details of their use are presented in our response to Question D.1.

Q.H.5 Provisions for onsite hydrologic monitors should be discussed (H.5.a).

R.H.5 Wolf Creek is a "dry site" as defined by Regulatory Guide 1.102. The plant site is located above the design basis flood level. Consequently, the need to monitor lake level or the levels in the nearby creeks or the Neosho River is not necessary since no conceivable floods could reach the plant site.

Q.H.6 A discussion of the provisions for seismic and hydrologic monitors offsite should be provided (H.6.a).

- R.H.6 For hydrologic monitors see the response to Question H.5.

Wolf Creek is located in the Central Stable Region of the North American Continent. No earthquake epicenter has been reported closer than 40 miles to the site, and the nearest shocks have had epicentral intensities no greater than Modified Mercalli Intensity (MMI) III. At distances of about 90 miles from the site, two earthquakes of MMI VII have been recorded. Since 1800, only eight earthquakes of MMI V or greater have occurred within 100 miles of the plant. Recorded earthquakes have not generated intensities greater than VI at the plant. None of the buildings in the vicinity of the site have sustained any known structural damage, nor is there any geological evidence of major ground motion. Consequently, the need at Wolf Creek for data from off-site seismic monitors or analysis equipment seems very remote. The need to have an agreement in place to obtain this data or services seems an unnecessary burden.

Plant seismic monitors are described in E-Plan Section 4.3.3.2 and Standard Plant FSAR Section 3.7(B). These onsite monitors are the devices which will determine the actions at the plant in accordance with the Technical Specifications for any detected seismic activity.

In summary, the possibility of any significant offsite seismic activity in the State of Kansas is very remote and safety-related activities are based on onsite seismic monitors. KG&E has no plans to obtain offsite seismic information.

- Q.H.7 The plan does not indicate if dosimetry provided by offsite radiological monitors meets as a minimum, the NRC Radiological Assessment Branch Technical Position for the Environmental Radiological Monitoring Program (H.6.b).
- R.H.7 Dosimetry provided for offsite radiological monitors utilizes that of the Operational Radiological Environmental Monitoring Program at WCGS, which meets the NRC Radiological Assessment Branch Technical Position.
- Q.H.8 Although inplant laboratory backup facilities are available and analytical equipment can be moved to the EOF if necessary, the plan does not indicate if provisions have been made to have access to offsite laboratories operated by private or government organizations (H.6.c).

SNUPPS-WC

- R.H.8 Inplant and EOF laboratories and the post-accident sampling system have been specifically designed and outfitted to preclude the use of offsite private or governmental facilities. Should the need arise during an event, consideration will be given to use of the state laboratories in Topeka, private laboratories under contract to KG&E or laboratories of neighboring utilities who are signature of the INPO general services agreement.
- Q.H.9 Additional information about the adequacy of the emergency kits at the EOF is needed (H.7).
- R.H.9 The EOF emergency kit will be maintained and inventoried on a regular basis as delineated in the station EPIPs. General content categories of the EOF emergency kit include protective equipment, communications equipment, radiological monitoring equipment and emergency supplies. The Site Health Physicist is responsible for ensuring all emergency kit contents are maintained, inventoried and inspected. The EPIPs will contain an inventory list of equipment for each emergency kit onsite and at the EOF. Additionally, this equipment may be augmented by other onsite equipment.

The following is a listing of recommended equipment to be placed in the EOF emergency kit. Items and quantity may be added, changed or deleted when emergency kits are established and stocked.

EOF EMERGENCY KIT

<u>EQUIPMENT</u>	<u>QUANTITY</u>
Air Sampler	2
Frisker	2
Paper Coveralls	20
Hoods	20
Rubber Overshoes	20 pairs
Shoe Covers	20 pairs
Rubber Gloves	20 pairs
Air Sample Fltrs.-Part	20
Air Sample Cart.-Charcoal	10
Face Masks w/Cannister	20
Spare Part. Cannister	20
Dosimeters (0-5R)	20
Dosimeters (0-200R)	30
Dosimeters (0-50R)	30
Masking Tape	5 rolls
Small Plastic Bags	10 boxes
Large Yellow Bags	2 boxes
TLDS	50

EOF EMERGENCY KIT (cont'd)

<u>EQUIPMENT</u>	<u>QUANTITY</u>
Flashlights	10
Spare Batteries (D)	20
First Aid Kit	2
Radiation Rope	500 feet
Thyroid (KI) Pills	2 bottles
Dosimeter Charger	2
Dosimeter Charger Batteries	4
Pencils	2 dozen
Paper	10 packages
Pens	2 dozen
Stop Watch	2
Emergency Log Sheets	200
Pencil Sharpener	1
Stapler	1
Staples	1 box
3 Hole Punch	1

Q.H.10 The plan does not indicate whether sufficient instrument/equipment reserves are available to replace those removed for calibration or repair (H.10).

R.H.10 Sufficient spare instruments/equipment is onsite to provide replacements. For those items removed from the kits for calibration or repair, an equivalent operable instrument will be placed in the kit.

I. Accident Assessment

Q.I.1 More specific information should be provided detailing the resources available and their capabilities with regard to Items II.B.3, II.F.1, and III.D.3.3 of NUREG-0737 (I.2).

R.I.1 Discussions on NUREG-0737 items are found in Chapter 18.0 of the FSAR. The specific items cited are found in the following FSAR Sections:

II.B.3 - Standard Plant Section 18.2.3
II.F.1 - Standard Plant Section 18.2.12
III.D.3.3 - Section 18.3.5

Q.I.2 Additional information concerning the means for determining the magnitude of release and relating source term to offsite doses based on containment leakage is needed to complete the review (I.3).

R.I.2 The magnitude of release is determined by a combination of effluent activity monitors, effluent activity samplers, effluent flow rates and plant sample analysis. The Radioactive Release Information System (RRIS) computer system provides continual surveillance of these parameters and generates real time activity release values which are distributed over an isotopic spectrum according to the results of effluent samples which are periodically subjected to multi-channel analyzer scans. Sample spectra can be adjusted for radioactive decay if an interruption occurs in regular sampling. Dose estimates to points in the environs of the site are possible by use of actual meteorological and activity release data and performing a modified straight-line Gaussian or Gaussian puff calculation.

Predictions of future release dose impacts are performed by utilizing in-containment high range monitors to provide gross readings of radioactivity, which are then converted to isotopic source terms by using the isotopic ratios provided by multi-channel analyzers of the post-accident sampling system. These source terms are tracked through a model of the plant to the release points at future times. Predicted meteorological conditions are then used to yield field dose projections.

The computer software employed by the RRIS retains the flexibility to allow user substitution of key data values such that variations in the projections due to potential changes in leak rates, source terms, meteorology, etc., may be investigated.

SNUPPS-WC

- Q I.3 Additional information concerning meteorological capability is needed in order to complete the review [See Annex 1] (I.5).
- R.I.3 Answer provided in Annex 1.
- Q.I.4 Because offsite monitoring teams may include county and State personnel, clarification as to whether these individuals are considered as part of the minimum augmentation staffing is needed. Further, the plan should indicate to whom these individuals will report during an emergency (I.7).
- R.I.4 Onsite personnel initially staff the field monitoring teams and will do so until activation of the EOF and arrival of offsite support. County and state personnel serving on these teams at a later time are not considered part of the minimum augmentation staffing. During the initial stage of the emergency team members report to the shift supervisor, serving as DED. Upon his arrival, team direction passes to the Radiological Emergency Coordinator (REC). Upon activation of the EOF and arrival of offsite personnel team direction is transferred to the Radiological Assessment Manager.
- Q.I.5 The transportation needs and the estimated deployment times for the response of field teams should be addressed (I.8).
- R.I.5 WCGS maintains a fleet of vehicles which are assigned to the station and available 24 hours per day for the transportation needs of field teams. Should it be necessary and upon approval of the DED, field team deployment can be affected within one hour post event declaration. Field team augmentation by county and state personnel is possible within four hours of event declaration.
- Q.I.6 Because the plan does not indicate whether silver zeolite or other suitable material is being used, there is no way of determining the influence of noble gases on radioiodine measuring capability. The licensee should provide additional information (I.9).
- R.I.6 KG&E's plans for iodine monitoring sampling capability are provided in Section 18.3.5 which discusses NUREG-0737 Item III.D.3.3.

J. Protective Response

Q.J.1 The evacuation of onsite personnel should not be predicated on 10 CFR 20 limits, but should be based on the EAL scheme as it relates to emergency classification [i.e., Unusual Event, Alert, Site Area and General Emergency]. A change in the plan to reflect this concept is needed (J.1).

R.J.1 The Plan will be revised to incorporate the EAL scheme described in the response to Question D.1 for evacuation of onsite individuals and individuals who may be within areas controlled by KG&E including employees not having emergency assignments, visitors, contractors and construction personnel, and those persons who may be within the owner controlled area.

The station EIPs for evacuation and accountability for a local area evacuation, plant evacuation and site area evacuation will require the DED to assess the situation and make determination of the level of evacuation based on the EAL scheme and potential for further degradation and immediate hazards to personnel.

Q.J.2 Specific references to applicable contamination monitoring procedures and decontamination procedures is necessary (J.3).

R.J.2 Personnel evacuated from the site are monitored for contamination in accordance with an EPIP. The procedure provides a discussion of contamination and its control, special measures to be instituted for spills and methods for dealing with contaminated persons. Numerous data forms are provided. The Radiological Emergency Coordinator and staff are responsible for carrying out this duty.

Q.J.3 Sufficient detail about decontamination capabilities (especially radioiodine decontamination) should be included. Also, clarify how the decontamination teams obtain their equipment and supplies (J.4).

R.J.3 Decontamination is performed as per an EPIP and the station's Operational Radiation Protection Plan. The EPIP addresses the use of radioprotective drugs as a prophylactic.

The decontamination teams include a member of the health physics staff and utilize equipment available for routine activities. The Radiological Emergency Coordinator is responsible for requesting additional

supplies from the Administrative Resources Manager should those at the plant be unavailable for use.

- Q.J.4 The plan does not clearly identify where evacuation team members will report and to whom they are responsible (J.5).
- R.J.4 The EPIPs provide instructions for the evacuation of personnel for a local area evacuation, plant evacuation and site evacuation, as well as accountability of personnel within 30 minutes of the evacuation. The Evacuation Team Members will report to the Shop Building Assembly Point, which is part of the OSC. As per the EPIPs, the Evacuation Team Members report to the Support Activities Coordinator (SAC) in the OSC. The Evacuation Team is comprised of a team leader, an alternate team leader, member of security and personnel trained in the use of radiation monitoring equipment, methods, procedures and requirements.
- Q.J.5 Provisions for accountability of missing persons (to include their names) within 30 minutes is not discussed. Contamination accountability methods (i.e., identification and record of contaminated and non-contaminated individuals) is not addressed (J.5).
- R.J.5 Methods for accountability of personnel onsite within 30 minutes following the emergency and continuously thereafter have been developed and are delineated in the station EPIPs.

Following a local area evacuation or a plant evacuation, personnel will report to their assigned evacuation stations and the Shop Building Assembly Point. All personnel on shift will report to the Supervising Operator in the Control Room. The DED will initiate an evacuation checklist which includes completion of personnel accountability. Non plant staff personnel and visitors will report to, or be escorted to the main security gate where they will remain until accounted for by the Security force and released by the evacuation team members assigned that function. Security will provide a printout of all personnel onsite and will deliver it to the Evacuation Team Leader in the OSC. The SAC will make a personnel accountability of OSC personnel, the Radiological Emergency Coordinator an accountability of TSC personnel, Operating Supervisor an accountability of on shift personnel, the Security Supervisor an accountability of Security personnel and the Evacuation Team Leader an accountability of personnel assembled in the Shop Building area. The

Evacuation Team leader will then contact the SAC, REC, Security Supervisor and Supervising Operator for a report of their accountabilities. He will use a checklist which is included in the EIPs to document the accountability and list any missing personnel. He will report the accountability results to the DED.

The method of accountability is generally the same for a site area evacuation and accountability except that Security will not call up a printout of personnel onsite until all those who evacuate to the off-site assembly area have carded out. The accountability for the TSC and onshift personnel is the same as for local or plant accountability. Road blocks into the station will be established and vehicles of evacuating personnel will be segregated at the offsite assembly point until they can be monitored.

The station EIPs provide additional detail on evacuation and accountability.

The station EIPs contain decontamination instructions, guidelines and provides the necessary records of individuals who become contaminated. The Personnel Contamination Record contains the individual's name, employer, department, job title, as well as additional information regarding the contamination such as part of body contaminated, levels of contamination before decontamination and following decontamination. Methods for determining if the individual is a potential inhalation or ingestion contamination case are also provided and a separate Inhalation and Ingestion Test Data Record for those who are, will be filled out. The information contained on these records will be reviewed by the Site Health Physicist and included in the individual's exposure record, as required.

- Q.J.6 Clarify Section 3.3.1.2 of the plan. Additional information about dedicated respiratory protection devices and dedicated protective clothing is necessary. Further, the administration of KI should reflect the latest recommendations of the FDA (J.6).
- R.J.6 Section 3.3.1.2 of the Plan will be clarified in the next revision. Individuals onsite have access to operational stores of respiratory protective devices and protective clothing. These are stored at several locations with limited distributions included as part of the emergency kits to assure availability. During extended events, this equipment is stockpiled at the EOF for provisions to emergency workers who

plan to enter radiologically contaminated or potentially contaminated areas.

The use of KI is described in the EIPs. The procedure provides for FDA recommendations, general instruction and administration of KI along with the appropriate data forms and logs of usage.

Q.J.7 The plan should describe a mechanism for recommending protective actions based on plant conditions (i.e., core/containment conditions). These recommendations should take into consideration offsite circumstances that may influence the choice of the most effective protective action response (e.g., evacuation time of the construction personnel). Limiting protective actions to only the downwind direction should not be employed exclusively. Recommendations for evacuation for 2 miles around the site and 5 miles downwind under core melt conditions, as well as sheltering of persons within the plume EPZ for General Emergencies may be necessary at times. This mechanism should be reviewed by local authorities (J.10.m).

R.J.7 Protective actions are made based upon event diagnosis as per our response to Question D.1. Recommendations for protective actions are made with consideration of offsite circumstances such as weather, discussions with state and local officials, etc. Recommendation to evacuate all or part of the 10 mile EPZ is made during a Site Area Emergency within sufficient time to evacuate those affected should an analysis of plant conditions indicate imminent and irrevocable loss of all three fission product barriers. Recommendation to evacuate similiar areas during a General Emergency is made if meteorological and radiological information indicates there is sufficient time to remove persons, otherwise a shelter advisory is issued for the affected sectors.

K. Radiological Exposure Control

- Q.K.1 Clarification is needed in Section 3.3.1.3 concerning the individual ultimately responsible for personnel exposure control (K.2).
- R.K.1 Section 3.3.1.3 will be clarified in the next Plan revision. The DED initially and later DEM upon his arrival is ultimately responsible for personnel exposure control.
- Q.K.2 The plan should provide more information on how the onsite emergency radiation protection program will differ from the normal program (e.g., use of portable high range instruments, automatic use of respiratory protection during entries, emergency RWP's, etc.). In addition, risk reduction techniques such as briefings and practice runs should be discussed along with how the emergency radiation protection procedures will be implemented (K.2).
- R.K.2 During an emergency, the Radiological Emergency Team will be activated. This Team will cover emergency sampling and surveying analysis and evaluation of hazards. They will operate under EIPs but in many cases will use standard operational procedures. Dry runs, drills, etc., will be used when possible to identify and eliminate or reduce risks from over-exposures. The ALARA program will be used to evaluate the Emergency Team effort to ensure that it is in accordance with ALARA concepts.
- Q.K.3 More detail concerning the methods of exposure control (to include the reading of self-reading dosimeters at appropriate frequencies) is needed (K.3).
- R.K.3 Daily computer printouts will be posted and available for emergency personnel. Personnel are indoctrinated in General Employee Training and Emergency Plan Training to keep track of their exposure. This includes details about reading dosimeters. Individual radiation exposure limits are outlined in the EIPs as well as who can authorize changes to these limits.
- Q.K.4 The Plan does not contain action levels used in determining the need for decontaminating personnel (K.5.a). Contamination control for food supplies and drinking water is not discussed. The criteria for returning areas and equipment to normal use should be addressed (K.6).

R.K.4 Contamination limits are outlined in station procedures and are referenced in EIPs. Contamination limits for food supplies and drinking water are based upon State of Kansas Protective Action Guides, a section of which is presented as Table 3.0-5 of the Plan.

M. Recovery and Reentry Planning and Post-accident Operations

Q.M.1 The criteria by which decisions to relax protective measures are reached (this process should consider both existing and potential conditions) should be included in the plan. Further, the plan should reference specific procedures to be used in implementing recovery/reentry actions (M.1).

R.M.1 The station EPIPs will provide the general plans and procedures for re-entry and recovery and will describe the means by which decisions to relax protective measures (e.g., allow re-entry into an evacuated area) are reached.

Evaluation of the three fission product barrier status as described in the response to Question D.1 will be used for de-escalation. As the situation improves and barriers are restored, the next lower level of event is declared. De-escalation may also occur if conditions have stabilized such that the potential for re-escalation to a higher level has been removed and a controlled situation exists.

Guidelines will be provided for initial site re-entry, such as from the EOF, and for re-entry to the plant and/or local areas. The DED will assign the responsibility of Re-entry Search and Rescue Coordinator to the Operations Emergency Coordinator (OEC), REC or the SAC. The Re-entry Coordinator will assemble a Radiation Emergency Team which will include at least one member of the Health Physics group and an individual knowledgeable of site, plant or area layout. The EPIPs will contain guidelines for specific re-entry complications such as high radiation, wreckage and fire.

Q.M.2 The plan should state that there are provisions to periodically estimate total population dose (M.4).

R.M.2 The Radioactive Release Information System (RRIS) has the capability to provide cumulative population doses at anytime after accident initiation. The RRIS section of the Plan will be revised to state this.

N. Exercise and Drills

Q.N.1 Clarification is needed: the plan does not address full-scale versus small-scale exercises and does not address the frequency of State participation in the EPZ and Ingestion zones [see 10 CFR 50.47(b.14) and Appendix E (IV.f)] (N.1).

R.N.1 WCGS is the only commercial nuclear station within the State of Kansas. Its plume exposure zone is contained within Coffey County. The plume exposure and ingestion pathway zones are both contained within the State of Kansas. This being the case, by 10 CFR 50, Appendix E, IV f(1.a); a full-scale exercise must be performed each year to allow "state and local government within the plume exposure pathway EPZ to participate in at least one full-scale exercise per year."

KG&E has acknowledged the performance of an annual full-scale exercise in the Plan.

EMERGENCY PLANNING QUESTIONS
ANNEX 1

Plan Section 3.1.3

- Q.I.3.1 Provide a clarification of the "plume tracking capabilities" of the Radioactive Release Information System (RRIS). "Plume tracking" in this context appears to be a misnomer unless real-time radiological monitoring information is processed through the RRIS. Most likely, the RRIS includes the capability for plume projection which can be confirmed through radiological monitoring in the field.
- R.I.3.1 The NRC observation is correct. The Radioactive Release Information System (RRIS) does not provide "plume tracking capabilities," but near-real time estimates (15-minute averages) of the plume location and distribution. Field radiological monitoring can be used to confirm the RRIS projections.
- Q.I.3.2 No description of the atmospheric dispersion model has been included in the Emergency Plan, except for an ambiguous reference to "methodology similar to that prescribed in US NRC Regulatory Guide 1.145." This regulatory guide describes a straight-line Gaussian atmospheric dispersion model with consideration of increased lateral diffusion during certain conditions for releases at or near ground-level. However, the increased lateral diffusion considered in Regulatory Guide 1.145 pertains only to hourly averaged conditions and not for the 15-minute averages considered for emergency planning. Provide a complete description of the atmospheric dispersion model to be used for dose assessment and plume projection for both the initial assessment and for follow-up assessments provided through the Technical Support Center and Emergency Operations Facility. Justify use of the selected model to provide assessments of real-time atmospheric dispersion conditions of the Wolf Creek site and throughout the plume exposure emergency planning zone.
- R.I.3.2 The software is being developed to use a straight-line Gaussian plume diffusion model, based upon Regulatory Guide 1.145 and employing 15-minute averaged conditions for an initial assessment. Discrete meanders in the plume which have not "averaged out" are contained roughly within the isopleths calculated for this initial assessment which will rapidly provide a number necessary for timely event classification.

A second atmospheric dispersion model is used for a more comprehensive assessment. This model uses a discrete, Gaussian puff analysis and tracks individual release puffs as they are affected by the 15-minute averaged wind and stability conditions. The number of puffs tracked during a 15-minute period vary, depending upon the existing windspeed. The effects of the individual puffs are summed to provide a detailed estimate of the release isopleths after the accident.

The Gaussian diffusion models were developed specifically for a flat terrain and adequately describe dispersion characteristics in the area of WCGS.

- Q.I.3.3 Provide clarification of the reference to "estimated meteorological...data" to be used in a backup method of dose projection should the RRIS become inoperative.
- R.I.3.3 The "estimated meteorological data" to be used in the backup dose projection method includes windspeed and direction, degree of cloud cover and whether it is day or night. These parameters are used to determine an atmospheric stability class based on Table 3.3 of the USAEC document: Meteorology and Atomic Energy - 1968 (TID-24190). Dose rate at the site boundary is then determined and a generic set of relative isodose curves may be used to estimate the extent of the plume. The dose rate estimate and the generic curves are based on Figures 3.10 and 3.11 of the same AEC document.

Section 4.3.3.1

- Q.I.3.4 Provide a description of the mechanism for transmittal of meteorological data from the onsite towers (primary and back-up) to the RRIS computer. Indicate whether data available to the RRIS computer will also be available to other users (such as the NRC) through remote interrogation. Also indicate how measurement of dry bulb temperature and dewpoint temperatures will be used (see first paragraph page 4.3-5).
- R.I.3.4 Redundant meteorological instruments are provided on KG&E's tower. Consequently, no backup met tower is planned. Backup data can be obtained from nearby met stations should the redundant instrumentation be inoperable.

Signals from meteorological monitoring instruments will be converted from analog to digital and buf-

ferred in a remote I/O multiplexor; they will be transmitted via an asynchronous serial link and error checked by CRC-16 protocol upon arrival at the RRIS.

Data will be available to the NRC through remote interrogation of the RRIS, should the NRC develop this capability.

Dry bulb temperature is measured at various levels to determine vertical temperature gradient for use in atmospheric dispersion calculations. Dewpoint temperature is not used in atmospheric dispersion calculations and will be removed from this paragraph in the next revision of this Plan.

Q.I.3.5 Provide a description of the displays of meteorological data in the control room, Technical Support Center, and Emergency Operations Facility, including a description of the determination of 15-minute averages of important parameters and the amount of past data that will be available. Also, clarify the parameters to be displayed in the control room, TSC, and EOF. From the description in paragraph two on page 4.3-5, continuous read-outs of only wind speed and wind direction are to be available in the control room. No mention is made of the display of an atmospheric stability indicator.

R.I.3.5 A tabular display of the following meteorological parameters is available at the TSC, the EOF and in the control room:

- wind speed and direction at 10 meters and 60 meters
- delta temperature between 10-60 meter levels
- wind direction variability measurements at 60 meters
- reference (or dry bulb) temperature at 10 meters
- atmospheric stability class

Measurements are made every five seconds for wind direction and wind direction variability 15-minute averages. Measurements made at one minute intervals are used in calculating 15-minute averages for all other parameters.

Data from the past week will be available for display.

Q I.3.6 Provide a clarification of the determination of vertical temperature gradient. Apparently, four resistance temperature detectors (RTDs) are located at the 10 meter level of the primary tower. One RTD is used to provide dry bulb temperature, and one RTD is coupled with an RTD at the 60 meter level to provide a measurement of vertical temperature gradient. Of what use are the remaining RTDs at the 10 meter level?

R.I.3.6 The remaining two RTDs are used to provide backup measurements of vertical temperature gradient.