



Duke Energy Corporation

McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-9340

(704) 875-4800 OFFICE
(704) 875-4809 FAX

H. B. Barron
Vice President

March 28, 2000

Document Control Desk
Nuclear Regulatory Commission
Washington, DC 20555

Subject: McGuire Nuclear Station
Docket Nos. 50-369 and 50-370
Emergency Plan Revision of Table B-1

The attachment to this letter is a proposed revision to the McGuire Nuclear Station Emergency Plan. Duke is proposing to reinstate a provision to Table B-1 (Minimum Staffing Requirements for Emergencies) that was inadvertently omitted in a previous Emergency Plan change. Pursuant to 10 CFR Part 50.54(q) Duke has determined that this proposed change requires NRC approval prior to implementation.

McGuire Nuclear Station has maintained a comprehensive Emergency Plan in accordance with the guidance provided in NUREG-0654, 10 CFR Part 50 and NUREG-0737. The Emergency Plan, as revised, will continue to meet the requirements of the regulations and the guidance stated in NUREG-0654, Rev. 1, Table B-1 and 10 CFR Part 50.47(b)(2) and NUREG-0737.

Attachment A provides the supporting justification for the proposed change. Attachment B provides the proposed revision to Table B-1 of the McGuire Emergency Plan. Please contact Steve Mooneyhan at (704) 875-4646 or Kay Crane at (704) 875-4306 for questions concerning this proposal.

Sincerely,

H. B. Barron
Site VP
McGuire Nuclear Station

A045

U.S. Nuclear Regulatory Commission
March 28, 2000
Page 2

xc: w/attachments (2 copies)

L. A. Reyes
Regional Administrator, NRC Region II
U. S. Nuclear Regulatory Commission
61 Forsyth Street, S. W., Suite 23T85
Atlanta, GA 30303

W/0 attachments

Frank Ranaldi
NRC Senior Project Manager (McGuire)
U. S. Nuclear Regulatory Commission
Mail Stop O-8H-12
Washington DC, 20555-0001

Scott Shaeffer,
Senior Resident Inspector
U. S. Nuclear Regulatory Commission
McGuire Nuclear Station

bcc: Mike Tuckman
Bryan Dolan
Dick Sweigart
Bill Foster
Dhiaa Jamil
Jack Peele
Mike Cash
Mark Patrick
Scott Bradshaw
Sonny Lipe
Alvin Hinson
Mike Thorne
Tom Beadle
Steve Mooneyhan
Tina Kuhr
Becky Hasty
Kay Crane
NSRB, EC05N
Electronic Licensing Library (EC050)
EP File 1502

Duke Power Company
P.O. Box 1006
Charlotte, NC 28201-1006

M. S. TUCKMAN
Senior Vice President
Nuclear Generation
(704)382-2200 Office
(704)382-4360 Fax



DUKE POWER

July 25, 1996

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Catawba Nuclear Station
Docket Nos. 50-413, 50-414
License Nos. NPF-35, NPF-52
NRC TACs M92623, M92624
McGuire Nuclear Station
Docket Nos. 50-369, 50-370
License Nos. NPF-9, NPF-17
NRC TACs M92462, M92463
Oconee Nuclear Station
Docket Nos. 50-269, 50-270, 50-287
License Numbers NPF-38, NPF-47, NPF-55
NRC TACs M92485, M92486, M92487
Revision of Table B-1 (NUREG-0654)

Refs.: Emergency Plan Change Submittal dated May 8, 1995

Attachment 1 contains the additional information requested by Mr. Bill Meier and Dave LaBarge on June 26, 1996, regarding relaxing the response time for two field monitoring responders from 45 to 75 minutes. Attachment 2 contains a discussion of augmentation for firefighting, rescue operations and first aid and a revised Table B-1, as requested by Mr. Bill Meier on July 17, 1996. Please contact Tina Kuhr at (704) 382-3151 if there are any questions on this information.

Sincerely,

M. S. Tuckman

M. S. Tuckman
Senior Vice President, Nuclear Generation

Attachments

Document Control Desk

July 25, 1996

xc:

S. D. Ebnetter, Regional Administrator
USNRC, Region II (2 copies)

P. S. Tam, Project Manager
USNRC, ONRR

V. Nerses, Project Manager
USNRC, ONRR

D. E. LaBarge, Project Manager
USNRC, ONRR

R. J. Freudenberger, Senior Resident Inspector
Catawba Nuclear Station

S. M. Shaeffer, Senior Resident Inspector
McGuire Nuclear Station

P. E. Harmon, Senior Resident Inspector
Oconee Nuclear Station

Document Control Desk

July 25, 1996

bcc:

J. W. Hampton
T. C. McMeekin
W. R. McCollum
B. L. Peele
E. M. Geddie
G. R. Peterson
W. W. Foster
J. W. Boyle
M. E. Patrick
J. A. Twiggs
S. A. Coy
L. E. Loucks
D. M. Hubbard
M. K. Nazar
T. P. Harrall
J. E. Burchfield
J. E. Snyder
M. S. Kitlan
G. A. Copp
G. T. Hamrick
R. P. Michael
R. M. Propst
M. D. Thorne
R. L. Hasty
S. R. Christopher
E. M. Kuhr
R. L. Gill
P. R. Newton

NCMPA-1

SREC

PMPA

NCEMC

ELL

NSRB

NEP File #1500

Attachment 1
Out of Plant Surveys

Many changes have occurred in the area of emergency classification and immediate protective actions since NUREG-0654, Rev. 1, was published. Detailed dose assessment and field monitoring data are not needed to determine immediate Protective Action Recommendations. Substantial core damage is necessary to create radiological effluents significant enough to exceed EPA Protective Action Guide levels offsite.

Of the events involving core damage, only a small percentage involve early releases. From a review of Probabilistic Risk Assessment Results, less than 3% of internal core damage event frequency involves a Large Early Release. Note that PRA results define "early" as "within 5 hours." When both internal and external events are considered, about 8% of the total core damage frequency involves a large early release for Catawba, with less for the other two sites. This information was derived from the IPE submittals.

Core damage can be clearly detected and determined in the control room. Core damage is only one of several indications upon which a General Emergency Classification is based. Duke Power has implemented guidance (effective 1/1/94 for McGuire and Catawba, in 1992 for Oconee) similar to that in the NRC's Response Technical Manual (NUREG/BR-0150). This has significantly increased the conservatism in our protective action recommendations over previous guidance based upon Information Notice 83-28.

Upon entry into a General Emergency classification, our plants will recommend evacuation of the 2-mile radius and 5-mile downwind sectors, and recommend that the remainder of the 10-mile EPZ be sheltered. For wind speeds less than 5 miles per hour, all sectors are considered to be downwind, and the Operations Shift Manager/Emergency Coordinator would recommend evacuation of the 5-mile radius. Due to the complex meteorology at Oconee, the Operations Shift Manager/Emergency Coordinator would always recommend evacuation of the 5-mile radius, with the remainder of the EPZ to be sheltered. Real time meteorological information (wind speed/wind direction) is available in the control room.

Field monitoring data is used to confirm dose assessment or provide indication of an unmonitored release. Information has been provided earlier about staff augmentation in the area of dose assessment. Field monitoring up to the protected area fence is performed by RP techs on shift. If activity is detected out of plant, it is assumed that the activity is beyond the fence also. That then becomes the information for the Emergency Coordinator to use in Emergency Classification (e.g. indication of loss of the containment barrier) and for the guidance of offsite surveys when they are available in 75 minutes.

In addition, our agreement with the states and counties is that we are only required to indicate whether or not the event involves a release on the initial notification message. Detailed dose information is provided as it becomes available.

Attachment 2
Local Support Response

Duke Power is revising the Proposed Table B-1 in the area of augmentation for Firefighting and Rescue Operations and First Aid. (See revised Table B-1 on next page.)

Augmentation for firefighting, rescue operations, and first aid is provided by local support. As soon as the need for local support is recognized, the request for resources is made. The local support agencies respond in accordance with existing letters of agreement. Response is expected to occur similar to any other industrial facility. Our on shift capabilities in these areas are described below.

Firefighting

Duke Nuclear Sites are required to staff a five member fire brigade per Design Basis Documents. Current company policy provides additional members of the fire brigade beyond those required. The additional members of the fire brigade have their priorities determined by the Operations Support Center. This fire brigade is required to be self sufficient within Nuclear Safety Related areas by NRC regulations. The Duke Power fire brigades are trained as interior structural fire fighters. Sufficient equipment is provided to attack any anticipated fires within these areas. The local support fire departments provide a secondary line of defense.

Rescue Operations and First Aid

Duke Powers' sites provide on shift resources trained to the DOT first responder level and trained in rescue operations. These personnel have been trained in confined space rescue and rope rescue. The on shift resources have been provided to be self sufficient in rescue and first aid operation to provide care to the patient within the critical first hour.

TABLE B-1 (PROPOSED)
DUKE POWER COMPANY
MINIMUM STAFFING LEVELS

MAJOR FUNCTIONAL AREA	MAJOR TASKS	POSITION TITLE OR EXPERTISE	ON SHIFT*	CAPABILITY FOR ADDITIONS WITHIN 75 MINUTES
Plant Operations and Assessment of Operational Aspects		Unit Supv. (SRO) Control Room SRO Control Room Operators Nuc. Equip. Operators	1 1 2 2	
Emergency Direction and Control (Emergency Coordinator)		Operations Shift Manger Station Manager	1	1
Notification/ Communication	Notify Company Personnel, State, County, Federal Agencies and Maintain Communication	Offsite Communicator	1**	2
Emergency Operations Facility (EOF) Radiological Accident Assessment and Support	EOF Director Dose Assessment Plant Status Access Control Communications Offsite Surveys	Senior Manager Rad. Assessment Manager Ops. Interface Manager (ONS) Accdt. Assmt. Mgr. (CNS&MNS) Access Control Offsite Communications FMT Members (2 Teams)		1 1*** 1 1**** 1 2 4
Radiological Support and Protective Actions	RP Coverage for Repair/Corrective Actions Count Room Search & Rescue Contaminated Injury Medical Response Firefighting Out of plant surveys Inplant surveys	RP Technicians Computer-Program until TSC activated	2	10
	Chem/Radwaste Operations	Chemistry Technician Radwaste Operator	1	1
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Manager (STA) Core/Thermal Hydraulics Electrical Engineering Mechanical Engineering	1 **	1**** 1 1
	Repair and Corrective Actions	Mechanical Maintenance I&E Technician	1 2	1 2
Firefighting	—	Fire Brigade	Per DBD	†
Rescue Operations and First-Aid	—	MERT Team	2**	†
Site Access Control and Personnel Accountability	Security, Personnel Accountability	Security Personnel	All Per Security Plan	--

TABLE B-1 (PROPOSED)
DUKE POWER COMPANY
MINIMUM STAFFING LEVELS

The 75 minute clock begins at the time of the initial Emergency Classification. The TSC/OSC are required to be activated within the same time. The EOF must be operational within 75 minutes of the Emergency Declaration. All facilities are required to be activated at an Alert or Higher Classification.

- * For each unaffected nuclear unit in operation, at least one unit supervisor, one control room operator, and one non-licensed operator should be maintained. For units sharing a control room, the unit supervisor may be shared between units if all functions are covered.

- ** Provided by shift personnel assigned other responsibilities
 - ◆ Operations personnel from unaffected units serve as a communicator to the offsite agencies and the NRC.

 - ◆ Shift Work Control Manager serving as the STA performs core thermal-hydraulic evaluations.

- *** Rad. Assessment Manager in the EOF will be responsible for providing assistance to the TSC for dose assessment.

- **** Accident Assessment Manager in the Catawba & McGuire EOF will provide additional support to the Technical Support Center in the area of core thermal hydraulics within 75 minutes. Oconee utilizes a Nuclear Engineer in the TSC to provide the support within 75 minutes.

- † Augmentation in these areas is provided by local support. The local support agencies respond in accordance with existing letters of agreement. Response is expected to occur similar to any other industrial facility.

Duke Power Company
P.O. Box 1006
Charlotte, NC 28201-1006

M. S. TUCKMAN
Senior Vice President
Nuclear Generation
(704)382-2200 Office
(704)382-4360 Fax



DUKE POWER

May 31, 1996

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Catawba Nuclear Station
Docket Nos. 50-413, 50-414
License Nos. NPF-35, NPF-52
NRC TACs M92623, M92624
McGuire Nuclear Station
Docket Nos. 50-369, 50-370
License Nos. NPF-9, NPF-17
NRC TACs M92462, M92463
Oconee Nuclear Station
Docket Nos. 50-269, 50-270, 50-287
License Numbers NPF-38, NPF-47, NPF-55
NRC TACs M92485, M92486, M92487
Revision of Table B-1 (NUREG-0654)

Ref.: Emergency Plan Change Submittal dated May 8, 1995

Attached is written documentation of the questions and answers regarding our Emergency Plan submittal of May 8, 1995, which was discussed in a conference call with Bill Maier, EP Specialist, ONRR; Ed Fox, Senior EP Specialist, ONRR; and Peter Tam, Project Manager, ONRR on May 22, 1996. Please contact Tina Kuhr at (704) 382-3151 if there are any questions on this information.

Sincerely,

M. S. Tuckman

M. S. Tuckman
Senior Vice President
Nuclear Generation

Attachment

Document Control Desk

May 31, 1996

Page 2

xc:

S. D. Ebnetter, Regional Administrator
USNRC, Region II (2 copies)

P. S. Tam, Project Manager
USNRC, ONRR

V. Nerses, Project Manager
USNRC, ONRR

D. E. LaBarge, Project Manager
USNRC, ONRR

R. J. Freudenberger, Senior Resident Inspector
Catawba Nuclear Station

G. F. Maxwell, Senior Resident Inspector
McGuire Nuclear Station

P. E. Harmon, Senior Resident Inspector
Oconee Nuclear Station

Document Control Desk

May 31, 1996

Page 3

bcc:

J. W. Hampton
T. C. McMeekin
W. R. McCollum
B. L. Peele
E. M. Geddie
G. R. Peterson
W. W. Foster
B. J. Dolan
M. E. Patrick
J. A. Twiggs
W. F. Byrum
S. A. Coy
L. E. Loucks
D. M. Hubbard
M. K. Nazar
T. P. Harrall
J. E. Burchfield
J. E. Snyder
M. S. Kitlan
G. A. Copp
G. T. Hamrick
R. P. Michael
R. M. Probst
J. R. Brown
R. L. Hasty
S. R. Christopher
E. M. Kuhr
R. L. Gill
P. R. Newton
NCMPA-1
SREC
PMPA
NCEMC
ELL
NSRB
NEP File #1500

Attachment 1

Response to NRC Questions
on Table B-1 submittal dated May 8, 1995

Q1: Are the numbers listed in Attachment B of the proposal the number of responders for the entire site, or the number of responders per reactor at each site?

A1: The Control Room staffing (top row of table) is per unit. The other responders are on a "per site" basis.

Q2: If "per reactor," then are all numbers multiplied by 3 at Oconee and by 2 at McGuire and Catawba?

A2: No. See response to question #1.

Q3: Have any changes been made to the proposal since it was originally submitted?

A3: No changes have been made. Additional information was sent to Falk Cantor for explanation only.

Q4: Dose Assessment -- We published EPPOS #3 as guidance for our inspectors -- described a need to keep real-time meteorology dose assessment capability on-shift. Are you aware of this? If not, how does that affect the proposal?

A4: EPPOS #3 was published on 11/8/95, after our submittal was made. We were aware that it had been published.

Many changes have occurred in the area of emergency classification and immediate protective actions since NUREG-0654, Rev. 1 was published. NUREG-0654 and other NRC documents required dose projections to determine protective action recommendations. Duke Power no longer requires control room dose assessment to make protective action recommendations. Substantial core damage is necessary to create radiological effluents significant enough to exceed EPA Protective Action Guide levels offsite. Core damage can be clearly detected and determined in the control room. Core damage is only one of several indications upon which a General Emergency Classification is based. Duke Power has implemented guidance (effective 1/1/94 for McGuire and Catawba, in 1992 for Oconee) similar to that in the NRC's

Response Technical Manual (NUREG/BR-0150). This has significantly increased the conservatism in our protective action recommendations over previous guidance based upon Information Notice 83-28.

Upon entry into a General Emergency classification, our plants will recommend evacuation of the 2-mile radius and 5-mile downwind sectors, and recommend that the remainder of the 10-mile EPZ be sheltered. For wind speeds less than 5 miles per hour, all sectors are considered to be downwind, and the Operations Shift Manager/Emergency Coordinator would recommend evacuation of the 5-mile radius. Due to the complex meteorology at Oconee, the Operations Shift Manager/Emergency Coordinator would always recommend evacuation of the 5-mile radius, with the remainder of the EPZ to be sheltered. Real time meteorological information (wind speed/wind direction) is available in the control room.

McGuire and Catawba have also implemented, effective 1/1/94, Radiological Effluent Emergency Classifications similar to the NUMARC/NESP-007, Rev. 2 guidance for the Site Area and General Emergency classifications. If site boundary dose is projected to exceed the EPA Protective Action Guide levels of 1 Rem TEDE or 5 Rem CDE (Adult Thyroid), then a General Emergency will be declared. These Radiological Effluent EALs include default monitor readings to be used by the Operations Shift Manager/Emergency Coordinator in the event that dose assessment capability is not available. Worst case annual average meteorological conditions were used to develop the default monitor readings. This is considered "adverse meteorology." The control room has the ability to determine if sectors beyond 5 miles are potentially affected based on core damage assessment (activity in containment greater than gap activity).

On 11/1/95, Oconee implemented an Emergency Classification scheme based upon NUMARC/NESP-007, Rev. 2. This scheme was reviewed and approved by the NRC on 4/10/95. If site boundary dose is projected to exceed the EPA Protective Action Guide levels of 1 Rem TEDE or 5 Rem CDE (Adult Thyroid), then a General Emergency will be declared. The Radiological Effluent EALs include default monitor readings to be used by the Operations Shift Manager/Emergency Coordinator in the event that dose assessment capability is not available, or a dose assessment cannot be completed

within fifteen minutes. There are monitor reading EALs based on readings for both the Containment Monitors and Unit Vent Monitors. The Containment Monitor readings are dependent on time after reactor trip (since that affects the core isotopic inventory). Annual average meteorological conditions, consistent with the ODCM as required by the NUMARC/NESP-007, were used to develop the default monitor readings. We performed a dose assessment to develop the Containment Monitor nomogram, which is an acceptable alternative to real time control room dose assessment.

With the combination of the Radiological Effluent EALs and default protective action recommendations, it is Duke Power's position that an assessment of offsite dose consequences has been made, eliminating the need for ad hoc dose assessment in the control room. Dose Assessment capability will be available from the TSC within 75 minutes of an Alert declaration.

Q5: Regarding the RP tech. staffing at the OSC, Att. A of the proposal states an additional RP techs would report to the OSC. Table faxed to the NRC on 12/19/95 says a total of 10 RP techs will report to the OSC within 75 minutes. Do those RP techs include the on-shift techs.

A5: Att. B shows 2 RP Techs on shift, with the ability to add 10 in 75 minutes, for a total of 12.

Q6: Tables for communicator on-shift do not list them as having other concurrent duties (i.e., no double asterisk). Proposal Att. A states that personnel from unaffected units handle communications until relieved by the TSC. Which is correct?

A6: Attachment B to the proposal dated 5/8/95 does have the double asterisk. See pages 13-14 of that submittal. Operations personnel from the unaffected unit or other station groups (e.g., McGuire uses the Work Control SRO) provide the communicator function.

Q7: If you do use personnel from the unaffected units to handle the communications, then how do you envision handling communications for an event that affects all units at the site (e.g. loss of offsite power, natural hazard, or security event?)

A7: Duke Power would consider those emergencies that affect multiple units to apply to the entire site. We would appoint one communicator and send one notification form to the offsite agencies, giving the status of all the units. Shift staffing is sufficient to have one communicator available.

Q8: Are control rooms at the sites readily accessible from each other?

A8: At Catawba and McGuire, both units share a control room. At Oconee, Units 1 and 2 share a control room, while the Unit 3 control room is nearby -- less than a two minute walk from the Unit 1&2 control room. Emergency response procedures and communications capability are also available in the Unit 3 control room.

Q9: Re: Attachment C of proposal, why is the figure for maintaining 4 RP techs on shift given at \$128K, but only \$28 for 2?

A9: Per Attachment C, the cost difference for maintaining four (4) on shift versus two (2) is strictly a function of overtime expense required to maintain the staffing level (coverage for vacation, holidays, sickness, etc.). For four (4) on shift the overtime cost is approx. \$123.5K, and for two (2) on shift it is approx. \$28.9K. Naturally, the overtime expense is typically only incurred during nights and weekends due to the flexibility to use day shift personnel on days. Note: The cost savings does not include any realized savings due to personnel staffing reductions because the intention is to increase the flexibility of the overall RP organization by using the freed-up shift resources elsewhere.

Q10: Re: count room tech -- was this individual cross-qualified for general RP tech duties, were they used as such, and does their elimination reduce the number of techs on shift by 2? Who will do the count room function?

A10: There is always at least one person on duty who is trained and qualified to perform the countroom function. This person would be one of the two RP techs assigned to shift. The countroom tech is cross-trained to perform other RP duties. The countroom person will be used to eliminate

one position by being able to perform other general RP duties.

Note: At Duke Power facilities, Chemistry pulls liquid samples. The countroom personnel only perform automated analysis of the liquid sample.

Q11: If the 45 minute responders are being kept on-shift, why was there a need to go to 45 minute response time instead of 30 minutes?

A11: We have not routinely put 45 minute responders on shift. We have taken credit for some positions (e.g. maintenance) being kept on shift for other reasons than emergency response. The 45 minutes (vs. 30 minutes) is an existing licensing agreement based upon the remote locations of Oconee, McGuire, and Catawba. The 45 minutes is timed from event declaration, not personnel notification.

Q12: Have you drilled with the proposed augmentation scheme?

A12: No. We did not plan to implement this change until it was approved. Oconee did a table top drill involving the new RP minimum staffing (2 RP technicians). During the table top, the RP techs discussed their responses to the scenario events and were able to manage the events until additional resources would have been available.

Q13: Have you validated procedures with the proposed augmentation scheme?

A13: Groups have evaluated the procedures and determined that the numbers are sufficient. Enough personnel are available to handle the requirements. Most procedures only require one person to perform them. Those that require more have been evaluated by I&E maintenance personnel and they have determined that sufficient resources are available. Duke Power uses group pages to alert all ERO members simultaneously. Personnel will begin arriving soon after they are notified. As a result of analyzing the staffing requirements in Table B-1, RP has concluded that two (2) techs on shift can meet the stated requirements. In addition, two (2) techs on shift can meet the established work requirements during routine plant operation.

Q14: Is the proposed Attachment B to the proposal the only change that will be made to the plan under this proposal? If not, I need to see the complete plan change.

A14: Duke Power plans to implement this as a stand alone plan change.

Q15: How do you ensure that people are informed of the local rad. hazard before the 75 minute time?

- Emerg. entry procedure?
- RWP surveys?
- Audibility of DADS?
- sensitivity?

A15: Duke Power performs a Site Assembly and activates all Emergency Response Facilities at the Alert Classification. After that time, personnel entry into the plant and into the RCA is controlled through the OSC.

Available information for personnel regarding radiological hazards is as follows:

- 1) In-Plant Radiation Monitoring Data -- Radiation Monitoring data is available on computers located in the TSC, OSC, EOF and the Control Room and can be accessed by any personnel operating from one of these facilities. These process and area monitors provide RP personnel an overview of radiological conditions in the plant and around the site. This data is an important tool for RP in establishing what access controls and RP coverage is warranted.
- 2) Electronic Dosimetry -- Electronic dosimetry (ED) is worn by personnel when in the RCA and is available at the access points to the RCA and in the OSC. These dosimeters have dose and dose rate readout functions with corresponding alarm setpoints. Using our automated access system, the setpoints for these alarms are set automatically depending on which Radiation Work Permit (RWP) is used.

Personnel supporting the emergency are required to log on to Standing RWP (SRWP)#33 prior to entering the OSC. The setpoints established for this SRWP are 25 mrem

(dose alarm) and 100 mrem/hr (dose rate alarm). Depending on the job assigned to personnel, RP may direct personnel to use a different RWP with job specific setpoints. In addition, manual readers for EDs are available which can be used by RP to manually assign setpoints. These devices provide real time radiological data to the individual.

The audibility of the alarms for the EDs in large or high noise areas has been evaluated and determined to not be a problem.

Duke Power uses the Merlin-Gerin ED which uses a silicon detector. These devices are used to monitor gamma dose. Based on evaluation of accident scenarios, gamma sensitivity is expected to be sufficient to monitor and control personnel dose during emergency situations.

- 3) Planviews -- Elevations and individual rooms within the RCA are posted with a radiological planview which provides personnel information from the last survey performed in the area such as general area, contact, and hot spot dose rate information.
- 4) Future Plans -- McGuire is currently installing a Dose Rate Monitoring System that will provide multiple monitoring points throughout the RCA. Installation of the system is planned for May 1997 at Catawba and in 1998 for Oconee. The data from these monitors will be available on all site computers through the network.

The amount/type of RP job coverage provided will be determined based on the radiological conditions in the area from the information provided by the above data sources. The current operating philosophy of the OSC is that EDs can be used to provide coverage of OSC personnel without RP support as long as dose rates are less than 100 mrem/hr. If dose rates exceed 100 mrem/hr, then RP must evaluate jobs/tasks for RP support. RP personnel on shift are qualified to provide this RP support.

Prior to personnel leaving the OSC to perform work, a pre-job briefing is completed. The depth of the briefing may

vary based on the radiological conditions at the work area. The briefing covers items such as:

- Criticality of work
- Plant status
- Radiological conditions in work area and travel path to area
- Turn back or Stop Work levels
- RWP to be used (if different from SRWP 33)
- ED setpoints
- Expected response of personnel to ED alarms or in-plant area monitor alarms
- Appropriate contamination controls
- Safety concerns

Q16: How long does it take for field monitoring teams to be completely mobilized?

A16: Our current requirement is to augment with 2 persons in 45 minutes and 2 more in 75 minutes. Mobilization of field monitoring teams within 75 minutes has not been a problem in demonstrated after hours activation drills or actual classified emergencies (ref. Oconee Alert 11/91).

During normal working hours, field teams can be fully mobile in approximately 45 minutes. During nights or weekends under this proposal, when field teams would be called in, personnel would respond within 75 minutes. We expect them to be able to deploy to the field within 10 minutes after arriving onsite.



DUKE POWER

May 8, 1995

**Document Control Desk
Nuclear Regulatory Commission
Washington, DC**

**Subject: Duke Power Company
Revision of Table B-1 (NUREG 0654)
Oconee - Docket Nos. 50-269, -270, -287
McGuire - Docket Nos. 50-369, 50-370
Catawba - Docket Nos. 50-413, 50-414**

The purpose of this letter is to request prior approval of changes to minimum emergency staffing levels for Duke Power Company nuclear site emergency plans under the Cost Beneficial Licensing Actions (CBLA) process. This request is being made pursuant to 10 CFR Part 50.47(b)(2) and 10 CFR Part 50.54(q). We have determined that these changes will not decrease the effectiveness of our emergency plans and the plans as revised will continue to meet the requirements of the regulations.

The changes we wish to make include:

- ◆ Elimination of the 45-minute response for all categories
- ◆ Decrease the minimum number of radiation protection technicians assigned to shift
- ◆ Clarification of the core thermal hydraulics response for CNS and MNS
- ◆ Provide consistency between the three Duke Power Company nuclear sites in the development of the minimum shift staffing levels

Duke Power Company has developed comprehensive emergency plans at the respective nuclear sites. Standard guidance from NUREG 0654 and NUREG 0737 has been traditionally utilized in the past. However, technological advances coupled with fourteen years experience in emergency response have allowed us to improve productivity and effectiveness.

Page 2
NRC Document Control Desk
May 8, 1995

Duke Power proposes to change emergency response for minimum staffing levels to allow all three of the nuclear sites to have consistent staffing. We plan to deviate from the written guidance in NUREG 0654, Table B-1 and NUREG 0737. At the time these regulations were adopted, very little guidance had been provided in the area of emergency planning. Since the event at Three Mile Island in 1979, the nuclear industry has learned a great deal about planning for emergency situations. We have also gained valuable experience in establishing an organization to respond to an emergency.

Since 1991, the emergency response organization at the nuclear sites has been divided as follows:

- Onsite response - The Control Room, Technical Support Center and Operational Support Center have primary responsibility for accident assessment and core damage mitigation.
- Offsite response - The Emergency Operations Facility has responsibility for emergency classification, protective action recommendations, field monitoring, communications with offsite agencies, and direct contact with the news media.

Duke Power plans to activate all facilities at an Alert or higher classification. In addition, the Control Room Emergency Coordinator has the authority to activate the emergency facilities any time he determines the need for additional resources to assist with an event.

Attachment A and Attachment B provide the supporting justification of the proposed changes. Attachment C provides information relative to Cost Beneficial Licensing Action. Duke Power requests a meeting with the NRC to discuss our proposal at the earliest possible time. Coleman Jennings at the Oconee Nuclear Site (803) 885-3294 will contact Len Weins to establish the meeting.

Sincerely,



M. S. Tuckman
Senior VP
Nuclear Generation Department

Page 3
NRC Document Control Desk
May 8, 1995

xc: L. A. Wiens, ONRR NRC Project Manager, Oconee
Vic Nerses, ONRR NRC Project Manager, McGuire
R. E. Martin, ONRR NRC Project Manager, Catawba
P. E. Harmon, Oconee Senior Resident Inspector
George Maxwell, McGuire Senior Resident Inspector
R. J. Freudenberger, Catawba Senior Resident Inspector
S. D. Ebnetter, Regional Administrator, NRC Region II

bxc: J. W. Hampton
T. C. McMeekin
D. L. Rehn
B. L. Peele
Mac Getty
Bill McCollum
W. W. Foster
Mark Patrick
Bryan Dolan
Sarah Coy
Bill Byrum
Jim Twiggs
Dean Hubbard
Tom Harrell
Mano Nazar
J. E. Burchfield
Z. L. Taylor
J. E. Synder
George Hamrick
Russell Propst
Richard Michael
Skip Copp
Tina Kuhr
C. C. Jennings
Becky Hasty
Steve Christopher
M. E. Bailey
R. L. Gill
NSRB, EC05N
ELL - EC050
A. V. Carr

ATTACHMENT A

COMMUNICATIONS:

Proposal:

Duke Power proposes to eliminate the 45-minute augmentation in the area of communications. This change in response will not adversely affect our program and will not decrease the effectiveness of our plan.

Basis for Change:

Presently, the emergency plans indicate that an additional person is required to augment the control room within 45 minutes of an emergency declaration. Duke Power nuclear plant control rooms have sufficient staff personnel available to handle initial communications to offsite agencies (states, counties, and NRC) until the Technical Support Center is activated. All Duke Power nuclear sites are multiple unit sites and personnel from an unaffected unit are assigned to handle communications until relieved by the Technical Support Center staff.

Two additional people will be provided in the Technical Support Center (within 75 minutes) to relieve Operations of the responsibility for offsite notifications. Two additional people are also required to be available in the Emergency Operations Facility within 75 minutes of the initial emergency classification.

EMERGENCY OPERATIONS FACILITY -

A commitment was made to the NRC to have available at the EOF within 75 minutes of emergency declaration the following people: 1 Senior Manager, 1 Rad Assessment Manager, 1 person to provide accident assessment and plant status information, 1 person for access/control, 2 people for offsite communications. Offsite surveys are considered a part of the EOF and a minimum of two teams (4 people) will be available in 75 minutes to monitor the environment beyond the site boundary. This commitment is being added to Table B-1 to show the initial personnel response required for Emergency Operations Facility.

DOSE PROJECTION

Proposal:

Duke Power proposes to eliminate the 45-minute augmentation in the area of Dose Assessment. This change in response will not adversely affect our program and will not decrease the effectiveness of our plan.

ATTACHMENT A

Basis for Change:

Many changes have occurred in the area of emergency classification and immediate protective actions since 1981. NUREG 0654 and other NRC documents required dose projections to determine protective actions recommendations. Duke Power agrees with the NRC Response Technical Manual and RTM training in that protective action recommendations should be based on plant conditions. Duke Power response procedures require evacuation recommendations for close-in population upon entry into a General Emergency classification.

Dose projection is not required for initial emergency classification or to provide protective action recommendations at a General Emergency classification. Once the Emergency Operations Facility is operational, the Radiation Assessment Manager is available to provide assistance to the Technical Support Center in formulating dose assessments and associated protective action recommendations.

PROGRAM CLARIFICATION - Chemistry

The Chemistry Section at each Duke Power nuclear site is responsible for primary and secondary system sampling as well as handling radwaste operations. Presently, both Catawba and McGuire Emergency Plans have been approved by the NRC to maintain one Chemistry technician as minimum shift staffing. A radwaste operator is required to be available within 75 minutes.

Basis for Change for Oconee (only)

Radwaste staffing is not required during the initial stages of postulated accidents. For liquid waste processing, Operations controls the pumping of the reactor building sumps, high activity waste tanks, and low activity waste tanks which would receive the initial water from the accident. There is adequate tankage to store the water until Radwaste is staffed to process the water. In severe accident scenarios, water would not be transferred or processed until directed by the Technical Support Center to ensure the control of radioactivity. In the event of a primary to secondary tube leak, the Radwaste processing equipment is in a standby mode and requires no set up time.

This change allows Oconee to become consistent with both McGuire and Catawba relative to chemistry minimum shift staffing.

ATTACHMENT A

RADIATION PROTECTION PERSONNEL

Proposal:

Duke Power proposes to have a minimum of two radiation protection personnel on shift at all times to provide the following expertise until additional people are available in 75 minutes:

1. Coverage for repair/corrective actions as needed. Individual electronic dosimeters are used as standard dosimetry.
2. Search and rescue as requested.
3. Radiological consequence support to Medical Emergency Response Team, Fire Brigade, and Hazmat Emergency Team as needed.
4. Inplant surveys as required.
5. Radioanalysis (Count room coverage).
6. Onsite (out-of-plant but inside the protected area fence) surveys as needed.

Ten additional radiation protection technicians and/or supervisors/staff will report to the site within 75 minutes of emergency declaration. Additional radiation protection personnel will be called in as needed.

The emergency response organization recall system is established to handle events that could happen in a short period of time. Major events culminating in severe core damage and core uncover are not likely within 75 minutes. Past experience indicates time is available to contact additional people to respond as need arises.

This change in response will not adversely affect our program and will not decrease the effectiveness of our plan. An increase in the use of modern technology will provide additional assistance to our shift personnel.

ATTACHMENT A

Basis for changes:

Duke Power developed an emergency plan that covers the full spectrum of emergency conditions: radiological, fire, security, chemical spills, and flooding conditions. Presently, the nuclear site emergency plan requires a total of 17 radiation protection personnel to respond to any emergency condition classified under the emergency plan. Their responsibilities include offsite surveys, onsite (out-of-plant) surveys, inplant surveys, access control, coverage for repair actions, search and rescue, medical response, firefighting, personnel monitoring, dosimetry issue and dose calculations. The basis for these requirements is found in NUREG 0654 and NUREG 0737 which were both adopted in 1980-1981 after the Three-Mile Island event. Since that time, many technological advances have been developed in the area of radiation protection and data availability.

Immediate radiological concerns are not necessarily present at the onset of a classifiable emergency. Radiological problems occur primarily after the onset of fuel damage. In a declared emergency situation, Shift Radiation Protection personnel report to the Operational Support Center and work under the direction of the Emergency Coordinator (Operations Shift Manager) until the full emergency response organization is available. The Emergency Coordinator (Operations Shift Manager) along with input from the Radiation Protection personnel would determine the priorities for Radiation Protection support from the OSC.

Initial radiological support from the Radiation Protection onshift personnel would include the following:

- ◆ Obtaining radiological data inside the site protected area fence for use by the Emergency Coordinator (Operations Shift Manager) for emergency classification
- ◆ Provide radiological data to crews dispatched from the OSC to perform various plant lineups and maintenance
- ◆ Prepare turnover information to update the Radiation Protection Manager upon his arrival at the OSC
- ◆ Begin setup of the OSC to support Radiation Protection functions.

Note: The foregoing information has been shared and discussed with the Operations Shift Managers and Supervisors to ensure that all these responsibilities can be met by Radiation Protection personnel onsite in an appropriate and efficient manner.

The inplant radiation monitoring system can be interrogated from the Technical Support Center (TSC), the Operational Support Center (OSC) and the Emergency Operations Center (EOF) and is available to the Emergency Coordinator (Operations Shift Manager) in the Control Room, and the RP Shift Supervisor/lead technician in their normal work area to determine radiological conditions onsite. Both the process and area monitors can be evaluated from the described locations to determine the overall radiological conditions in the plant and for normal release points. The area monitors can be used extensively by the Radiation Protection personnel in the Operational Support Center to identify areas of concern in the plant and "safe" routes for teams dispatched from the OSC.

Presently, Duke Power uses the Electronic Dose Capture System (EDC) together with electronic alarming dosimeters as a secondary device. These electronic dosimeters are solid-state silicon detectors which are not subject to saturation concerns like GM detectors and have the capability to alarm on total accumulated dose, dose rate or time. The setpoints on these dosimeters are set either automatically or manually based on the Radiation Work Permit selected for the work to be performed. Each person responding to the emergency will use one of these dosimeters which reduces the need for Radiation Protection personnel to accompany each team dispatched from the OSC. This type of interface with Radiation Protection is the same as for work during non-emergencies.

Teams dispatched from the OSC (with or without a Radiation Protection Technician) during the first 75 minutes of an off-hours emergency, will use the information provided by the inplant radiation monitoring system, the electronic alarming dosimeter, together with specific instructions provided by Radiation Protection personnel in the OSC. These instructions would include turn back dose or dose rate levels and instructions on contacting the OSC should their dosimeters go into alarm. Most teams dispatched will be in constant communication with the OSC via hand-held radios. Those teams without radios would have access to telephone communications and plant page announcements.

ATTACHMENT A

SHIFT WORK MANAGER (STA) - Core Thermal Hydraulics (Catawba and McGuire only. Oconee has already been approved by the NRC for the STA to handle the core/thermal hydraulics duties for the first 75 minutes)

Both Catawba and McGuire maintain an individual onshift to perform the Shift Technical Advisor function which includes advising the Operations Shift Manager regarding core thermal hydraulics. This individual has an engineering degree and maintains an active SRO license and is specially trained to perform the STA function as described below:

1. Report to the control room within 10 minutes of notification to perform Shift Technical Advisor (STA) duties.
2. Perform an independent review of core status which involves monitoring of critical safety functions (safety parameter display system at CNS and MNS) to ensure the following are maintained:
 - ◆ Subcriticality
 - ◆ Core Cooling
 - ◆ Heat sink (Steam generator levels and feedwater flow)
 - ◆ Reactor Coolant System Integrity (pressure and temperature)
 - ◆ Containment Integrity (valve position)
 - ◆ Reactor Coolant System Integrity (level)
3. Review core status with Operations Shift Manager and/or Unit Supervisor.

ATTACHMENT A

REPAIR AND CORRECTIVE ACTIONS

Proposal:

Duke Power proposes to eliminate the 45-minute augmentation in the area of repair and corrective actions. This change in response will not adversely affect our program and will not decrease the effectiveness of our plan.

Basis for Change:

Presently Duke Power follows the guidance provided in NUREG 0654 for minimum staffing for repair and corrective actions as shown in the table below.

	On-Shift Staffing	45-Minute Response	75-Minute Response
Catawba, McGuire & Oconee	I&E - 1 MM - 1	I&E - 2	I&E - 1 MM - 1

NUREG 0654 states that both the mechanical and the I&E maintenance functions onshift may be provided by shift personnel assigned other functions. Duke proposes to change the minimum staffing level to require 2 qualified I&E technicians to be available as minimum on-shift staffing and to require two additional qualified I&E technicians to be available in the OSC within 75 minutes. The forty-five minute response requirement would be eliminated. One of the forty-five minute responders would be placed on shift and the other responder would report in 75 minutes. The mechanical maintenance staffing would remain as described above.

Duke is moving to multi-skilled maintenance teams on shift which will provide 24-hour coverage with technicians that have a primary expertise in either the I&E or Mechanical discipline. Each person would also have some training in the other discipline.

ATTACHMENT A

RESCUE OPERATIONS AND FIRST AID - Clarification (Oconee only)

Presently the Oconee Nuclear Site trains volunteer responders to the site Medical Emergency Response Team (MERT) utilizing the Department of Transportation (DOT) First Responder Program. Two people are required to be oncall each shift for response to a medical emergency. The Emergency Plan presently indicates that 2 additional people will respond in 75 minutes to assist with medical response. This is no longer required since our MERT program now requires two people per shift to respond to medical events. Local support is also available within approximately 15-20 minutes from the time of notification to the Oconee Memorial Hospital. This change is another step in providing consistency between the Duke Power nuclear sites for emergency response minimum staffing requirements.

Attachment B
TABLE B-1 (PROPOSED)

DUKE POWER COMPANY
MINIMUM STAFFING LEVELS

MAJOR FUNCTIONAL AREA	MAJOR TASKS	POSITION TITLE OR EXPERTISE	ON SHIFT*	CAPABILITY FOR ADDITIONS WITHIN 75 MINUTES
Plant Operations and Assessment of Operational Aspects		Unit Supv. (SRO) Control Room SRO Control Room Operators Nuc. Equip. Operators	1 1 2 2	— — — —
Emergency Director and Control (Emergency Coordinator)***		OPS Shift Manager Station Manager	1	1
Notification/Communication	Notify Company Personnel, State, County, Federal Agencies and Maintain Communication	Offsite Communicator	1**	2
Emergency Operations Facility (EOF) Radiological Accident Assessment and Support	EOF Director Dose Assessment Plant status Access & Control Communications Offsite Surveys	Senior Manager Rad. Assessment Manager Ops. Interface Mgr. (ONS) Accdt. Assmt. Mgr. (CNS&MS) Access/Control Offsite Communications FMT Members (2 Teams)		1 1*** 1 1**** 1 2 4
Radiological Support and Protective Actions	RP Coverage for Repair/Corrective Actions Count Room Search & Rescue Contaminated Injury Medical Response Firefighting Out of plant surveys Inplant surveys	RP Technicians Computer program until TSC activated	2	10
	Chem/Radwaste Operations	Chemistry Technician Radwaste Operator	1	1
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Manager (STA) Core/Thermal Hydraulics Electrical Engineering Mechanical Engineering	1 **	1**** 1 1
	Repair and Corrective Actions	Mechanical Maintenance I&E Technician	1 2	1 2
Firefighting	—	Fire Brigade	Per DBD	Local Support
Rescue Operations and First-Aid	—	MERT Team	2**	Local Support
Site Access Control and Personnel Accountability	Security, Personnel Accountability	Security Personnel	All Per Security Plan	—

~~TABLE 5-1 (REVISED)~~
DUKE POWER COMPANY
MINIMUM STAFFING LEVELS
(CONTINUED)

The 75-minute clock begins at the time of the initial Emergency Classification. The TSC/OSC are required to be activated within the same time. The EOF must be operational within 75 minutes of the emergency declaration. All facilities are required to be activated at an Alert or higher classification.

- * For each unaffected nuclear unit in operation, at least one unit supervisor, one control room operator, and one non-licensed operator should be maintained. For units sharing a control room, the unit supervisor may be shared between units if all functions are covered.
- ** Provided by shift personnel assigned other responsibilities -
 - ◆ Operations personnel from unaffected units serve as a communicator to the offsite agencies and the NRC.
 - ◆ Shift Work Control Manager serving as the STA performs core thermal-hydraulic evaluations.
- *** Rad Assessment Manager in the EOF will be responsible for providing assistance to the TSC for dose assessment.
- **** Accident Assessment Manager in the Catawba & McGuire EOF will provide additional support to the Technical Support Center in the area of core thermal hydraulics within 75 minutes. Oconee utilizes a Nuclear Engineer in the TSC to provide the support within 75 minutes.

ATTACHMENT C

BASIS FOR COST BENEFICIAL LICENSING ACTION

DESCRIPTION	CATAWBA (30 years remaining on a 40-year License)	MCGUIRE (27 years remaining on a 40-year License)	OCONEE (18 years remaining on a 40-year License)
Current cost of maintaining 4 RP technicians per shift	123,480	123,480	
Current cost of maintaining 3 RP technicians per shift			76,230
Less projected cost of maintaining 2 RP technicians per shift	28,980	28,980	28,980
Savings from reducing current-required minimum staffing levels	94,500	94,500	47,250
Savings generated over the remaining life of the station	\$ 2,835,000	\$ 2,351,500	\$ 850,500

CALCULATIONS FOR DETERMINING THE SAVINGS

CATAWBA AND MCGUIRE: (Both Catawba and McGuire Emergency Plans require 4 RP Technicians as minimum staffing).

Shift technician's average time off = 300 hours per year

Vacation = 160 hours

Holidays = 120 hours

Sickness/dependent care = 20 hours

Current cost of maintaining 4 RP technicians per shift:

If all RP Shift Technicians' off time required the use of overtime to maintain staffing level, the cost would be **\$189,940** per year calculated as follows:

300 hours/year x 20 technicians (5 shifts x 4) x \$31.50 OT/hour = **\$189,000** per year

ATTACHMENT C

CATAWBA/MCGUIRE (continued)

No overtime would be required Monday through Thursday from 7:00AM to 5:30PM (40 hours per week) as relief during these hours would be provided from the day shift RP staffing calculated as follows:

40 hours/week x 52 weeks/year x \$31.50 OT/hour = \$65,520 per year of non-overtime relief.

The current cost of maintaining 4 technicians on each shift is \$123,480 per year calculated as follows:

\$189,000 - \$65,520 = \$123,480 per year.

Projected cost of maintaining 2 RP technicians per shift:

If only 2 RP Shift Technicians' off time required the use of overtime to maintain staffing level, the cost would be \$94,500 per year calculated as follows:

300 hours/year x 10 technicians (5 shifts x 2) x \$31.50 OT/hour = \$94,500 per year

Since no overtime would be required on Monday through Thursday from 7:00AM to 5:30 PM (40 hours per week) as relief during these hours would be provided from the day shift RP staffing.

40 hours/week x 52 weeks/year x \$31.50 OT/hour = \$65,520 per year of non-overtime relief.

Projected cost of maintaining 2 RP Technicians on each shift is \$28,980 per year calculated as follows:

\$94,500 - \$65,520 = \$28,980

OCONEE: (Oconee Emergency Plan requires 3 RP Technicians as minimum staffing).

Shift technician's average time off = 300 hours per year

Vacation = 160 hours

Holidays = 120 hours

Sickness/dependent care = 20 hours

Current cost of maintaining 3 RP technicians per shift:

If all RP Shift Technicians' off time required the use of overtime to maintain staffing level, the cost would be \$141,750 per year calculated as follows:

300 hours/year x 15 technicians (5 shifts x 3) x \$31.50 OT/her = \$141,750 per year

No overtime would be required Monday through Thursday from 7:00AM to 5:30PM (40 hours per week) as relief during these hours would be provided from the day shift RP staffing calculated as follows:

40 hours/week x 52 weeks/year x \$31.50 OT/hour = \$65,520 per year of non-overtime relief.

The current cost of maintaining 3 technicians on each shift is \$123,480 per year calculated as follows:

\$141,750 - \$65,520 = \$76,230 per year.

420



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 12, 1996

Mr. M. S. Tuckman
Senior Vice President
Nuclear Generation
Duke Power Company
P.O. Box 1006
Charlotte, NC 28201

McGuire Nuclear Site
Vice President's Office
RECEIVED
NOV 19 1996
OFFICE/RECORDS COPY
FILE NO.

SUBJECT: CHANGES TO EMERGENCY PLAN STAFFING LEVELS FOR OCONEE, MCGUIRE, AND CATAWBA NUCLEAR STATIONS (TAC NOS. M92462, M92463, M92485, M92486, M92487, M92623, AND M92624)

Dear Mr. Tuckman:

By letters dated May 8, 1995, May 31, 1996, and July 25, 1996, Duke Power Company (DPC) proposed to eliminate reference to the 45-minute responders from the emergency plans for McGuire Nuclear Station Units 1 and 2, Oconee Nuclear Station Units 1, 2, and 3, and Catawba Nuclear Station Units 1 and 2. While Duke Power did not enumerate the request as such, the staff determined that the overall request consists of twelve separate proposals divided among the three stations.

As a result of our review, the staff has determined that nine of the twelve proposals would not decrease the effectiveness of the currently approved emergency plans at the three stations. Therefore, these nine proposals are approved. The staff has determined, however, that the other three proposals, if implemented with the nine already approved, would result in lowering emergency response personnel staffing levels to the point where the stations' abilities to adequately respond to the spectrum of anticipated accidents/events is questionable. For this reason, the staff has not approved these three proposals. Details of the individual proposals and conclusions about them are contained in the enclosed Safety Evaluations.

Since the proposals are interrelated, DPC may determine that a more cost beneficial combination of proposals exists than that which the staff has approved. If another such combination is more desirable, then a separate request should be submitted.

For your information, the staff has initiated a generic review of the guidance for minimum staffing levels for response to emergencies as well as the response times for augmentation of emergency response. The results of this review, when completed, may address some of your proposals.

M. S. Tuckman

-2-

This action closes the TAC numbers listed above.

Sincerely,



Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, 50-287,
50-369, 50-370, 50-413,
50-414

Enclosures: 1. Oconee Safety Evaluation
2. Catawba Safety Evaluation
3. McGuire Safety Evaluation

cc w/encl: See next page

Duke Power Company

Catawba Nuclear Station
McGuire Nuclear Station
Oconee Nuclear Station

cc:

Mr. M. S. Kitlan
Regulatory Compliance Manager
Duke Power Company
4800 Concord Road
York, South Carolina 29745

North Carolina Electric Membership
Corporation
P. O. Box 27306
Raleigh, North Carolina 27611

Mr. Paul R. Newton
Legal Department (PB05E)
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Saluda River Electric Cooperative,
Inc.
P. O. Box 929
Laurens, South Carolina 29360

J. Michael McGarry, III, Esquire
Winston and Strawn
1400 L Street, NW.
Washington, DC 20005

Senior Resident Inspector
4830 Concord Road
York, South Carolina 29745

North Carolina Municipal Power
Agency Number 1
1427 Meadowwood Boulevard
P. O. Box 29513
Raleigh, North Carolina 27626

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, NW Suite 2900
Atlanta, Georgia 30323

Mr. Peter R. Harden, IV
Account Sales Manager
Westinghouse Electric Corporation
Power Systems Field Sales
P. O. Box 7288
Charlotte, North Carolina 28241

Max Batavia, Chief
Bureau of Radiological Health
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

County Manager of York County
York County Courthouse
York, South Carolina 29745

Ms. Karen E. Long
Assistant Attorney General
North Carolina Department of Justice
P. O. Box 629
Raleigh, North Carolina 27602

Richard P. Wilson, Esquire
Assistant Attorney General
S.C. Attorney General's Office
P. O. Box 11549
Columbia, South Carolina 29211

Mr. G. A. Copp
Licensing - EC050
Duke Power Company
526 South Church Street
Charlotte, North Carolina 28242-0001

Piedmont Municipal Power Agency
121 Village Drive
Greer, South Carolina 29651

Mr. T. Richard Puryear
Owners Group (NCEMC)
Duke Power Company
4800 Concord Road
York, South Carolina 29745

Duke Power Company

Catawba Nuclear Station
McGuire Nuclear Station
Oconee Nuclear Station

cc:

Dr. John M. Barry
Mecklenburg County
Department of Environmental
Protection
700 N Tryon Street
Charlotte, North Carolina 29202

Mr. Ed Burchfield
Compliance
Duke Power Company
Oconee Nuclear Site
P. O. Box 1439
Seneca, South Carolina 29679

County Manager of Mecklenburg County
720 East Fourth Street
Charlotte, North Carolina 28202

Mr. Robert B. Borsum
Framatome Technologies
Suite 525
1700 Rockville Pike
Rockville, Maryland 20852

Mr. J. E. Snyder
Regulatory Compliance Manager
Duke Power Company
McGuire Nuclear Site
12700 Hagers Ferry Road
Huntersville, North Carolina 28078

Manager, LIS
NUS Corporation
2650 McCormick Drive, 3rd Floor
Clearwater, Florida 34619-1035

Senior Resident Inspector
c/o U.S. Nuclear Regulatory
Commission
12700 Hagers Ferry Road
Huntersville, North Carolina 28078

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
Route 2, Box 610
Seneca, South Carolina 29678

Mr. Dayne H. Brown, Director
Division of Radiation Protection
North Carolina Department of
Environmental Health and Natural
Resources
P. O. Box 27687
Raleigh, North Carolina 27611

Mr. W. R. McCollum
Site Vice President
Catawba Nuclear Station
Duke Power Company
4800 Concord Road
York, South Carolina 29745

County Supervisor of Oconee County
Walhalla, South Carolina 27621

Mr. T. C. McMeekin
Vice President, McGuire Site
Duke Power Company
12700 Hagers Ferry Road
Huntersville, North Carolina 28078

Mr. J. W. Hampton
Vice President, Oconee Site
Duke Power Company
P. O. Box 1439
Seneca, South Carolina 29679

Elaine Wathen, Lead REP Planner
Division of Emergency Management
116 West Jones Street
Raleigh, North Carolina 27603-1335



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO PROPOSED EMERGENCY PLAN STAFFING LEVEL CHANGE

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

DOCKET NOS. 50-269, 50-270, AND 50-287

I. BACKGROUND

By letter dated May 8, 1995, Duke Power Company requested a review and prior approval of changes to minimum emergency staffing levels for the nuclear site emergency plan for its Oconee Station. Duke Power requested the review under the Cost Beneficial Licensing Action (CBLA) process. The proposed savings in this case would be realized by reducing the number of on-shift responders and the overtime costs associated with maintaining these individuals on-shift.

Telephone calls between Duke Power and the NRC occurred on October 25, 1995, May 22 and June 26, 1996, to discuss some of these issues. Duke Power submitted additional information by letters dated May 31 and July 25, 1996, in response to questions raised by the NRC staff. This Safety Evaluation was written using information from the CBLA submittal, the letters of May 31 and July 25, 1996, and the contents of the currently approved site emergency plan and procedures.

II. APPLICABLE REGULATIONS AND GUIDANCE

10 CFR 50.47(b)(2)

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and interfaces among various on-site response activities and offsite support and response activities are specified.

10 CFR 50, Appendix E, IV. Content of Emergency Plans

The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiation emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, and recovery. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license shall contain information needed to demonstrate compliance with the standards described in 50.47(b), and they will be evaluated against those standards.

10 CFR 50, Appendix E, IV. A. Organization

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency.

Regulatory Guide 1.101 "Emergency Planning and Preparedness for Nuclear Power Reactors", C. Regulatory Position

The criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA-REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans.

NUREG-0654/FEMA-REP-1, Rev. 1, Criterion B. Onsite Emergency Organization

5. Each licensee shall specify the positions or title and major tasks to be performed by the persons assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1. (See Table B-1)

7. Each licensee shall specify the corporate management, administrative, and technical support personnel who will augment the plant staff as specified in the table entitled "Minimum Staffing Requirements for Nuclear Power Emergencies," (Table B-1) and in the following areas:

- a. logistic support for emergency personnel, ...;
- b. technical support for planning and reentry/recovery operations;
- c. management level interface with governmental authorities; and
- d. release of information to news media during an emergency (coordination with governmental authorities).

NUREG-0737 Supplement No. 1 "Clarification of TMI Action Plan Requirements"

Table 2, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies" (See Table 2). (Note: Table 2 of NUREG-0737 is the same information contained in Table B-1 of NUREG-0654. While the requirements of Supp. 1 of NUREG-0737 were mandated to the industry by Generic Letter 82-33, the Generic Letter states that the staffing levels contained in Table 2 are only goals, and not strict requirements.)

III. ANALYSIS

Duke Power Company currently uses an emergency staffing scheme that is slightly modified from that provided in Table B-1 of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Whereas NUREG-0654 specifies certain numbers of responders that should be available within 30 and 60 minutes of the declaration of an emergency, Duke Power Company, because of the remote locations of its sites, committed to respective 45 and 75-minute response times from the declaration of the Alert, or higher, emergency. Since all of Duke Power's response facilities are activated at an Alert classification, their 45 and 75-minute staffing commitments are referenced to the declaration time of the Alert condition. The proposal upon which this Safety Evaluation is based seeks to eliminate the 45-minute category of responders by placing one of those responders on shift, eliminating two of the positions and increasing the response time of the remainder to 75 minutes. Also, the proposal seeks to eliminate two of the on-shift personnel expected to respond to emergencies and increase their response times to 75 minutes. Finally, this proposal seeks to eliminate two 75-minute responders used for rescue operations and first-aid.

The NRC recognizes that the response times stated in the proposal and recounted in this Safety Evaluation represent maximum response times to which Duke Power intends to commit under the proposed change. The NRC also recognizes that for emergency response initiated during normal working hours, many more responders than the minimum noted in the proposal would arrive in considerably less time than the maximum times listed. Furthermore, the NRC recognizes that for emergency response initiated during backshifts, the arrival times for some responders would be sooner than the maximum times stated. However, in order to ensure a conservative analysis, the numbers of responders are assumed to be at the minimum committed level and the arrival times assumed to be at the maximum committed time lapse in the discussion which follows. All times (45 minutes or 75 minutes) mentioned in this Safety Evaluation are referenced to the declaration of the initiating Alert, Site Area Emergency or General Emergency declaration.

Duke Power's overall proposal consists of ten different staffing changes. Each proposed change is described and evaluated separately in this Safety Evaluation with separate conclusions for each. The goals stated in the submittal letter were as follows:

- Eliminate the 45-minute response for all categories of responders. Due to the difficulty of ensuring this response within 45 minutes of the declaration of an emergency by personnel responding from home during off-hours times, Duke Power maintains this response by keeping some of the 45-minute responders on shift. These responders are required to be able to perform their function within 45 minutes of an Alert declaration.
- Decrease the minimum number of radiation protection (RP) technicians assigned to shift.
- Provide consistency between the three Duke Power nuclear sites in the development of the minimum shift staffing levels.

The analysis of the specific staffing changes proposed to accomplish those goals are listed below:

1. Duke Power proposes to eliminate the one responder providing 45-minute augmentation in the area of communications. This responder is intended to augment the normal on-shift control room staff to notify offsite authorities of the emergency event. The existing plan and procedures call for a member of the control room staff from an unaffected unit to make such notifications. Since these notifications need to be made within 15 minutes of an emergency condition, the 45-minute responder is not able to assist in the initial notification, but rather with follow-up communications with offsite authorities. These follow-up communications are required at one hour intervals from the initial notification. Duke Power requires two additional communicators to report to both the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) within 75 minutes of the declaration of an Alert or higher emergency classification. These responders will be able to respond in time to perform these follow-up notifications.

Staff Analysis

Oconee is a three-unit site, and two of the Oconee units share a common control room. This arrangement provides for a readily available communicator for events affecting one of these units. The other unit's control room is a short distance away (less than a two minute walk) so that control room personnel are available within a reasonable amount of time to make a 15-minute notification for emergency conditions, which affect only one unit. For events affecting all three units, Duke Power relies on the training of non-licensed operators to handle communications while the control room staff handles plant response to the event.

Until the overall management of the event passes to the TSC or the Emergency Operations Facility (EOF), the Control Room is tasked with making offsite notifications. Included in the notification is a description of plant status and site environmental conditions. Control room operators are the most knowledgeable of these items during the initial stages of an emergency. The augmentation of an outside communicator from elsewhere in the plant or from offsite does not provide for as timely a transfer of information as does the use of operators familiar with the progress of the event. The value, to the Control Room, of a communicator responding to the TSC before that facility is fully functional is questionable, since the Control Room must direct that individual's actions remotely and this could be more burdensome to the Control Room staff.

Since the on-shift staff is most qualified to give informed notification of plant conditions, and since the augmentation of the communication function by an unfamiliar responder provides a very limited enhancement of this function, this particular proposal is acceptable.

2. Duke Power proposes to eliminate the responder providing 45-minute augmentation in the area of dose assessment, maintaining that dose projections are not required for initial emergency classification or to provide protective action recommendations (PARs) at a General Emergency classification. This function would be covered exclusively by the Rad Assessment Manager who would be required to report within 75 minutes of the Alert declaration to the EOF.

Staff Analysis

Nuclear power plant licensees must maintain, in accordance with Appendix E to 10 CFR Part 50, the capability to perform dose assessment using effluent release information and real-time meteorology at all times. The currently approved Oconee emergency plan does not require an on-shift capability for assessing or projecting the dose consequences of plant conditions or releases of radioactive materials. Until this, Appendix E required on-shift capability is restored, the need for early augmentation in this area is even greater than if the Control Room was able to project the dose consequences of a release of radioactive material.

In the event a General Emergency is declared by the on-shift Emergency Coordinator, the current emergency plan calls for a default PAR to be given regardless of meteorological conditions. That PAR calls for an evacuation of a 5-mile radius around the site. All other areas within the 10-mile emergency planning zone (EPZ) are sheltered. This PAR is given for any General Emergency declaration resulting from a release of radioactive material and is given by the Control Room Emergency Coordinator. The PAR is not modified in any way based on the meteorological conditions existing at the time of the release or declaration. Such a PAR, if based on a release of radioactive materials, may be overly conservative if it lacks refinement based on a real-time dose assessment. This would be particularly true if the meteorological conditions at the time of the declaration or release are such

that the doses at the site boundary are not actually at the General Emergency level. Conversely, if a unique combination of meteorological conditions and release rate existed such that a PAR more conservative than the default PAR were required, then a real-time dose assessment would define the most appropriate PAR for these conditions. A refined, real-time dose assessment, performed by knowledgeable personnel, needs to be available for consideration in the development of the ultimate PAR that is given to the offsite authorities.

For these reasons, the ERO needs to refine the projected dose impact of a release of radioactive material as soon as possible after the release has begun. The delay of dose assessment expertise until 75 minutes after an Alert condition has been declared does not support this need. Without a real-time dose assessment capability existing on-shift, the NRC does not approve the relaxation of response time for dose assessment expertise from 45 to 75 minutes. When Duke Power restores the on-shift dose assessment capability, they may wish to resubmit this proposal to be reevaluated for its acceptability.

3. Duke Power proposes to eliminate the on-shift radwaste operator and instead provide the person to perform this function within 75 minutes of an Alert declaration.

Staff Analysis

The site Chemistry Section is responsible for handling radwaste operations in addition to primary and secondary chemistry sampling. The on-shift Operations Department personnel are able to pump liquid radwaste during the initial stages of any event/accident that results in excessive leakage outside the containment structure. For leakage of reactor fluid systems outside the containment, the leak would be stopped by either operator-initiated or automatic isolation. Leaks within the containment building would be contained therein until the recovery from the event was well underway. In either case, the need for a dedicated radwaste operator would exist after the activation of the ERO such that the individual reporting 75 minutes after the Alert declaration would be adequate. This response time is consistent with the guidance given in Table 2 of Supplement 1 to NUREG-0737, when the 15-minute extension in response time that has already been approved for the Oconee site is assumed. This proposal is acceptable.

4. Duke Power proposes to reduce the minimum number of RP technicians on-shift by one, from three to two. Duke Power lists the following duties as those to be performed by the two on-shift technicians:
 - a. Coverage for repair/corrective actions as needed (Individual electronic dosimeters are used as standard dosimetry).
 - b. Search and rescue as requested.

- c. Radiological consequence support to Medical Emergency Response Team, Fire Brigade, and Hazmat Emergency Team as needed.
- d. In-plant surveys as required.
- e. Radioanalysis of liquid/gas samples.
- f. Onsite (protected area) plume surveys as needed.

Staff Analysis

Table 2 of Supplement 1 to NUREG-0737, which is the predominant guidance given by the NRC in the area of onsite emergency response staffing levels, lists the following major onsite tasks, which should be met by on-shift RP technicians:

- a. In-plant surveys.
- b. Radiochemistry.
- c. Access control.
- d. Coverage for repair, corrective actions, search and rescue, first-aid, and firefighting.
- e. Personnel monitoring.
- f. Dosimetry.

Duke Power mentions its increased use of modern technology as a means of providing additional assistance to shift personnel. Specific mention is made of the use of new digital alarming dosimeters that alarm on any or all of three parameters: integrated dose, dose rate, and time.

Current guidance at Oconee is for the dosimeter to be used in place of an RP technician escort for personnel access to areas where the general radiation levels are less than 100 mrem/hr. RP escort may still be required in areas with dose rates higher than this value. Dosimeters are usually set to alarm at 100 mrem/hr dose rates as well as at 25 mrem of accumulated dose when used under the standing general entry radiation work permit.

During the early phases of accident sequences, radiation levels are usually not a major concern if the fuel clad barrier is still intact. However, for scenarios in which the fuel clad is the first barrier breached, or where the inventory of radioactive material in the RCS is released directly to the environment, radiation levels within the plant or the immediate area onsite may be a concern. Additionally, for emergencies that do not follow a core damage sequence, such as damage to spent fuel assemblies during handling or accidents involving releases from onsite storage tanks, the release of radioactive material could conceivably be the initiating event. In these cases, RP escort for personnel entering high dose areas will be necessary.

Personnel entries into the radiologically controlled area (RCA) to mitigate the accident sequence in its early stages can frequently occur. In otherwise generally accessible areas, dose rates under accident conditions may be high, indeterminate, or rapidly changing. Area radiation monitor output can be read at certain remote locations at Oconee such as the Control Room or the Operations Support Center, but these systems do not provide the same level of detail available from a detailed area radiation survey. Duke Power plans to install a Dose Rate Monitoring System that will provide multiple monitoring points throughout the RCA, but this system is not scheduled for installation at Oconee until calendar year 1998. Once this system is operational, then proposals to reduce staffing levels further can be reexamined.

When an accident occurs, it is likely that the two on-shift RP technicians will be involved in determining local radiation levels either before or during the entry of repair teams or operators that are dispatched from the Control Room. RP technician presence at the scene of in-plant operations may be needed to provide the level of on-scene radiological assessment, decision making, and leadership that may not be possible at the remote location from which the workers are dispatched.

These duties, along with the responsibility for performing radiochemical analysis, will present a challenge to two RP technicians, particularly at a three-unit site. It is possible that one or both of the RP technicians could be engaged in activities within the RCA of an unaffected unit when an emergency occurs on another. With the technological advancements mentioned by Duke Power in its proposal, two RP technicians could adequately respond to perform the more immediate functions listed above; however, these two technicians would need timely augmentation to accomplish the other tasks that are listed in Table 2 of Supp. 1 to NUREG-0737, such as outside and in-plant surveys. For these reasons, this proposal is acceptable when considered with the assumption that certain other ERO augmentation would remain as it currently exists (i.e., within 45 minutes of an Alert declaration). The discussion of these RP technicians is contained in the following paragraphs.

5. Duke Power proposes relaxing the response time commitment for the two RP technicians currently listed as 45 minute responders to perform offsite radiation surveys. These two technicians would be required to respond within 75 minutes after the Alert declaration. They would augment two other RP technicians who currently respond within 75 minutes for a total of four RP technicians responding within 75 minutes to perform offsite radiation surveys.

Staff Analysis

Duke Power has justified this proposal as it pertains to RP responders by stating that immediate radiological concerns are not necessarily present at the onset of a classifiable emergency and that radiological problems occur primarily after the onset of fuel damage. Duke Power cited results of the

submitted Individual Plant Examination (IPE) as stating that less than 8 percent of events resulting in core damage frequency results in offsite releases within 5 hours of event initiation.

Duke Power also states that the use of onsite radiation surveys following releases of radioactive materials would give early indication of the severity of the release. Duke Power states that these surveys would be performed by the on-shift RP technicians, but as is stated in 4. above, these technicians would most probably be involved in performing in-plant surveys or repair team escort. However, if such surveys are performed by either the on-shift technicians or short-term augmentation (45-minute responders), this function would serve to give a rapid indication that a release of radioactive materials has involved offsite consequences. Such a determination, if made in a timely fashion, could compensate for a later mobilization of offsite survey teams.

Based on the low occurrence of early offsite releases and the fact that early onsite radiation monitoring will occur by both on-shift and early augmentation responders, the response time for offsite survey personnel can be relaxed to 75 minutes from the currently required 45-minute response time. This proposal is acceptable when considered with the assumption that certain other ERO augmentation would remain as it currently exists. It is therefore acceptable.

6. Duke Power also proposes to relax the response time for one RP technician used for performing plume surveys inside the protected area but outside of the power block (out-of-plant onsite surveys). This responder, who currently reports within 45 minutes following an Alert declaration, would be a member of a team of ten RP technicians reporting to the Operations Support Center (OSC) within 75 minutes following an Alert declaration.

Staff Analysis

Duke Power states that the proposed two on-shift RP technicians would be expected to perform the onsite surveys. With the need for them in the plant to escort operators, repair, search and rescue, first-aid or firefighting teams as stated in 4. above, it is unlikely that they would be available for plume or radiation monitoring outside of the plant. As stated in 4. above, certain accident sequences can result in releases of radioactive materials either as the initiating condition or occurring soon thereafter. There is no assurance that the proposed staffing plan would adequately address the particular need for onsite surveys, given the workload of the onsite RP technicians.

The relaxation of the offsite survey response from 45 minutes to 75 minutes places greater importance on the need to perform early onsite external surveys. This proposal, therefore, is not acceptable.

7. The response time for one additional RP technician who currently responds within 45 minutes would also be relaxed to 75 minutes under this proposal. This individual is called in to augment the task of performing in-plant radiation surveys.

Staff Analysis

As stated in 4. above, the proposed two on-shift RP technicians would rely on timely augmentation to perform the six tasks assigned to them. To relax the response time for this RP technician would delay that augmentation for another 30 minutes. This specific proposal is not acceptable.

8. Table 2 of Supp. 1 to NUREG-0737 and Oconee's current minimum staffing commitment both list two RP technicians reporting within 45 minutes (Oconee time commitment) to perform the functions of:
 - a. Access control.
 - b. Coverage for repair, corrective actions, search and rescue, first-aid, and firefighting.
 - c. Personnel monitoring.
 - d. Dosimetry.

Staff Analysis

Duke Power proposes to eliminate the 45-minute response time commitment for these individuals and include them in the team of ten RP technicians reporting to the OSC within 75 minutes of the Alert declaration. Since these RP technicians perform functions supporting other responders, their need is based on the presence of additional responders within 45 minutes. Duke Power is eliminating the 45-minute response time for all repair personnel, so these RP technicians would not be needed except to support the on-shift responders. The on-shift RP technicians already support the on-shift responders in the four functions listed above; therefore, eliminating these two 45-minute responders would not degrade these functions. This specific proposal, therefore, is acceptable.

9. Under the current staffing scheme, two instrument and electrical (I&E) technicians respond within 45 minutes to augment the task of performing repair and corrective actions. Duke Power trains these technicians to perform all electrical and I&C maintenance, thus increasing the availability of repair expertise for each technician assigned. A minimum of four I&E technicians are available for emergency response as listed in the currently approved emergency plan.

Under the current staffing scheme, one of these technicians is assigned on-shift duties, two respond within 45 minutes and one other responds within 75 minutes. Duke Power proposes to split the two 45 minute responders and have one of them maintained on-shift and the other respond within 75 minutes. This proposal would result in an on-shift staffing level in excess of the minimum guidance of Table 2 of Supp. 1 to NUREG-0737 and a 75-minute staffing level equal to the guidance of Table 2 for I&E technicians.

Staff Analysis

The cross-qualification of these responders provides greater flexibility for their use where needed during the initial stages of any accident progression. This proposal does not involve a loss of response capability, but rather, enhances this capability by keeping a greater number of responders continuously available by being on-shift. The Control Room is the only facility that will direct the actions of these technicians from the onset of the event until the OSC is activated at 75 minutes. The proposal results in a reduction of the number of I&E technicians that are available between 45 minutes and 75 minutes (from three to two), but two I&E technicians would be adequate to respond to the direction of the Control Room during this period.

This specific proposal is acceptable.

10. The current Oconee Emergency Plan lists two on-shift responders to fulfill the task of rescue operations and first-aid administration. Two additional responders are listed as reporting within 75 minutes to augment these functions. The plan also states that the station will rely on local (offsite organization) support. The May 8, 1995, proposal describes Oconee Memorial Hospital as providing this service. Duke Power proposes to eliminate the commitment to provide the two additional station responders within 75 minutes and rely solely on local support from the hospital to augment the on-shift responders. Duke Power's July 25, 1996, letter, sent to provide additional information, describes that this local support will be in accordance with letters of agreement between Oconee station and the local agencies.

Staff Analysis

This proposal is acceptable because it does not result in any loss of capability. Duke Power lists the expected hospital response time as 15-20 minutes, which is well in advance of the existing 75-minute commitment. The resources that the hospital possesses for dealing with long-term emergency rescue and/or first-aid administration are decidedly better than what onsite responders can provide. The NRC approves this specific proposal based on the expected response times for the local support agencies.

IV. CONCLUSIONS

Since the overall proposal consists of ten discrete proposals, each proposal was individually analyzed for its impact on onsite preparedness. Proposals related to changes in on-shift staffing levels were analyzed first because of their more direct effect on the cost of continuously maintaining such staffing levels. For individual proposals that were analyzed and determined to be acceptable, subsequent individual proposal analyses were made assuming the implementation of proposals previously determined to be acceptable.

Based on this methodology, the following conclusions were made:

- A. The NRC has determined that the following individual proposals do not decrease the level of onsite preparedness and approves them. The NRC approves these proposals with the assumption that the response commitments of all other responders not listed in this paragraph continues to be in accordance with the emergency plan as approved prior to the proposed changes. All times are referenced to the declaration of the earliest Alert or higher emergency classification. Numbers listed correspond to the numbers assigned to the individual proposals in the analysis section:
1. Eliminate the 45-minute communicator response.
 3. Relax the radwaste operator response time from on-shift to 75 minutes.
 4. Reduce the minimum number of on-shift RP technicians from three to two.
 5. Relax the response time of two RP technicians used for performing offsite radiation surveys from 45 minutes to 75 minutes.
 8. Relax the response time of two RP technicians for access control, team coverage, personnel monitoring and dosimetry from 45 minutes to 75 minutes.
 9. Revise I&E technician response to two personnel on-shift and two within 75 minutes.
 10. Eliminate the two 75-minute onsite responders for the task of rescue operations and first-aid.
- B. The NRC has determined that the following individual proposals, if implemented along with the ones listed above, will result in a reduction of onsite preparedness without an adequate compensating offset. These proposals are not approved. All times are referenced to the declaration of the earliest Alert or higher emergency classification. Numbers listed correspond to the numbers assigned to the individual proposals in the analysis section:

2. Eliminate the 45-minute dose assessment responder.
6. Relax the response time of the one onsite survey (out-of-plant) responder from 45 minutes to 75 minutes.
7. Relax the response time of the in-plant survey responder from 45 minutes to 75 minutes.

Principal Contributor: W. A. Maier

Date: November 12, 1996



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO PROPOSED EMERGENCY PLAN STAFFING LEVEL CHANGE

DUKE POWER COMPANY

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

I. BACKGROUND

By letter dated May 8, 1995, Duke Power Company requested a review and prior approval of changes to minimum emergency staffing levels for the nuclear site emergency plan for the Catawba Nuclear Station, Units 1 and 2. Duke Power requested the review under the Cost Beneficial Licensing Action (CBLA) process. The proposed savings in this case would be realized by reducing the number of on-shift responders and the overtime costs associated with maintaining these individuals on-shift.

Telephone calls between Duke Power and the NRC occurred on October 25, 1995, May 22 and June 26, 1996, to discuss some of these issues. Duke Power submitted additional information by letters dated May 31 and July 25, 1996, to respond to questions raised by the NRC staff. This Safety Evaluation was written using information derived from the CBLA submittal, the letters of May 31 and July 25, 1996, and the contents of the currently approved site emergency plan and procedures.

II. APPLICABLE REGULATIONS AND GUIDANCE

10 CFR 50.47(b)(2)

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and interfaces among various on-site response activities and offsite support and response activities are specified.

10 CFR 50, Appendix E, IV. Content of Emergency Plans

The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiation emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, and recovery. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license shall contain information needed to demonstrate compliance with the standards described in 50.47(b), and they will be evaluated against those standards.

10 CFR 50, Appendix E, IV. A. Organization

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency.

Regulatory Guide 1.101 "Emergency Planning and Preparedness for Nuclear Power Reactors", C. Regulatory Position

The criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA-REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans.

NUREG-0654/FEMA-REP-1, Rev. 1, Criterion B. Onsite Emergency Organization

5. Each licensee shall specify the positions or title and major tasks to be performed by the persons assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1. (See Table B-1)

7. Each licensee shall specify the corporate management, administrative, and technical support personnel who will augment the plant staff as specified in the table entitled "Minimum Staffing Requirements for Nuclear Power Emergencies," (Table B-1) and in the following areas:

- a. logistic support for emergency personnel, ...;
- b. technical support for planning and reentry/recovery operations;
- c. management level interface with governmental authorities; and
- d. release of information to news media during an emergency (coordination with governmental authorities).

NUREG-0737 Supplement No. 1 "Clarification of TMI Action Plan Requirements"

Table 2, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies" (See Table 2). (Note: Table 2 of NUREG-0737 is the same information contained in Table B-1 of NUREG-0654. While the requirements of Supp. 1 of NUREG-0737 were mandated to the industry by Generic Letter 82-33, the Generic Letter states that the staffing levels contained in Table 2 are only goals, and not strict requirements.)

III. ANALYSIS

Duke Power Company currently uses an emergency staffing scheme that is slightly modified from that provided in Table B-1 of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Whereas NUREG-0654 specifies certain numbers of responders that should be available within 30 and 60 minutes of the declaration of an emergency, Duke Power Company, because of the remote locations of its sites, committed to respective 45 and 75-minute response times from the declaration of the Alert, or higher, emergency. Since all of Duke Power's response facilities are activated at an Alert classification, their 45 and 75-minute staffing commitments are referenced to the declaration time of the Alert condition. The proposal upon which this Safety Evaluation is based seeks to eliminate the 45-minute category of responders by placing one of those responders on shift, eliminating two of the positions and increasing the response time of the remainder to 75 minutes. Also, the proposal seeks to eliminate two of the on-shift personnel expected to respond to emergencies and increase their response times to 75 minutes.

The NRC recognizes that the response times stated in the proposal and recounted in this Safety Evaluation represent maximum response times to which Duke Power intends to commit under the proposed change. The NRC also recognizes that for emergency response initiated during normal working hours, many more responders than the minimum noted in the proposal would arrive in considerably less time than the maximum times listed. Furthermore, the NRC recognizes that for emergency response initiated during backshifts, the arrival times for some responders would be sooner than the maximum times stated. However, in order to ensure a conservative analysis, the numbers of responders are assumed to be at the minimum committed level and the arrival times assumed to be at the maximum committed time lapse in the discussion which follows. All times (45 minutes or 75 minutes) mentioned in this Safety Evaluation are referenced to the declaration of the initiating Alert, Site Area Emergency or General Emergency declaration.

Duke Power's overall proposal consists of ten different staffing changes. Each proposed change is described and evaluated separately in this Safety Evaluation with separate conclusions for each. The goals stated in the submittal letter were as follows:

- Eliminate the 45-minute response for all categories of responders. Due to the difficulty of ensuring this response within 45 minutes of the declaration of an emergency by personnel responding from home during off-hours times, Duke Power maintains this response by keeping some of the 45-minute responders on shift. These responders are required to be able to perform their function within 45 minutes of an Alert declaration.
- Decrease the minimum number of radiation protection (RP) technicians assigned to shift
- Provide consistency between the three Duke Power nuclear sites in the development of the minimum shift staffing levels

The analysis of the specific staffing changes proposed to accomplish those goals are listed below:

1. Duke Power proposes to eliminate the one responder providing 45-minute augmentation in the area of communications. This responder is intended to augment the normal on-shift control room staff to notify offsite authorities of the emergency event. The existing plan and procedures call for a member of the control room staff from an unaffected unit to make such notifications. Since these notifications need to be made within 15 minutes of an emergency condition, the 45-minute responder is not able to assist in the initial notification, but rather with follow-up communications with offsite authorities. These follow-up communications are required at one hour intervals from the initial notification. Duke Power requires two additional communicators to report to both the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) within 75 minutes of the declaration of an Alert or higher emergency classification. These responders will be able to respond in time to perform these follow-up notifications.

Staff Analysis

Catawba is a two-unit site, with both units sharing a common control room. Sufficient control room staff exists to be able to make notifications for emergency conditions which affect only one unit. For events affecting both units, Duke Power relies on the training of non-licensed operators to handle communications while the control room staff handles plant response to the event.

Until the overall management of the event passes to the TSC or the Emergency Operations Facility (EOF), the Control Room is tasked with making offsite notifications. Included in the notification is a description of plant status and site environmental conditions. Control room operators are the most knowledgeable of these items during the initial stages of an emergency. The augmentation of an outside communicator from elsewhere in the plant or from offsite does not provide for as timely a transfer of information as does the use of operators familiar with the progress of the event. The value, to the Control Room, of a communicator responding to the TSC before that facility is fully functional is questionable, since the Control Room must direct that individual's actions remotely and this could be more burdensome to the Control Room staff.

Since the on-shift staff is most qualified to give informed notification of plant conditions, and since the augmentation of the communication function by an unfamiliar responder provides a very limited enhancement of this function, this particular proposal is acceptable. This proposal is acceptable.

2. Duke Power proposes to eliminate the responder providing 45-minute augmentation in the area of dose assessment, maintaining that dose projections are not required for initial emergency classification or to provide protective action recommendations (PARs) at a General Emergency classification. This function would be covered exclusively by the Rad Assessment Manager who would be required to report within 75 minutes of the Alert declaration to the EOF.

Staff Analysis

Nuclear power plant licensees must maintain, in accordance with Appendix E to 10 CFR Part 50, the capability to perform dose assessment using effluent release information and real-time meteorology at all times. The currently approved Catawba emergency plan does not require an on-shift capability for assessing or projecting the dose consequences of plant conditions or releases of radioactive materials. Until this, Appendix E required on-shift capability is restored, the need for early augmentation in this area is even greater than if the Control Room was able to project the dose consequences of a release of radioactive material.

In the event a General Emergency is declared by the on-shift Emergency Coordinator, the current emergency plan implementing procedure calls for an immediate PAR to be given. This PAR is one of two that are predetermined based on wind speed. It is not initially made in consideration of actual or projected offsite dose consequences; however, the procedure for responding to a General Emergency requires updates of the PAR based on offsite dose projections, among other things. Such a PAR, if based on a release of radioactive materials, may be overly conservative if it lacks refinement based on a real-time dose assessment. This would be particularly true if the meteorological conditions at the time of the declaration or release are such that the doses at the site boundary are not actually at the General Emergency level. Conversely, if a unique combination of meteorological conditions and

release rate existed such that a PAR more conservative than the default PAR were required, then a real-time dose assessment would define the most appropriate PAR for these conditions. A refined, real-time dose assessment, performed by knowledgeable personnel, needs to be available for consideration in the development of the ultimate PAR that is given to the offsite authorities.

For these reasons, the ERO needs to refine the projected dose impact of a release of radioactive material as soon as possible after the release has begun. The delay of dose assessment expertise until 75 minutes after an Alert condition has been declared does not support this need. Without a real-time dose assessment capability existing on-shift, the NRC does not approve the relaxation of response time for dose assessment expertise from 45 to 75 minutes. When Duke Power restores the on-shift dose assessment capability, they may wish to resubmit this proposal to be reevaluated for its acceptability.

3. Duke Power proposes to relax the response time for the individual providing technical support in the area of core and thermal hydraulics from 45 minutes to 75 minutes. Duke Power maintains that this function can be adequately covered by the Shift Technical Advisor (STA) until the activation of the Technical Support Center within 75 minutes of the Alert declaration.

Staff Analysis

Duke Power's current commitment is based on Table B-1 of NUREG-0654. This guidance was developed in October 1980, shortly following the Three Mile Island accident. Since that time, implementation of the generic requirements following the TMI accident have more clearly defined the STA role and the technical proficiency required of STAs. These on-shift STAs are trained in the evaluation of core and thermal/hydraulic parameters. Further, industry adoption of safety parameter display systems (SPDS), which provide real-time update and evaluation of core and thermal/hydraulic parameters, has enabled utilities to display this information directly to control room personnel.

Duke Power maintains an individual on each shift to fulfill the STA requirement. These STAs are expected to arrive at the control room within 10 minutes of summons. They independently review the SPDS and advise the on-shift supervision of the significance of the data. The STAs at Catawba are degreed engineers and maintain active SRO licenses. Based on these commitments, the on-shift STAs can provide the needed core and thermal/hydraulic information until the activation of the TSC and the arrival of the 75-minute responder. This proposal is acceptable.

4. Duke Power proposes to reduce the minimum number of RP technicians on-shift by two, from four to two. Duke Power lists the following duties as those to be performed by the two on-shift technicians:

- a. Coverage for repair/corrective actions as needed (Individual electronic dosimeters are used as standard dosimetry).
- b. Search and rescue as requested.
- c. Radiological consequence support to Medical Emergency Response Team, Fire Brigade, and Hazmat Emergency Team as needed.
- d. In-plant surveys as required.
- e. Radioanalysis of liquid/gas samples.
- f. Onsite (protected area) plume surveys as needed.

Staff Analysis

Table 2 of Supplement 1 to NUREG-0737, which is the predominant guidance given by the NRC in the area of onsite emergency response staffing levels, lists the following major onsite tasks, which should be met by on-shift RP technicians:

- a. In-plant surveys.
- b. Radiochemistry.
- c. Access control.
- d. Coverage for repair, corrective actions, search and rescue, first-aid, and firefighting.
- e. Personnel monitoring.
- f. Dosimetry.

Duke Power mentions its increased use of modern technology as a means of providing additional assistance to shift personnel. Specific mention is made of the use of new digital alarming dosimeters that alarm on any or all of three parameters: integrated dose, dose rate, and time.

Current guidance at Catawba is for the dosimeter to be used in place of an RP technician escort for personnel access to areas where the general radiation levels are less than 100 mrem/hr. RP escort may still be required in areas with dose rates higher than this value. Dosimeters are usually set to alarm at 100 mrem/hr dose rates as well as at 25 mrem of accumulated dose when used under the standing general entry radiation work permit.

During the early phases of accident sequences, radiation levels are usually not a major concern if the fuel clad barrier is still intact. However, for scenarios in which the fuel clad is the first barrier breached, or where the inventory of radioactive material in the RCS is released directly to the environment, radiation levels within the plant or the immediate area onsite

may be a concern. Additionally, for emergencies that do not follow a core damage sequence, such as damage to spent fuel assemblies during handling or accidents involving releases from onsite storage tanks, the release of radioactive material could conceivably be the initiating event. In these cases, RP escort for personnel entering high dose areas will be necessary.

Personnel entries into the radiologically controlled area (RCA) to mitigate the accident sequence in its early stages can frequently occur. In otherwise generally accessible areas, dose rates under accident conditions may be high, indeterminate, or rapidly changing. Area radiation monitor output can be read at certain remote locations at Catawba such as the Control Room or the Operations Support Center, but these systems do not provide the same level of detail available from a detailed area radiation survey. Duke Power plans to install a Dose Rate Monitoring System that will provide multiple monitoring points throughout the RCA, but this system is not scheduled for installation at Catawba until calendar year 1997. Once this system is operational, then proposals to reduce staffing levels further can be reexamined.

When an accident occurs, it is likely that the two on-shift RP technicians will be involved in determining local radiation levels either before or during the entry of repair teams or operators that are dispatched from the Control Room. RP technician presence at the scene of in-plant operations may be needed to provide the level of on-scene radiological assessment, decision making, and leadership that may not be possible at the remote location from which the workers are dispatched.

These duties, along with the responsibility for performing radiochemical analysis, will present a challenge to two RP technicians, particularly at a two-unit site. It is possible that one or both of the RP technicians could be engaged in activities within the RCA of an unaffected unit when an emergency occurs on the other. With the technological advancements mentioned by Duke Power in its proposal, two RP technicians could adequately respond to perform the more immediate functions listed above; however, these two technicians would need timely augmentation to accomplish the other tasks that are listed in Table 2 of Supp. 1 to NUREG-0737, such as outside and in-plant surveys. For these reasons, this proposal is acceptable when considered with the assumption that certain other ERO augmentation would remain as it currently exists (i.e., within 45 minutes of an Alert declaration). The discussion of these RP technicians is contained in the following paragraphs.

5. Duke Power proposes relaxing the response time commitment for the two RP technicians currently listed as 45-minute responders to perform offsite radiation surveys. These two technicians would be required to respond within 75 minutes after the Alert declaration. They would augment two other RP technicians who currently respond within 75 minutes for a total of four RP technicians responding within 75 minutes to perform offsite radiation surveys.

Staff Analysis

Duke Power has justified this proposal as it pertains to RP responders by stating that immediate radiological concerns are not necessarily present at the onset of a classifiable emergency and that radiological problems occur primarily after the onset of fuel damage. Duke Power cited results of the submitted Individual Plant Examination (IPE) as stating that 8 percent of events resulting in core damage frequency results in offsite releases within 5 hours of event initiation.

Duke Power also states that the use of onsite radiation surveys following releases of radioactive materials would give early indication of the severity of the release. Duke Power states that these surveys would be performed by the on-shift RP technicians, but as is stated in 4. above, these technicians would most probably be involved in performing in-plant surveys or repair team escort. However, if such surveys are performed by either the on-shift technicians or short-term augmentation (45-minute responders), this function would serve to give a rapid indication that a release of radioactive materials has involved offsite consequences. Such a determination, if made in a timely fashion, could compensate for a later mobilization of offsite survey teams.

Based on the low occurrence of early offsite releases and the fact that early onsite radiation monitoring will occur by both on-shift and early augmentation responders, the response time for offsite survey personnel can be relaxed to 75 minutes from the currently required 45-minute response time. This proposal is acceptable when considered with the assumption that certain other ERO augmentation would remain as it currently exists. It is, therefore, acceptable.

6. Duke Power also proposes to relax the response time for one RP technician used for performing plume surveys inside the protected area but outside of the power block (out-of-plant onsite surveys). This responder, who currently reports within 45 minutes following an Alert declaration, would be a member of a team of ten RP technicians reporting to the Operations Support Center (OSC) within 75 minutes following an Alert declaration.

Staff Analysis

Duke Power states that the proposed two on-shift RP technicians would be expected to perform the onsite surveys. With the need for them in the plant to escort operators, repair, search and rescue, first-aid or firefighting teams as stated in 4. above, it is unlikely that they would be available for plume or radiation monitoring outside of the plant. As stated in 4. above, certain accident sequences can result in releases of radioactive materials either as the initiating condition or occurring soon thereafter. There is no assurance that the proposed staffing plan would adequately address the particular need for onsite surveys, given the workload of the onsite RP technicians.

The relaxation of the offsite survey response from 45 minutes to 75 minutes places greater importance on the need to perform early onsite external surveys. This proposal, therefore, is not acceptable.

7. The response time for one additional RP technician who currently responds within 45 minutes would also be relaxed to 75 minutes under this proposal. This individual is called in to augment the task of performing in-plant radiation surveys.

Staff Analysis

As stated in 4. above, the proposed two on-shift RP technicians would rely on timely augmentation to perform the six tasks assigned to them. To relax the response time for this RP technician would delay that augmentation for another 30 minutes. This specific proposal is not acceptable.

8. Table 2 of Supp. 1 to NUREG-0737 and Catawba's current minimum staffing commitment both list two RP technicians reporting within 45 minutes (Catawba time commitment) to perform the functions of:
 - a. Access control.
 - b. Coverage for repair, corrective actions, search and rescue, first-aid, and firefighting.
 - c. Personnel monitoring.
 - d. Dosimetry.

Staff Analysis

Duke Power proposes to eliminate the 45-minute response time commitment for these individuals and include them in the team of ten RP technicians reporting to the OSC within 75 minutes of the Alert declaration. Since these RP technicians perform functions supporting other responders, their need is based on the presence of additional responders within 45 minutes. Duke Power is eliminating the 45-minute response time for all repair personnel, so these RP technicians would not be needed except to support the on-shift responders. The on-shift RP technicians already support the on-shift responders in the four functions listed above; therefore, eliminating these two 45-minute responders would not degrade these functions. This specific proposal, therefore, is acceptable.

9. Under the current staffing scheme, two instrument and electrical (I&E) technicians respond within 45 minutes to augment the task of performing repair and corrective actions. Duke Power trains these technicians to perform all electrical and I&C maintenance, thus increasing the availability of repair expertise for each technician assigned. A minimum of four I&E technicians are available for emergency response as listed in the currently approved emergency plan.

Under the current staffing scheme, one of these technicians is assigned on-shift duties, two respond within 45 minutes and one other responds within 75 minutes. Duke Power proposes to split the two 45 minute responders and have one of them maintained on-shift and the other respond within 75 minutes. This proposal would result in an on-shift staffing level in excess of the minimum guidance of Table 2 of Supp. 1 to NUREG-0737 and a 75 minute staffing level equal to the guidance of Table 2 for I&E technicians.

Staff Analysis

The cross-qualification of these responders provides greater flexibility for their use where needed during the initial stages of any accident progression. This proposal does not involve a loss of response capability, but rather, enhances this capability by keeping a greater number of responders continuously available by being on-shift. The Control Room is the only facility that will direct the actions of these technicians from the onset of the event until the OSC is activated at 75 minutes. The proposal results in a reduction of the number of I&E technicians that are available between 45 minutes and 75 minutes (from three to two), but two I&E technicians would be adequate to respond to the direction of the Control Room during this period.

This specific proposal is acceptable.

10. The currently approved emergency plan for Catawba Station lists local support as the augmentation for the major functional areas of firefighting and rescue operations/first-aid. The currently approved plan lists this support as occurring within 45 minutes after the initiating Alert, or higher, declaration.

The proposed change to the augmentation as listed in the May 8, 1995, submittal and restated in the July 25, 1996 letter continues to list local support as the augmenting response for these functions; however, the Table that enumerates the number of responders and their response times now lists the response time for firefighting and rescue operations/first-aid as 75 minutes. The July 25, 1996, letter clarified this response as being made in accordance with the letters of agreement between Duke Power Company and these local organizations; i.e., response by these local support agencies was expected to occur similar to any other industrial facility.

Staff Analysis

While the listing of a change in response time appears to be a relaxation of Duke Power's commitment, the NRC recognizes that the listing was made in the only column available for describing the origin of the augmentation for these functional areas. The response from organizations responsible for firefighting or first-aid/rescue is, by the very nature of these functions, made in the shortest time possible. When the local support in these functional areas was listed in the 45-minute response column, the response time was assumed to be as soon as possible. Under the proposed revision to the plan, this response time is still assumed to be as soon as possible. In

the currently approved plan, there are no provisions in the letters of agreement between Duke Power and the local agencies providing this support that specifies a maximum allowed response time. Because such response augmentation in these functional areas is expected to occur as soon as possible, there is no loss of effectiveness. This change is acceptable.

IV. CONCLUSIONS

Since the overall proposal consists of ten discrete proposals, each proposal was individually analyzed for its impact on onsite preparedness. Proposals related to changes in on-shift staffing levels were analyzed first because of their more direct effect on the cost of continuously maintaining such staffing levels. For individual proposals that were analyzed and determined to be acceptable, subsequent individual proposal analyses were made assuming the implementation of proposals previously determined to be acceptable.

Based on this methodology, the following conclusions were made:

- A. The NRC has determined that the following individual proposals do not decrease the level of onsite preparedness and approves them. The NRC approves these proposals with the assumption that the response commitments of all other responders not listed in this paragraph continues to be in accordance with the emergency plan as approved prior to the proposed changes. All times are referenced to the declaration of the earliest Alert or higher emergency classification. Numbers listed correspond to the numbers assigned to the individual proposals in the analysis section:
1. Eliminate the 45-minute communicator response.
 3. Relax the core and thermal/hydraulic technical support response from 45 minutes to 75 minutes.
 4. Reduce the minimum number of on-shift RP technicians from four to two.
 5. Relax the response time of two RP technicians used for performing offsite radiation surveys from 45 minutes to 75 minutes.
 8. Relax the response time of two RP technicians for access control, team coverage, personnel monitoring and dosimetry from 45 minutes to 75 minutes.
 9. Revise I&E technician response to two personnel on-shift and two within 75 minutes.
 10. Listing the local support response in the areas of firefighting and rescue operations/first-aid in the column of 75-minute responders.

- B. The NRC has determined that the following individual proposals, if implemented along with the ones listed above, will result in a reduction of onsite preparedness without an adequate compensating offset. These proposals are not approved. All times are referenced to the declaration of the earliest Alert or higher emergency classification. Numbers listed correspond to the numbers assigned to the individual proposals in the analysis section:
2. Eliminate the 45-minute dose assessment responder.
 6. Relax the response time of the one onsite survey (out-of-plant) responder from 45 minutes to 75 minutes.
 7. Relax the response time of the in-plant survey responder from 45 minutes to 75 minutes.

Principal Contributor: W. A. Maier

Date: November 12, 1996



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO PROPOSED EMERGENCY PLAN STAFFING LEVEL CHANGE

DUKE POWER COMPANY

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

I. BACKGROUND

By letter dated May 8, 1995, Duke Power Company requested a review and prior approval of changes to minimum emergency staffing levels for the nuclear site emergency plan for the McGuire Nuclear Station, Units 1 and 2. Duke Power requested the review under the Cost Beneficial Licensing Action (CBLA) process. The proposed savings in this case would be realized by reducing the number of on-shift responders and the overtime costs associated with maintaining these individuals on-shift.

Telephone calls between Duke Power and the NRC occurred on October 25, 1995, May 22 and June 26, 1996, to discuss some of these issues. Duke Power submitted additional information by letters dated May 31 and July 25, 1996, to respond to questions raised by the NRC staff. This Safety Evaluation was written using information derived from the CBLA submittal, the letters of May 31 and July 25, 1996, and the contents of the currently approved site emergency plan and procedures.

II. APPLICABLE REGULATIONS AND GUIDANCE

10 CFR 50.47(b)(2)

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and interfaces among various on-site response activities and offsite support and response activities are specified.

10 CFR 50, Appendix E, IV. Content of Emergency Plans

The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiation emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, and recovery. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license shall contain information needed to demonstrate compliance with the standards described in 50.47(b), and they will be evaluated against those standards.

10 CFR 50, Appendix E, IV. A. Organization

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency.

Regulatory Guide 1.101 "Emergency Planning and Preparedness for Nuclear Power Reactors", C. Regulatory Position

The criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA-REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans.

NUREG-0654/FEMA-REP-1, Rev. 1, Criterion B. Onsite Emergency Organization

5. Each licensee shall specify the positions or title and major tasks to be performed by the persons assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1. (See Table B-1)
7. Each licensee shall specify the corporate management, administrative, and technical support personnel who will augment the plant staff as specified in the table entitled "Minimum Staffing Requirements for Nuclear Power Emergencies," (Table B-1) and in the following areas:

- a. logistic support for emergency personnel, ...;
- b. technical support for planning and reentry/recovery operations;
- c. management level interface with governmental authorities; and
- d. release of information to news media during an emergency (coordination with governmental authorities).

NUREG-0737 Supplement No. 1 "Clarification of TMI Action Plan Requirements"

Table 2, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies" (See Table 2). (Note: Table 2 of NUREG-0737 is the same information contained in Table B-1 of NUREG-0654. While the requirements of Supp. 1 of NUREG-0737 were mandated to the industry by Generic Letter 82-33, the Generic Letter states that the staffing levels contained in Table 2 are only goals, and not strict requirements.)

III. ANALYSIS

Duke Power Company currently uses an emergency staffing scheme that is slightly modified from that provided in Table B-1 of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Whereas NUREG-0654 specifies certain numbers of responders that should be available within 30 and 60 minutes of the declaration of an emergency, Duke Power Company, because of the remote locations of its sites, committed to respective 45 and 75-minute response times from the declaration of the Alert, or higher, emergency. Since all of Duke Power's response facilities are activated at an Alert classification, their 45 and 75-minute staffing commitments are referenced to the declaration time of the Alert condition. The proposal upon which this Safety Evaluation is based seeks to eliminate the 45-minute category of responders by placing one of those responders on shift, eliminating two of the positions and increasing the response time of the remainder to 75 minutes. Also, the proposal seeks to eliminate two of the on-shift personnel expected to respond to emergencies and increase their response times to 75 minutes.

The NRC recognizes that the response times stated in the proposal and recounted in this Safety Evaluation represent maximum response times to which Duke Power intends to commit under the proposed change. The NRC also recognizes that for emergency response initiated during normal working hours, many more responders than the minimum noted in the proposal would arrive in considerably less time than the maximum times listed. Furthermore, the NRC recognizes that for emergency response initiated during backshifts, the arrival times for most responders would be sooner than the maximum times stated. However, in order to ensure a conservative analysis, the numbers of responders are assumed to be at the minimum committed level and the arrival times assumed to be at the maximum committed time lapse in the discussion which follows. All times (45 minutes or 75 minutes) mentioned in this Safety Evaluation are referenced to the declaration of the initiating Alert, Site Area Emergency or General Emergency declaration.

Duke Power's overall proposal consists of ten different staffing changes. Each proposed change is described and evaluated separately in this Safety Evaluation with separate conclusions for each. The goals stated in the submittal letter were as follows:

- Eliminate the 45-minute response for all categories of responders. Due to the difficulty of ensuring this response within 45 minutes of the declaration of an emergency by personnel responding from home during off-hours times, Duke Power maintains this response by keeping some of the 45 minute responders on shift. These responders are required to be able to perform their function within 45 minutes of an Alert declaration.
- Decrease the minimum number of radiation protection (RP) technicians assigned to the shift.
- Provide consistency between the three Duke Power nuclear sites in the development of the minimum shift staffing levels.

The analysis of the specific staffing changes proposed to accomplish those goals are listed below:

1. Duke Power proposes to eliminate the one responder providing 45 minute augmentation in the area of communications. This responder is intended to augment the normal on-shift control room staff to notify offsite authorities of the emergency event. The existing plan and procedures call for a member of the control room staff from an unaffected unit to make such notifications. Since these notifications need to be made within 15 minutes of an emergency condition, the 45-minute responder is not able to assist in the initial notification, but rather with follow-up communications with offsite authorities. These follow-up communications are required at one hour intervals from the initial notification. Duke Power requires two additional communicators to report to both the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) within 75 minutes of the declaration of an Alert or higher emergency classification. These responders will be able to respond in time to perform these follow-up notifications.

Staff Analysis

McGuire is a two-unit site, with both units sharing a common control room. Sufficient control room staff exists to be able to make notifications for emergency conditions which affect only one unit. For events affecting both units, Duke Power relies on the training of non-licensed operators to handle communications while the control room staff handles plant response to the event.

Until the overall management of the event passes to the TSC or the Emergency Operations Facility (EOF), the Control Room is tasked with making offsite notifications. Included in the notification is a description of plant status and site environmental conditions. Control room operators are the most knowledgeable of these items during the initial stages of an emergency. The augmentation of an outside communicator from elsewhere in the plant or from offsite does not provide for as timely a transfer of information as does the use of operators familiar with the progress of the event. The value, to the Control Room, of a communicator responding to the TSC before that facility is fully functional is questionable, since the Control Room must direct that individual's actions remotely and this could be more burdensome to the Control Room staff.

Since the on-shift staff is most qualified to give informed notification of plant conditions, and since the augmentation of the communication function by an unfamiliar responder provides a very limited enhancement of this function, this particular proposal is acceptable.

2. Duke Power proposes to eliminate the responder providing 45-minute augmentation in the area of dose assessment, maintaining that dose projections are not required for initial emergency classification or to provide protective action recommendations (PARs) at a General Emergency classification. This function would be covered exclusively by the Rad Assessment Manager who would be required to report within 75 minutes of the Alert declaration to the EOF.

Staff Analysis

Nuclear power plant licensees must maintain, in accordance with Appendix E to 10 CFR Part 50, the capability to perform dose assessment using effluent release information and real-time meteorology at all times. The currently approved McGuire emergency plan does not require an on-shift capability for assessing or projecting the dose consequences of plant conditions or releases of radioactive materials. Until this, Appendix E required on-shift capability is restored, the need for early augmentation in this area is even greater than if the Control Room was able to project the dose consequences of a release of radioactive material.

In the event a General Emergency is declared by the on-shift Emergency Coordinator, the current emergency plan implementing procedure calls for an immediate PAR to be given. This PAR is one of three that are predetermined based on wind speed or containment radiation level. It is not initially made in consideration of actual or projected offsite dose consequences. Such a PAR, if based on a release of radioactive materials, may be overly conservative if it lacks refinement based on a real-time dose assessment. This would be particularly true if the meteorological conditions at the time of the declaration or release are such that the doses at the site boundary are not actually at the General Emergency level. Conversely, if a unique combination of meteorological conditions and release rate existed such that a PAR more conservative than the default PAR were required, then a real-time

dose assessment would define the most appropriate PAR for these conditions. A refined, real-time dose assessment, performed by knowledgeable personnel, needs to be available for consideration in the development of the ultimate PAR that is given to the offsite authorities.

For these reasons, the ERO needs to refine the projected dose impact of a release of radioactive material as soon as possible after the release has begun. The delay of dose assessment expertise until 75 minutes after an Alert condition has been declared does not support this need. Without a real-time dose assessment capability existing on-shift, the NRC does not approve the relaxation of response time for dose assessment expertise from 45 to 75 minutes. When Duke Power restores the on-shift dose assessment capability, they may wish to resubmit this proposal to be reevaluated for its acceptability.

3. Duke Power proposes to relax the response time for the individual providing technical support in the area of core and thermal hydraulics from 45 minutes to 75 minutes. Duke Power maintains that this function can be adequately covered by the Shift Technical Advisor (STA) until the activation of the Technical Support Center within 75 minutes of the Alert declaration.

Staff Analysis

Duke Power's current commitment is based on Table B-1 of NUREG-0654. This guidance was developed in October 1980, shortly following the Three Mile Island accident. Since that time, implementation of the generic requirements following the TMI accident have more clearly defined the STA role and the technical proficiency required of STAs. These on-shift STAs are trained in the evaluation of core and thermal/hydraulic parameters. Further, industry adoption of safety parameter display systems (SPDS), which provide real-time updates and evaluation of core and thermal/hydraulic parameters, has enabled utilities to display this information directly to control room personnel.

Duke Power maintains an individual on each shift to fulfill the STA requirement. These STAs are expected to arrive at the control room within 10 minutes of summons. They independently review the SPDS and advise the on-shift supervision of the significance of the data. The STAs at McGuire are degreed engineers and maintain active SRO licenses. Based on these commitments, the on-shift STAs can provide the needed core and thermal/hydraulic information until the activation of the TSC and the arrival of the 75-minute responder. This proposal is approved.

4. Duke Power proposes to reduce the minimum number of RP technicians on-shift by two, from four to two. Duke Power lists the following duties as those to be performed by the two on-shift technicians:
 - a. Coverage for repair/corrective actions as needed (Individual electronic dosimeters are used as standard dosimetry).

- b. Search and rescue as requested.
- c. Radiological consequence support to Medical Emergency Response Team, Fire Brigade, and Hazmat Emergency Team as needed.
- d. In-plant surveys as required.
- e. Radioanalysis of liquid/gas samples.
- f. Onsite (protected area) plume surveys as needed.

Staff Analysis

Table 2 of Supplement 1 to NUREG-0737, which is the predominant guidance given by the NRC in the area of onsite emergency response staffing levels, lists the following major onsite tasks, which should be met by on-shift RP technicians:

- a. In-plant surveys.
- b. Radiochemistry.
- c. Access control.
- d. Coverage for repair, corrective actions, search and rescue, first-aid, and firefighting.
- e. Personnel monitoring.
- f. Dosimetry.

Duke Power mentions its increased use of modern technology as a means of providing additional assistance to shift personnel. Specific mention is made of the use of new digital alarming dosimeters that alarm on any or all of three parameters: integrated dose, dose rate, and time.

Current guidance at McGuire is for the dosimeter to be used in place of an RP technician escort for personnel access to areas where the general radiation levels are less than 100 mrem/hr. RP escort may still be required in areas with dose rates higher than this value. Dosimeters are usually set to alarm at 100 mrem/hr dose rates as well as at 25 mrem of accumulated dose when used under the standing general entry radiation work permit.

During the early phases of accident sequences, radiation levels are usually not a major concern if the fuel clad barrier is still intact. However, for scenarios in which the fuel clad is the first barrier breached, or where the inventory of radioactive material in the RCS is released directly to the environment, radiation levels within the plant or the immediate area onsite may be a concern. Additionally, for emergencies that do not follow a core

damage sequence, such as damage to spent fuel assemblies during handling or accidents involving releases from onsite storage tanks, the release of radioactive material could conceivably be the initiating event. In these cases, RP escort for personnel entering high dose areas will be necessary.

Personnel entries into the radiologically controlled area (RCA) to mitigate the accident sequence in its early stages can frequently occur. In otherwise generally accessible areas, dose rates under accident conditions may be high, indeterminate, or rapidly changing. Area radiation monitor output can be read at certain remote locations at McGuire such as the Control Room or the Operations Support Center, but these systems do not provide the same level of detail available from a detailed area radiation survey. Duke Power was installing a Dose Rate Monitoring System at McGuire during the development of this Safety Evaluation that will provide multiple monitoring points throughout the RCA. Based on a lack of operational history, the effectiveness of this system has not yet been proven. It would not provide the same amount of detailed area radiation information that would be available from a detailed area radiation survey. Once this system has undergone a period of operation, its effect on reducing emergency response staffing levels can be reexamined.

When an accident occurs, it is likely that the two on-shift RP technicians will be involved in determining local radiation levels either before or during the entry of repair teams or operators that are dispatched from the Control Room. RP technician presence at the scene of in-plant operations may be needed to provide the level of on-scene radiological assessment, decision making, and leadership that may not be possible at the remote location from which the workers are dispatched.

These duties, along with the responsibility for performing radiochemical analysis, will present a challenge to two RP technicians, particularly at a two-unit site. It is possible that one or both of the RP technicians could be engaged in activities within the RCA of an unaffected unit when an emergency occurs on the other. With the technological advancements mentioned by Duke Power in its proposal, two RP technicians could adequately respond to perform the more immediate functions listed above; however, these two technicians would need timely augmentation to accomplish the other tasks that are listed in Table 2 of Supp. 1 to NUREG-0737, such as outside and in-plant surveys. For these reasons, this proposal is acceptable when considered with the assumption that certain other ERO augmentation would remain as it currently exists (i.e., within 45 minutes of an Alert declaration). The discussion of these RP technicians is contained in the following paragraphs.

5. Duke Power proposes relaxing the response time commitment for the two RP technicians currently listed as 45-minute responders to perform offsite radiation surveys. These two technicians would be required to respond within 75 minutes after the Alert declaration. They would augment two other RP technicians who currently respond within 75 minutes for a total of four RP technicians responding within 75 minutes to perform offsite radiation surveys.

Staff Analysis

Duke Power has justified this proposal as it pertains to RP responders by stating that immediate radiological concerns are not necessarily present at the onset of a classifiable emergency and that radiological problems occur primarily after the onset of fuel damage. Duke Power cited results of the submitted Individual Plant Examination (IPE) as stating that less than 8 percent of events resulting in core damage frequency results in offsite releases within 5 hours of event initiation.

Duke Power also states that the use of onsite radiation surveys following releases of radioactive materials would give early indication of the severity of the release. Duke Power states that these surveys would be performed by the on-shift RP technicians, but as is stated in 4. above, these technicians would most probably be involved in performing in-plant surveys or repair team escort. However, if such surveys are performed by either the on-shift technicians or short-term augmentation (45-minute responders), this function would serve to give a rapid indication that a release of radioactive materials has involved offsite consequences. Such a determination, if made in a timely fashion, could compensate for a later mobilization of offsite survey teams.

Based on the low occurrence of early offsite releases and the fact that early onsite radiation monitoring will occur by both on-shift and early augmentation responders, the response time for offsite survey personnel can be relaxed to 75 minutes from the currently required 45-minute response time. This proposal is acceptable when considered with the assumption that certain other ERO augmentation would remain as it currently exists. It is, therefore, acceptable.

6. Duke Power also proposes to relax the response time for one RP technician used for performing plume surveys inside the protected area but outside of the power block (out-of-plant onsite surveys). This responder, who currently reports within 45 minutes following an Alert declaration, would be a member of a team of ten RP technicians reporting to the Operations Support Center (OSC) within 75 minutes following an Alert declaration.

Staff Analysis

Duke Power states that the proposed two on-shift RP technicians would be expected to perform the onsite surveys. With the need for them in the plant to escort operators, repair, search and rescue, first-aid or firefighting teams as stated in 4. above, it is unlikely that they would be available for plume or radiation monitoring outside of the plant. As stated in 4. above, certain accident sequences can result in releases of radioactive materials either as the initiating condition or occurring soon thereafter. There is no assurance that the proposed staffing plan would adequately address the particular need for onsite surveys, given the workload of the onsite RP technicians.

The relaxation of the offsite survey response from 45 minutes to 75 minutes places greater importance on the need to perform early onsite external surveys. This proposal, therefore, is not acceptable.

7. The response time for one additional RP technician who currently responds within 45 minutes would also be relaxed to 75 minutes under this proposal. This individual is called in to augment the task of performing in-plant radiological surveys.

Staff Analysis

As stated in 4. above, the proposed two on-shift RP technicians would rely on timely augmentation to perform the six tasks assigned to them. To relax the response time for this RP technician would delay that augmentation for another 30 minutes. This specific proposal is not acceptable.

8. Table 2 of Supp. 1 to NUREG-0737 and McGuire's current minimum staffing commitment both list two RP technicians reporting within 45 minutes (McGuire time commitment) to perform the functions of:
- a. Access control.
 - b. Coverage for repair, corrective actions, search and rescue, first-aid, and firefighting.
 - c. Personnel monitoring.
 - d. Dosimetry.

Staff Analysis

Duke Power proposes to eliminate the 45-minute response time commitment for these individuals and include them in the team of ten RP technicians reporting to the OSC within 75 minutes of the Alert declaration. Since these RP technicians perform functions supporting other responders, their need is based on the presence of additional responders within 45 minutes. Duke Power is eliminating the 45-minute response time for all repair personnel, so these RP technicians would not be needed except to support the on-shift responders. The on-shift RP technicians already support the on-shift responders in the four functions listed above; therefore, eliminating these two 45-minute responders would not degrade these functions. This specific proposal, therefore, is acceptable.

9. Under the current staffing scheme, two instrument and electrical (I&E) technicians respond within 45 minutes to augment the task of performing repair and corrective actions. Duke Power trains these technicians to perform all electrical and I&C maintenance, thus increasing the availability of repair expertise for each technician assigned. A minimum of four I&E technicians are available for emergency response as listed in the currently approved emergency plan.

Under the current staffing scheme, one of these technicians is assigned on-shift duties, two respond within 45 minutes and one other responds within 75 minutes. Duke Power proposes to split the two 45 minute responders and have one of them maintained on-shift and the other respond within 75 minutes. This proposal would result in an on-shift staffing level in excess of the minimum guidance of Table 2 of Supp. 1 to NUREG-0737 and a 75-minute staffing level equal to the guidance of Table 2 for electrical maintenance and I&C technicians.

Staff Analysis

The cross-qualification of these responders provides greater flexibility for their use where needed during the initial stages of any accident progression. This proposal does not involve a loss of response capability, but rather, enhances this capability by keeping a greater number of responders continuously available by being on-shift. The Control Room is the only facility that will direct the actions of these technicians from the onset of the event until the OSC is activated at 75 minutes. The proposal results in a reduction of the number of I&E technicians that are available between 45 minutes and 75 minutes (from three to two), but two I&E technicians would be adequate to respond to the direction of the Control Room during this period.

This proposal is acceptable.

10. The currently approved emergency plan for McGuire Station lists local support as the augmentation for the major functional areas of firefighting and rescue operations/first-aid. The currently approved plan lists this support as occurring within 45 minutes after the initiating Alert, or higher, declaration.

The proposed change to the augmentation as listed in the May 8, 1995, submittal and restated in the July 25, 1996, letter continues to list local support as the augmenting response for these functions; however, the Table that enumerates the number of responders and their response times now lists the response time for firefighting and rescue operations/first-aid as 75 minutes.

The July 25, 1996, letter clarified this response as being made in accordance with the letters of agreement between Duke Power Company and these local organizations; i.e., response by these local support agencies was expected to occur similar to any other industrial facility.

Staff Analysis

While the listing of a change in response time appears to be a relaxation of Duke Power's commitment, the NRC recognizes that the listing was made in the only column available for describing the origin of the augmentation for these functional areas. The response from organizations responsible for firefighting or first-aid/rescue is, by the very nature of these functions, made in the shortest time possible. When the local support in these functional areas was listed in the 45-minute response column, the response

time was assumed to be as soon as possible. Under the proposed revision to the plan, this response time is still assumed to be as soon as possible. In the currently approved plan, there are no provisions in the letters of agreement between Duke Power and the local agencies providing this support that specifies a maximum allowed response time. Because such response augmentation in these functional areas is expected to occur as soon as possible, there is no loss of effectiveness. This change is acceptable.

IV. CONCLUSIONS

Since the overall proposal consists of ten discrete proposals, each proposal was individually analyzed for its impact on onsite preparedness. Proposals related to changes in on-shift staffing levels were analyzed first because of their more direct effect on the cost of continuously maintaining such staffing levels. For individual proposals that were analyzed and determined to be acceptable, subsequent individual proposal analyses were made assuming the implementation of proposals previously determined to be acceptable.

Based on this methodology, the following conclusions were made:

- A. The NRC has determined that the following individual proposals do not decrease the level of onsite preparedness and approves them. The NRC approves these proposals with the assumption that the response commitments of all other responders not listed in this paragraph continues to be in accordance with the emergency plan as approved prior to the proposed changes. All times are referenced to the declaration of the earliest Alert or higher emergency classification. Numbers listed correspond to the numbers assigned to the individual proposals in the analysis section:
- ✓ 1. Eliminate the 45-minute communicator response.
 - ✓ 3. Relax the core and thermal/hydraulic technical support response from 45 minutes to 75 minutes.
 4. Reduce the minimum number of on-shift RP technicians from four to two.
 - ✓ 5. Relax the response time of two RP technicians used for performing offsite radiation surveys from 45 minutes to 75 minutes.
 - ✓ 8. Relax the response time of two RP technicians for access control, team coverage, personnel monitoring and dosimetry from 45 minutes to 75 minutes.
 9. Revise I&E technician response to two personnel on-shift and two within 75 minutes.
 10. Listing the local support response in the areas of firefighting and rescue operations/first-aid in the column of 75-minute responders.

Discuss
w/ Ken Reece ✓

- B. The NRC has determined that the following individual proposals, if implemented along with the ones listed above, will result in a reduction of onsite preparedness without adequate compensating offset. These proposals are not approved. All times are referenced to the declaration of the earliest Alert or higher emergency classification. Numbers listed correspond to the numbers assigned to the individual proposals in the analysis section:
2. Eliminate the 45-minute dose assessment responder.
 6. Relax the response time of the one onsite survey (out-of-plant) responder from 45 minutes to 75 minutes.
 7. Relax the response time of the in-plant survey responder from 45 minutes to 75 minutes.

Principal Contributor: W. A. Maier

Date: November 12, 1996

ATTACHMENT A
EMERGENCY PLAN CHANGE JUSTIFICATION

ON-SHIFT MECHANICAL MAINTENANCE AND INSTRUMENT AND ELECTRICAL TECHNICIANS:

Proposal:

McGuire proposes to reinstate a previous provision in Table B-1 of the McGuire Emergency Plan (Minimum Staffing Requirements for Emergencies) to allow for the on-shift Mechanical and/or Instrument and Electrical (IAE) positions to be provided by shift personnel assigned other functions. This provision is in NUREG-0654, Table B-1 (Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies), and was previously included in McGuire Emergency Plan, Table B-1. Due to an inadvertent omission in a previous Emergency Plan change this provision is not currently in the McGuire Emergency Plan. This change would return previously approved flexibility in the staffing of the McGuire emergency response organization and be consistent with the provisions of NUREG-0654, Table B-1.

Basis for Change:

Table B-1 of the McGuire Emergency Plan currently allows certain on-shift positions to be staffed by on-shift personnel assigned other functions. These positions include the Emergency Coordinator, Off Site Agency Communicator, Radiological On-Shift Dose Assessment, Core/Thermal Hydraulics Support, and Medical Emergency Response (MERT). (See Pages 3 and 4 of Attachment A.)

NUREG-0654, Table B-1 states that the Mechanical Maintenance and Instrument and Control Technician on-shift functions "May be provided by shift personnel assigned other functions". This provision for the Mechanical and IAE technicians was included in the McGuire Emergency Plan, Table B-1, through April 29, 1997.

McGuire Emergency Plan Revision 97-1, which was issued on April 30, 1997, included several changes to Table B-1 staffing requirements that had been previously approved by the NRC. Among those Table B-1 revisions was the following change to the IAE staffing.

Previous Maintenance and IAE Staffing Requirements

On-Shift Staffing	45 Minute Response	75 Minute Response
Mechanical - 1		Mechanical - 1
IAE - 1	IAE - 2	IAE - 1

ATTACHMENT A
EMERGENCY PLAN CHANGE JUSTIFICATION

97-1 Revision Maintenance and IAE Staffing Requirements

On-Shift Staffing	45 Minute Response	75 Minute Response
Mechanical - 1		Mechanical - 1
IAE - 2		IAE - 2

When Emergency Plan Revision 97-1 was issued, the provision for the Mechanical Maintenance and IAE Technician positions to be filled by on shift personnel assigned other functions was not identified in Table B-1. Based on discussions with Duke Power personnel who were involved with the revision and review of the Duke Power and NRC correspondence, the omission of this provision does not appear to have been intentional. The documents associated with this change that were reviewed are listed below and are included with this submittal.

May 08, 1995 - Letter from Duke Power to the NRC requesting prior approval of changes to minimum emergency staffing levels.

May 31, 1996 - Letter from Duke Power to the NRC providing written documentation of questions and answers regarding the May 8, 1995 minimum emergency staffing level change request.

July 25, 1996 - Letter from Duke Power to the NRC providing written documentation of additional questions and answers regarding the May 8, 1995 minimum emergency staffing level change request.

November 12, 1996 - Letter from the NRC to Duke Power detailing the NRC's staff review regarding the minimum emergency staffing level change request.

McGuire Maintenance shift staffing levels have been maintained at a level that provides a sufficient number of on-shift personnel to satisfy the on-shift Mechanical and IAE Technician positions required by the Emergency Plan, as well as supplying a portion of the on-shift Fire Brigade. Incorporating this change into the Emergency Plan will allow on-shift Maintenance personnel to satisfy the Mechanical or IAE function while also satisfying other desired functions (i.e. Fire Brigade, etc.). This requested change would reinstate this provision of NUREG-0654 Table B-1 into Table B-1 of the McGuire Emergency Plan.

ATTACHMENT A
EMERGENCY PLAN CHANGE JUSTIFICATION

CURRENT
 FIGURE B-1
 MCGUIRE NUCLEAR SITE
MINIMUM STAFFING REQUIREMENTS FOR EMERGENCIES

Major Functional Area	Major Task	Position, Title or Expertise	On Shift	Capability for Additions****		
				45 Min.	75 Min.	
Plant Operations and Assessment of Operational Aspects		Operations Shift Manager (SRO)	1			
		Shift Supervisor (SRO)	1			
		Control Room Operators (RO)	2			
		Non-Licensed Operators	2			
Emergency Direction and Control (Emergency Coordinator)**		Operations Shift Manager TSC Emergency Coordinator	*		1	
Notification/Communication	Notify Company Personnel, State, County, Federal Agencies and Maintain Communication	Off-site Agency Communicator	1*		2	
Emergency Operations Facility (EOF) Radiological Accident Assessment and Support	EOF Director Dose Assessment Plant Status Access Control Communications Off-site Surveys	Senior Manager			1	
		Rad. Assessment Manager			1	
		Accident Assessment Manager			1***	
		Access Control			1	
		Off-site Agency Communicators			2	
		FMT Members (2 Teams)*****			4	
Radiological Support and Protective Actions	RP Coverage for Repair/ Corrective Actions, Access Control, Search & Rescue, Radiochemistry, Contaminated Injury Medical Response, Personnel Monitoring, Dosimetry, Firefighting	RP Technicians	3		6	
					1	1
					1	1
	Dose Assessment	TSC Off-site Dose Assessor	*	1		
	Chem/Radwaste Operations	Chemistry Technician Radwaste Operator	1		1	
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Work Manager (STA)	1		1***	
		Core/Thermal Hydraulics	*			
		Electrical Mechanical				1 1
	Repair and Corrective Actions	Mechanical Maint. Tech. IAE Technician	1 2		1 2	
Firefighting		Fire Brigade	Per SLC		Local Support	
Rescue Operations and First Aid		MERT	2*		Local Support	
Site Access Control and Personnel Accountability	Security, Personnel Accountability	Security Personnel	All Per Security Plan			

ATTACHMENT A
EMERGENCY PLAN CHANGE JUSTIFICATION

Page 4 of 4

CURRENT
FIGURE B-1
MCGUIRE NUCLEAR SITE
MINIMUM STAFFING REQUIREMENTS FOR EMERGENCIES

- * May be provided by shift personnel assigned other functions. This capability may be limited in nature until relief personnel arrive onsite.
 - The Work Control SRO serves as a communicator to the off-site agencies and the NRC.
 - The Shift Work Manager serving as the STA will perform core/thermal hydraulic evaluations.
- ** Management of the off-site Emergency Response will be assumed by the EOF Director when the Emergency Operations Facility is activated.

Management of the on-site Emergency Response is assumed by the Station Manager/alternate acting as the Emergency Coordinator when the Technical Support Center and Operations Support Center are activated.
- *** The TSC Reactor Engineer and the Accident Assessment Manager in the EOF will provide additional support in the area of core/thermal hydraulics within 75 minutes.
- **** Consideration is given to the fact that most McGuire Site staff and support personnel do not choose or are unable to live within a radius of the site which will allow a response time of 30 minutes or less under ideal conditions. Factors such as weather conditions, road capacity and traffic density, limited housing (near site) and the distance to travel from residence to plant site indicate a realistic response time of from a few minutes to 1 hour and 15 minutes for most employees. Consideration is also given to personnel on shift who are qualified and sufficient in number to handle any emergency condition until response personnel begin to arrive onsite in from a few minutes to one (1) hour and 15 minutes.
- ***** The Field Monitoring Teams will initially report to the Operations Support Center (OSC). If needed, the Field Monitoring Teams will be dispatched from the Operations Support Center (OSC). Once the Emergency Operations Facility (EOF) Field Monitoring Coordinator is ready he/she will assume control of the Field Monitoring Teams.

ATTACHMENT B
PROPOSED EMERGENCY PLAN REVISION

PROPOSED
FIGURE B-1
MCGUIRE NUCLEAR SITE
MINIMUM STAFFING REQUIREMENTS FOR EMERGENCIES

Major Functional Area	Major Task	Position, Title or Expertise	On Shift	Capability for Additions****		
				45 Min.	75 Min.	
Plant Operations and Assessment of Operational Aspects		Operations Shift Manager (SRO)	1			
		Shift Supervisor (SRO)	1			
		Control Room Operators (RO)	2			
		Non-Licensed Operators	2			
Emergency Direction and Control (Emergency Coordinator)**		Operations Shift Manager TSC Emergency Coordinator	*		1	
Notification/Communication	Notify Company Personnel, State, County, Federal Agencies and Maintain Communication	Off-site Agency Communicator	1*		2	
Emergency Operations Facility (EOF) Radiological Accident Assessment and Support	EOF Director Dose Assessment Plant Status Access Control Communications Off-site Surveys	Senior Manager			1	
		Rad. Assessment Manager			1	
		Accident Assessment Manager			1***	
		Access Control			1	
		Off-site Agency Communicators			2	
		FMT Members (2 Teams)*****			4	
Radiological Support and Protective Actions	RP Coverage for Repair/ Corrective Actions, Access Control, Search & Rescue, Radiochemistry, Contaminated Injury Medical Response, Personnel Monitoring, Dosimetry, Firefighting	RP Technicians	3		6	
					1	1
					1	1
					1	
	Out of Plant Surveys			1	1	
	In-Plant Surveys			1	1	
	Dose Assessment	TSC Off-site Dose Assessor	*	1		
	Chem/Radwaste Operations	Chemistry Technician Radwaste Operator	1		1	
Plant System Engineering, Repair and Corrective Actions	Technical Support	Shift Work Manager (STA)	1			
		Core/Thermal Hydraulics	*		1***	
		Electrical Mechanical			1 1	
	Repair and Corrective Actions	Mechanical Maint. Tech. IAE Technician	1* 2*		1 2	
Firefighting		Fire Brigade	Per SLC		Local Support	
Rescue Operations and First Aid		MERT	2*		Local Support	
Site Access Control and Personnel Accountability	Security, Personnel Accountability	Security Personnel	All Per Security Plan			

ATTACHMENT B
PROPOSED EMERGENCY PLAN REVISION

Page 2 of 2

PROPOSED
FIGURE B-1
MCGUIRE NUCLEAR SITE
MINIMUM STAFFING REQUIREMENTS FOR EMERGENCIES

- * May be provided by shift personnel assigned other functions. This capability may be limited in nature until relief personnel arrive onsite.
 - The Work Control SRO serves as a communicator to the off-site agencies and the NRC.
 - The Shift Work Manager serving as the STA will perform core/thermal hydraulic evaluations.
- ** Management of the off-site Emergency Response will be assumed by the EOF Director when the Emergency Operations Facility is activated.

Management of the on-site Emergency Response is assumed by the Station Manager/alternate acting as the Emergency Coordinator when the Technical Support Center and Operations Support Center are activated.
- *** The TSC Reactor Engineer and the Accident Assessment Manager in the EOF will provide additional support in the area of core/thermal hydraulics within 75 minutes.
- **** Consideration is given to the fact that most McGuire Site staff and support personnel do not choose or are unable to live within a radius of the site which will allow a response time of 30 minutes or less under ideal conditions. Factors such as weather conditions, road capacity and traffic density, limited housing (near site) and the distance to travel from residence to plant site indicate a realistic response time of from a few minutes to 1 hour and 15 minutes for most employees. Consideration is also given to personnel on shift who are qualified and sufficient in number to handle any emergency condition until response personnel begin to arrive onsite in from a few minutes to one (1) hour and 15 minutes.
- ***** The Field Monitoring Teams will initially report to the Operations Support Center (OSC). If needed, the Field Monitoring Teams will be dispatched from the Operations Support Center (OSC). Once the Emergency Operations Facility (EOF) Field Monitoring Coordinator is ready he/she will assume control of the Field Monitoring Teams.