Consumers Power Company

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Harold R Denton, Director
Office of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, DC 20555

MIDLAND PROJECT
MIDLAND DOCKET NOS 50-329, 50-330
MIDLAND COMPARISON TO APPENDIX R OF 10 CFR 50
FILE B9.5.1, 0485.1 SERIAL 15105
REFERENCES: (1) RLTEDESCO LETTER TO JWCOOK, DATED JUNE 29, 1981
(2) JWCOOK LETTER TO HRDENTON, SERIAL 13353, DATED AUGUST 6, 1981
(3) EGADENSAM LETTER TO JWCOOK, DATED SEPTEMBER 24, 1981
(4) NRC SUMMARY OF OCTOBER 7, 1981 MEETING, NRC LETTER DATED OCTOBER 27, 1981
ENCLOSURE: "APPENDIX R COMPARISON - MIDLAND UNITS 1 AND 2" DATED DECEMBER 1, 1981

In response to the NRC's correspondence of June 29, 1981 and September 24, 1981 (References 1 and 3), we are forwarding the enclosed document which is a point-by-point tabular comparison of the Midland Plant fire protection program and design features with Appendix R to 10 CFR 50. The enclosed Appendix R comparison is a reflection of the commitments already contained in Section 9A of the Midland FSAR.

We call your attention to one area of concern which we have identified and which is currently under evaluation. This relates to Item 1 of Appendix R located under Section D, "Manual Fire Suppression." We are currently evaluating the locations of hose stations and hose lengths in relation to the as-built configuration of structures and systems to evaluate whether at least one effective hose stream can reach any location that contains or presents an exposure fire hazard to safety-related structures, systems or components.

To provide an opportunity to discuss the results of our evaluation of hose station locations, we recommend a meeting with the Staff to be held at a mutually convenient time in January 1982. This meeting could also provide a

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convenient forum in which to resolve any remaining SER open items and address remaining Staff concerns on the Midland fire protection program. We will contact our NRC Project Manager to make arrangements for this meeting.

R A Wells
Executive Manager

For J W Cook

JWC/RLT/dsb

CC RWHernan, NRC, w/a (3)
RKAnand, NRC. w/a
WTLeFave, NRC, w/a
JGKeppler, NRC, Region III, w/a
JMPeschel, NRC, Region III, w/a
LHCurtis, Bechtel

BCC REBerry, H-416B, w/a
DTPerry, P-14-300, w/a
RAPolich, P-14-212, w/a
JDAlderink, Midland, w/a
JAMooney, P-14-115A, w/a
RWHuston, Washington, w/a
DFLewis, Bechtel, w/a
DBMiller, Midland, w/a
RJBurg, Bechtel, w/a
DPHoffman, P-24-118A, w/a
WJHall, P-24-621, w/a BLHarshe, P-24-618, w/a
KJTerry, P-24-611, w/a
TJSullivan/DMBudzik, P-24-624A, w/o
Licensing Clerk
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APPENDIX R* COMPARISON

MIDLAND UNITS 1 AND 2
DOCKET NO 50-329 AND 50-330
CONSUMERS POWER COMPANY

DECEMBER 1, 1981

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*Note: Appendix R noticed 45 FR 76602 on November 19, 1980 and as amended 46 FR 44734 on September 8, 1981.

APPENDIX R COMPARISON

Midland Units 1 and 2

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
I. Introduction and Scope	I. Introduction and Scope
A. Definitions	A. Definitions
1. The phrases "important to safety," or "safety-related," will be used throughout this Appendix R as applying to all safety functions. The phrase "safe shutdown" will be used throughout this Appendix R as applying to both hot and cold shutdown functions.	1. The phrase "safety-related," used throughout the Appendix 9A to the Midland FSAR, refers to systems and components important to safety. The plant conditions of hot shutdown and cold shutdown, as used in the Midland plant technical specifications, are possible plant conditions after a fire caused disruption. The phrase "shutdown" is used to refer to either hot standby or cold shutdown.
2. Three levels of fire damage limits are established according to the safety functions of the structure, system, or component:	2. Levels of fire damage limits which have been considered in the analysis and design of Midland are as follows:

Safety Function	Fire Damage Limits
Hot Shutdown...	One train of equipment necessary to achieve hot shutdown from either the control room or emergency control station(s) must be maintained free of fire damage by a single fire, including an exposure fire.

Safety Function	Fire Damage Limits
Hot Shutdown...	One train of equipment necessary to achieve and maintain hot standby conditions from either the control room or alternate control stations will be free from fire damage, given the occurrence of any exposure fire.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
Cold Shutdown..Both trains of equipment necessary to achieve cold shutdown may be damaged by a single fire, including an exposure fire, but damage must be limited so that at least on train can be repaired or made operable within 72 hours using onsite capability.	Cold Shutdown..Systems necessary to achieve and maintain cold shutdown from either the control room or alternate control stations are available or can be repaired and made available within 72 hours after a single fire.
Design Basis... Accidents Both trains of equipment necessary for mitigation of consequences following design basis accidents may be damaged by a single exposure fire.	Design Basis... Accidents Both trains of equipment necessary for mitigation of consequences following design basis accidents may be damaged by a single exposure fire.
3. Exposure Fire. An exposure fire is a fire in a given area that involves either in situ or transient combustibles and is external to any structures, systems, or components located in or adjacent to that same area. The effects of such fire (eg, smoke, heat, or ignition) can adversely affect those structures, systems, or components important to safety. Thus, a fire involving one train of safe shutdown equipment may constitute an exposure fire for the redundant train located in the same area, and a fire involving combustibles other than either redundant train may constitute an exposure fire to both redundant trains located in the same area.	3. Exposure Fire. The term "exposure fire", used throughout Appendix 9A of the Midland FSAR, refers to a fire in a given area that involves either in situ or transient combustibles and is external to any structures, systems or components located in or adjacent to that same area. It is recognized that the effects of such fire (eg, smoke, heat or ignition) could adversely affect those structures, systems or components important to safety, and appropriate precautions or design changes have been made for Midland.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
B. Objectives	B. Objectives
1. The most stringent fire damage limit shall apply for those systems that fall into more than one category.	1. The most stringent fire damage limit was applied to those systems that did fall into more than one of the above categories.
2. Redundant systems used to mitigate the consequences of other design basis accidents but not necessary for safe shutdown may be lost to a single exposure fire. However, protection shall be provided so that a fire within only one such system will not damage the redundant system.	2. Redundant systems used to mitigate the consequences of other design basis accidents but not necessary for safe shutdown are protected.
II. General Requirements	II. General Requirements
A. Fire Protection Program	A. Fire Protection Program
1. A fire protection program shall be established at each nuclear power plant. The program shall establish the fire protection policy for the protection of structures, systems, and components important to safety at each plant and the procedures, equipment and personnel required to implement the program at the plant site.	1. The Midland fire protection program complies with these objectives as documented in FSAR Appendix 9A.
2. The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff personnel knowledgeable in both fire protection and nuclear safety.	2. The fire protection program is under the direction of qualified individuals with appropriate levels of delegated authority as stated in Subsection 9A.1.10 of FSAR Appendix 9A. Individuals knowledgeable in both fire protection and nuclear safety have been utilized in the preparation of FSAR Appendix 9A and will be utilized in the implementation of the Midland fire protection program.

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3. The fire protection program shall extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives: to prevent fires from starting; to detect rapidly, control, and extinguish promptly those fires that do occur; to provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.	3. The Midland fire protection program extends the concept of defense-in-depth to meet these objectives as documented in FSAR Subsection 9A.1.2.
B. Fire Hazards Analysis	B. Fire Hazards Analysis
A fire hazards analysis shall be performed by qualified fire protection and reactor systems engineers to:	The Midland fire protection evaluation report has been performed by qualified fire protection and reactor systems engineers.
1. Consider potential in situ and transient fire hazards;	1. The Midland fire protection evaluation report considered potential in situ and and transient fire hazards.
2. Determine the consequences of fire in any location in the plant on the ability to safely shut down the reactor or on the ability to minimize and control the release of radioactivity to the environment; and	2. Systems and components needed to achieve and maintain shutdown were identified. An analysis was performed to determine factors affecting modes of operation and control. These factors include: a. The time at which a system should resume operation after a fire initiated disruption has occurred; b. The ability and desirability to control a system by operator action;

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
	c. The location and suitability of alternate points of control; and d. The effects of a fire on the systems and components.
3. Specify measures for fire prevention, fire detection, fire suppression, and fire containment and alternative shutdown capability as required for each fire area containing structures, systems, and components important to safety in accordance with NRC guidelines and regulations.	3. A description of fire prevention, fire detection, fire suppression, and fire containment and shutdown capability measures used at the Midland plant for each fire area containing structures, systems, and components important to safety is provided in Section 9A.2 of FSAR Appendix 9A.
C. Fire Prevention Features	C. Fire Prevention Features
Fire protection features shall meet the following general requirements for all fire areas that contain or present a fire hazard to structures, systems, or components important to safety.	The Midland plant fire protection and prevention features meet the following general requirements:
1. In situ fire hazards shall be identified and suitable protection provided.	1. In situ fire hazards were identified, and suitable protection is provided.
2. Transient fire hazards associated with normal operation, maintenance, repair, or modification activities shall be identified and eliminated where possible. Those transient fire hazards that can not be eliminated shall be controlled and suitable protection provided.	2. Transient fire hazards were identified, and eliminated where possible. For those that cannot be eliminated, suitable protection has been provided for the area.
3. Fire detection systems, portable extinguishers, and standpipe and hose stations shall be installed.	3. Fire detection systems, portable extinguishers, and standpipe and hose stations have been designed and are installed as identified in FSAR Appendix 9A.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
4. Fire barriers or automatic suppression systems or both shall be installed as necessary to protect redundant systems or components necessary for safe shutdown.	4. Fire barriers or automatic suppression systems have been installed as necessary to protect redundant systems or components necessary for shutdown.
5. A site fire brigade shall be established, trained, and equipped and shall be on site at all times.	5. A fire brigade is established, trained, and equipped and will be on site at all times as discussed in FSAR Subsection 9A.3.B.
6. Fire detection and suppression systems shall be designed, installed, maintained, and tested by personnel properly qualified by experience and training in fire protection systems.	6. Fire detection and suppression systems are designed, installed, maintained, and tested by properly qualified personnel.
7. Surveillance procedures shall be established to ensure that fire barriers are in place and that fire suppression systems and components are operable.	7. During construction Bechtel field personnel will ensure that fire barriers are in place and suppression systems are operable in accordance with agreed upon turnover procedures. Surveillance procedures will be established to ensure that fire suppression systems and components are operable during plant operation. Surveillance procedures are listed in the Midland Plant Fire Protection Implementing Procedures.
D. <u>Alternative or Dedicated Shutdown Capability</u> In areas where the fire protection features cannot ensure safe shutdown capability in the event of a fire in that area, alternative or dedicated safe shutdown capability shall be provided.	D. <u>Alternative or Dedicated Shutdown Capability</u> Alternative, rather than dedicated, shutdown capability is provided in the Midland plant design.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
III. Specific Requirements	III. Specific Requirements
A. Water Supplies for Suppression Systems	A. Water Supplies for Suppression Systems
1. Two separate water supplies shall be provided to furnish necessary water volume and pressure to the fire main loop.	1. The water source for the fire protection system is the plant cooling pond.
2. Each supply shall consist of a storage tank, pump, piping, and appropriate isolation and control valves. Two separate redundant suctions in one or more intake structures from a large body of water (river, lake, etc.) will satisfy the requirement for two separated water storage tanks. These supplies shall be separated so that a failure of one supply will not result in a failure of the other supply.	2. The Midland design utilizes two fire pumps drawing suction from a single intake bay. Failure of one fire protection water system (pumps, piping, and valves) will not result in the failure of the other system. These water supplies are described in FSAR Subsection 9A.3.E.
3. Each supply of the fire water distribution system shall be capable of providing for a period of 2 hours the maximum expected water demands as determined by the fire hazards analysis for safety-related areas or other areas that present a fire exposure hazard to safety-related areas.	3. The volume of the cooling pond available for the fire protection system is sufficient to meet all fire protection requirements for a period of 2 hours. This volume is discussed in FSAR Subsection 9A.3.E.2.
4. When storage tanks are used for combined service-water/fire-water uses the minimum volume for fire uses shall be ensured by means of dedicated tanks or by some physical means such as vertical standpipe for other water service. Administrative controls, including locks for tank outlet valves, are unacceptable as the only means to ensure minimum water volume.	4. Midland does not use storage tanks for a source of water to the fire protection system.

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5. Other water systems used as one of the two fire water supplies shall be permanently connected to the fire main system and shall be capable of automatic alignment to the fire main system. Pumps, controls, and power supplies in these systems shall satisfy the requirements for the main fire pumps. The use of other water systems for fire protection shall not be incompatible with their functions required for safe plant shutdown. Failure of the other system shall not degrade the fire main system.	5. The Midland plant fire water supplies are not connected to any other water systems.
B. Sectional Isolation Valves	B. Sectional Isolation Valves
Sectional isolation valves such as post indicator valves or key operated valves shall be installed in the fire main loop to permit isolation of portions of the fire main loop for maintenance or repair without interrupting the entire water supply.	Post-indicator valves will be used for section isolation of fire mains, as described in FSAR Subsection 9A.2.3.2(a).
C. Hydrant Isolation Valves	C. Hydrant Isolation Valves
Valves shall be installed to permit isolation of outside hydrants from the fire main for maintenance or repair without interrupting the water supply to automatic or manual fire suppression systems in any area containing or presenting a fire hazard to safety-related or safe shutdown equipment.	Midland's design will isolate underground sections of the fire main which contain the hydrant(s) needed to be isolated. The water supply to fire protection systems in safety-related or shutdown areas will not be subsequently interrupted.

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D. Manual Fire Suppression	D. Manual Fire Suppression
1. Standpipe and hose systems shall be installed so that at lease one effective hose stream will be able to reach any location that contains or presents an exposure fire hazard to structures, systems, or components important to safety.	1. This concern is under evaluation.
2. Access to permit effective functioning of the fire brigade shall be provided to all areas that contain or present an exposure fire hazard to structures, systems, or components important to safety.	2. Access to permit effective functioning of the fire brigade is provided to areas in which postulated fires can occur, as described in FSAR Section 9A.2.
3. Standpipe and hose stations shall be inside PWR containments and BWR containments that are not inerted. Standpipe and hose stations inside containment may be connected to a high quality water supply of sufficient quantity and pressure other than the fire main loop if plant-specific features prevent extending the fire main supply inside containment.	3. The Midland plant fire protection system includes standpipe and hose stations inside the containment buildings which are connected to the fire water system and can be isolated by a single manual valve.
E. Hydrostatic Hose Tests	E. Hydrostatic Hose Test
Fire hose shall be hydrostatically tested at a pressure of 150 psi or 50 psi above maximum fire main operating pressure, whichever is greater. Hose stored in outside hose houses shall be tested annually. Interior standpipe hose shall be tested every three years.	Fire hose will be hydrostatically tested at a pressure of 250 psi. Hoses stored outside will be tested annually. Interior standpipe hose will be tested every three years.

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F. Automatic Fire Detection	F. Automatic Fire Detection
Automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components. These fire detection systems shall be capable of operating with or without offsite power.	Automatic fire detection will be supplied for all areas of the plant that contain an exposure fire hazard to shutdown or safety-related components. A description of the fire detection system is contained in Subsection 9A.1.9.3 of FSAR Appendix 9A.
G. Fire Protection of Safe Shutdown Capability	G. Fire Protection of Safe Shutdown Capability
1. Fire protection features shall be provided for structures, systems, and components important to safe shutdown. These features shall be capable of limiting fire damage so that:	1. The Midland plant has been analyzed to provide fire protection features for structures, systems, and components needed to achieve and maintain shutdown in the event of any in situ or transient fire.
a. One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage; and	a. One train of systems necessary to achieve and maintain hot standby from the control room or alternate control station will be free from fire damage.
b. Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours.	b. The systems necessary to achieve and maintain cold shutdown from either the control room or emergency control stations are available or can be repaired and made available within 72 hours.
2. Except as provided for in paragraph G.3 of this section, where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside	2. An analysis was performed to determine places within the plant in which an exposure fire could damage cables or equipment and prevent operation of redundant train of systems necessary to achieve and maintain shutdown. The criteria used for this analysis is given in Subsection 9A.1.8.3 of FSAR Appendix 9A.

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of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided:	Outside the main control room (MCR) and primary containments, where cable or equipment, including associated non-safety-related circuits that could prevent operation or cause maloperation of redundant trains of systems necessary to achieve and maintain hot standby conditions are located within the same fire area, one of the following means of ensuring that one of the redundant trains is free of fire damage has been provided unless specified otherwise in FSAR Section 9A.2:
a. Separation o cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;	a. Separation of cables, equipment, and associated nonsafety-related circuits by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers is protected to provide fire resistance equivalent to that required for the barrier;
b. Separation of cables and equipment and associated non-safety circuits of redundant trains by horozontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or	b. Separation of cables, equipment, and associated nonsafety-related circuits or redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. Fire detectors and automatic suppression systems are installed as described in FSAR Section 9A.2; or

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c. Enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area;	c. Enclosure of cable, equipment, and associated nonsafety-related circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, a method of fire detection and an automatic fire suppression system is provided for the fire area. As an alternative to the fire protection recommendations given above, the Midland plant provides the following fire protection inside the main control room: a. Smoke detection both at ceiling level and above the ceiling and also in all major walk-in control cabinets. b. Fire suppression through the use of portable extinguishers and manual hose reals. Should a fire occur inside the MCR limited manual action inside the MCR is possible and extensive manual action occurs outside the MCR. The effects of a fire will be limited to any single cabinet. Electrical isolation of Train A controls, required to achieve and maintain shutdown, located both in the MCR and at the alternate emergency control stations is provided by transfer switches. The Midland transfer switches are multicontract, break-before-make switches. When a transfer switch is in the normal position, the preferred point of control is energized and active, and the secondary or redundant point of control is isolated. Should a fire disrupt the preferred point of

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
	control, the transfer switch can be thrown to isolate the preferred point of control and make the alternate point of control active.
Inside noninerted containments one of the fire protection means specified above or one of the following fire protection means shall be provided:	The Midland containment atmosphere is a noninerted atmosphere. Due to administrative controls, exposure fires inside containment are assumed not to occur during normal operations. Fire protection has been provided as specified in FSAR Section 9A.2.
d. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards;	
e. Installation of fire detectors and an automatic fire suppression system in the fire area; or	
f. Separation of cables and equipment and associated non-safety circuits of redundant trains by noncombustible radiant energy shield.	
3. Alternative or dedicated shutdown capability and its associated circuits (alternative shutdown capability is provided by rerouting, relocating or modification of existing systems; dedicated shutdown capability is provided by installing new structures and systems for the function of post-fire shutdown),	3. Alternate shutdown capability and its associated circuits, which is independent of cables, systems, or components in the area, room, or zone under consideration, are provided where the protection of systems, whose function is required for hot shutdown, does not satisfy the requirements of Paragraph G.2 above.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
independent of cables, systems or components in the area, room or zone under consideration, shall be provided: a. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of Paragraph G.2 of this section; or b. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activites or from the rupture or inadvertent operation of fire suppression systems. In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.	
H. Fire Brigade A site fire brigade trained and equipped for fire fighting shall be established to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade shall be a least five members on each shift. The brigade leader and at least two brigade members shall have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The qualification of fire brigade members shall include an annual physical examination to determine their ability to perform strenuous fire fighting	H. Fire Brigade A site fire brigade, trained and equipped for fire fighting, will be established to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade consists of 5 members on each shift. The brigade leader and at least two brigade members have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on shutdown capability. These three members will be from the Operations Department of the plant. The qualification of the fire brigade members includes a preemployment physical examina-

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
activities. The shift supervisor shall not be a member of the fire brigade. The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety-related systems.	tion to determine their ability to perform various activities during their work assignments. Each brigade member also has the opportunity to have a physical examination each year. Also, each brigade member who would wear a self-contained breathing apparatus has completed a respiratory fitness program performed by an outside agency. The shift supervisor has a senior operator's license and is the leader of the fire brigade. Due to the organizational structure of the Midland plant, a shift supervisor can be a member of the fire brigade without adversely affecting plant operations. The plant supervisor has the overall operational responsibility of operating the plant and supervising the actions in the control room.
The minimum equipment provided for the brigade shall consist of personal protective equipment such as turnout coats, boots, gloves, hard hats, emergency communications equipment, portable lights, portable ventilation equipment, and portable extinguishers. Self-contained breathing apparatus using full-face positive-pressure masks approved by NIOSH (National Institute for Occupational Safety and Health-approval formerly given by the U.S. Bureau of Mines) shall be provided for fire brigade, damage control and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical.	The equipment provided for the brigade consists of turnout coats, gloves, hard hats, portable two-way radios, portable lights and portable extinguishers. NIOSH approved self-contained breathing apparatus using full-face positive-pressure masks will be provided for the fire brigade and control room personnel. At least 10 masks will be available for fire brigade personnel. Service or rated operating life will be one hour for the self-contained units. At least two extra oxygen bottles will be located on site for each self contained breathing unit. In addition, an on-site 6-hour supply of reserve oxygen will be provided and arranged to permit quick and complete replenishment of exhausted supply oxygen bottles as they

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Service or rated operating life shall be a minimum of 1/2 hour for the self-contained units.	are returned. This reserve supply will consist of extra oxygen bottles and an oxygen cascade refilling system.
At least a 1-hour supply of breathing air in extra bottles shall be located on the plant site for each unit of self-contained breathing apparatus. In addition, an on-site 6-hour supply of reserve air shall be provided and arranged to permit quick and complete replenishment of exhausted air supply bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used, and the compressors shall be operable assuming a loss of offsite power. Special care must be taken to locate the compressor in areas free of dust and contaminants.	
I. <u>Fire Brigade Training</u>	I. <u>Fire Brigade Training</u>
The fire brigade training program shall ensure that the capability to fight potential fires is established and maintained. The program shall consist of an initial classroom instruction program followed by periodic classroom instruction, fire fighting practice, and fire drills:	The following program will be implemented for fire brigade training at Midland:
1. Instruction	1. Instruction
a. The initial classroom instruction shall include:	a. The initial classroom instruction will include:
(1) Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.	(1) Training of all fire brigade members in all positions within the brigade. The brigade will work as a team with all members

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	being able to assume all positions. Because of illness, injury, absence, etc, the member composition of the 5-man fire brigade cannot be predetermined and assignment of specific individuals to specific functions may result in confusion during a fire.
(2) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.	(2) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.
(3) The toxic and corrosive characteristics of expected products of combustion.	(3) The toxic and corrosive characteristics of expected products of combustion.
(4) Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.	(4) Review of the plant layout through discussions on locations of plant fire fighting equipment and fire protection systems. Also, plant layout will be covered when considering access to individual fire areas for purposes of fire fighting. Separate instruction in the layout of the plant will not be taught during fire brigade training sessions because all members of fire brigade will already be familiar with the plant layout due to their daily normal job experience and activities, and other plant training.

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(5) The proper use of available fire fighting equipment and the correct method of fighting each type of fire. The types of fires covered should include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modifications (welding) and record file fires.	(5) The proper use of available fire fighting equipment and the correct method of fighting each type of fire. The types of fires covered will include fires in energized electrical equipment, fires in cable and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction to modifications (welding), and record file fires.
(6) The proper use of communication, lighting, ventilation, and emergency breathing equipment.	(6) The proper use of communication lighting, ventilation, and emergency breathing equipment.
(7) The proper method for fighting fires inside buildings and confined spaces.	(7) The proper method for fighting fires inside buildings and confined spaces.
(8) The direction and coordination of the fire fighting activities (fire brigade leaders only).	(8) The direction and coordination of the fire fighting activities (brigade leaders only).
(9) Detailed review of fire fighting strategies and procedures.	(9) Review of fire fighting strategies and procedures.
(10) Review of the latest plant modifications and corresponding changes in fire fighting plans.	(10) Review of the latest plant modifications and corresponding changes in fire fighting plans as deemed necessary.
Note - Items (9) and (10) may be deleted from the training of no more than two of the nonoperations personnel who may be assigned to the fire brigade.	

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b. The instruction shall be provided by qualified individuals who are knowledgeable, experienced, and suitably trained in fighting the types of fires that could occur in the plant and in using the types of equipment available in the nuclear power plant.	b. The instruction will be provided by qualified individuals who are knowledgable, experienced, and suitably trained in fighting the types of fires that could occur in the plant and in using the types of equipment available in the Midland plant.
c. Instruction shall be provided to all fire brigade members and fire brigade leaders.	c. Instruction will be provided to all fire brigade members and fire brigade leaders.
d. Regular planned meetings shall be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary.	d. Fire drills and regular training sessions are held throughout the year. Changes in the fire protection program and other subjects will be discussed during drills and regular training sessions. Regular planned meetings held at least every 3 months for all brigade members for the exclusive review of changes in the fire protection program and other subjects would be redundant, repetitive, and unnecessary.
e. Periodic refresher training sessions shall be held to repeat the classroom instruction program for all brigade members over a two-year period. These sessions may be concurrent with the regular planned meetings.	e. Periodic refresher training sessions will be held to repeat the classroom instruction program for all brigade members over a two-year period. These sessions may be concurrent with the regular planned meetings.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
2. Practice	2. Practice
Practice sessions shall be held for each shift fire brigade on the proper method of fighting the various types of fires that could occur in a nuclear power plant. These sessions shall provide brigade members with experience in actual fire extinguishment and the use of emergency breathing apparatus under strenuous conditions encountered in fire fighting. The practice sessions shall be provided at least once per year for each fire brigade member.	Practice sessions will be held for each shift fire brigade on the proper method of fighting the various types of fires that could occur in the Midland Plant. These sessions will provide brigade members with experience in extinguishing actual fires and use of emergency breathing apparatus under the strenuous conditions encountered in fire fighting. The practice sessions will be provided at least once per year for each fire brigade member.
3. Drills	3. Drills
a. Fire brigade drills shall be performed in the plant so that the fire brigade can practice as a team.	a. Fire brigade drills will be performed in the plant so that the fire brigade can practice as a team.
b. Drills shall be performed at regular intervals not to exceed 3 months for each shift fire brigade. Each fire brigade member should participate in each drill, but must participate in at least two drills per year.	b. Drills will be performed at regular intervals not exceeding three months for each shift fire brigade. Each brigade member will particpate in at least two drills per year.
A sufficient number of these drills, but not less than one for each shift fire brigade per year, shall be unannounced to determine the fire fighting readiness of the plant fire brigade, brigade leader, and fire protection systems and equipment. Persons planning and authorizing an unannounced drill shall ensure that the responding shift fire	A sufficient number of these drills, but not less than one for each shift fire brigade per year, will be unannounced to determine the fire fighting readiness of the plant fire brigade, brigade leader, and fire protection systems and equipment. Persons planning and authorizing an unannounced drill will ensure that the responding shift fire

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
brigade members are not aware that a drill is being planned until it is begun. Unannounced drills shall not be scheduled closer than four weeks.	brigade members are not aware that a drill is being planned. Unannounced drills will not occur more frequently than at four-week intervals.
At least one drill per year shall be performed on a "back shift" for each shift fire brigade.	At least one drill per year will be performed on a "back shift" for each shift fire brigade.
c. The drills shall be preplanned to establish the training objectives of the drill and shall be critiqued to determine how well the training objectives have been met. Unannounced drills shall be planned and critiqued by members of the management staff responsible for plant safety and fire protection. Performance deficiencies of a fire brigade or of individual fire brigade members shall be remedied by scheduling additional training for the brigade or members. Unsatisfactory drill performance shall be followed by a repeat drill within 30 days.	c. Drills will be preplanned to establish the training objectives of the drill and will be critiqued to determine how well the training objectives have been met. Unannounced drills will be planned and critiqued by members of the management staff responsible for plant safety and fire protection. Performance deficiencies of a fire brigade or of individual fire brigade members will be remedied by scheduling additional training for the brigade or members. Unsatisfactory drill performance will be followed by a repeat drill within 30 days.
d. At 3-year intervals, a randomly selected unannounced drill shall be critiqued by qualified individuals independent of the licensee's staff. A copy of the written report from such individuals shall be available for NRC review.	d. At 3-year intervals, a randomly selected unannounced drill will be critiqued by qualified individuals independent of the licensee's staff. A copy of the written report from such individuals will be available for NRC review.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
e. Drills shall as a minimum include the following:	e. Drills, as a minimum, will include the following:
(1) Assessment of fire alarm effectiveness, time required to notify and assemble fire brigade, and selection, placement and use of equipment, and fire fighting strategies.	(1) Assesment of fire alarm effectiveness, time required to notify and assemble fire brigade, and selection, placement, and use of equipment and fire fighting strategies.
(2) Assessment of each brigade member's knowledge of his or her role in the fire fighting strategy for the area assumed to contain the fire. Assessment of the brigade member's conformance with established plant fire fighting procedures and use of fire fighting equipment, including self-contained emergency breathing apparatus, communication equipment, and ventilation equipment, to the extent practicable.	(2) Assessment of each brigade member's knowledge of his or her role in the fire fighting strategy for the area assumed to contain the fire; assessment of the brigade member's conformance with established plant fire fighting procedures; and use of fire fighting equipment, including self-contained emergency breathing apparatus, communications equipment, and ventilation equipment, to the extent practical.
(3) The simulated use of fire fighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill should differ from those used in the previous drill so that brigade members are trained in fighting fires in various plant areas. The situation selected should simulate the size and arrangement of a fire that could reasonably occur	(3) The simulated use of fire fighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill will differ from those used in the previous drill so that brigade members are trained in fighting fires in various plant areas. The situation selected will simulate the size and arrangement of

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
in the area selected, allowing for fire development due to the time required to respond, to obtain equipment, and organize for the fire, assuming loss of automatic suppression capability.	a fire that could reasonably occur in the area selected, allowing for fire development due to the time required to respond, obtain equipment, and organize for the fire, assuming loss of automatic suppression capability.
(4) Assessment of brigade leader's direction of the fire fighting effort as to thoroughness, accuracy, and effectiveness.	(4) Assessment of brigade leader's direction of the fire fighting effort as to thoroughness, accuracy, and effectiveness.
4. Records	4. Records
Individual records of training provided to each fire brigade member, including drill critiques, shall be maintained for at least 3 years to ensure that each member receives training in all parts of the training program. Those records of training shall be available for NRC review. Retraining or broadened training for fire fighting within buildings shall be scheduled for all those brigade members whose performance records show deficiencies.	Individual records of the training provided to each fire brigade member, including drill critiques, will be maintained for at least 3 years to ensure that each member receives training in all portions of the training program. These records of training will be available for NRC review. Retraining or broadened training for fire fighting within buildings will be scheduled for all those brigade members whose performance records show deficiencies.
J. Emergency Lighting	J. Emergency Lighting
Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.	The Midland plant design provides an emergency lighting system with an 8-hour battery supply.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
K. Administrative Controls	K. Administrative Controls
Administrative controls shall be established to minimize fire hazards in areas containing structures, systems, and components important to safety. These controls shall establish procedures to:	Administrative controls will be established to minimize fire hazards in areas containing structures, systems, and components important to safety. Procedures will be established to state or control:
1. Govern the handling and limitation of the use of ordinary combustible materials, combustible and flammable gases and liquids, high efficiency particulate air and charcoal filters, dry ion exchange resins, or other combustible supplies in safety-related areas.	1. Use of combustible and flammable materials in all safety-related areas.
2. Prohibit the storage of combustibles in safety-related areas or establish designated storage areas with appropriate fire protection.	2. Prohibit storage of bulk combustible and flammable materials in safety-related areas, or establish designated storage areas with appropriate fire protection.
3. Govern the handling of and limit transient fire loads such as combustible and flammable liquids, wood and plastic products, or other combustible materials in buildings containing safety-related systems or equipment during all phases of operating, and especially during maintenance, modification, or refueling operations.	3. Quantities of transient combustible and flammable liquids, wood, plastic products, and other combustible materials during maintance activities, plant modifications and refueling activities to only that quantity necessary to perform the activity. This control applies to all safety-related areas.
4. Designate the onsite staff member responsible for the inplant fire protection review of proposed work activities to identify potential transient fire hazards and specify required additional fire protection in the work activity procedure.	4. Designation of the onsite staff member responsible for the plant fire protection review of proposed work activities to identify potential transient fire hazards and specify required additional fire protection in the work activity procedure.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
5. Govern the use of ignition sources by use of a flame permit system to control welding, flame cutting, brazing, or soldering operations. A separate permit shall be issued for each area where work is to be done. If work continues over more than one shift, the permit shall be valid for not more than 24 hours when the plant is operating or for the duration of a particular job during plant shutdown.	5. Maintenance orders addressing fire protection requirements for the activities is assigned at the beginning of each shift or work activity and is returned at the end of each shift or activity, effectively controlling potential ignition sources. This procedure is described in FSAR Subsection 9A.3.2.3. The plant will assign a cognizant individual to coordinate plant modifications. Contractors performing plant modifications are required to adhere to Consumers Power Company fire protection policies.
6. Control the removal from the area of all waste, debris, scrap, oil spills, or other combustibles resulting from the work activity immediately following completion of the activity, or at the end of each work shift, whichever comes first.	6. Removal from the area of all waste, debris, scrap, oil spills, or other combustibles resulting from the work activity immediately following completion of the activity, or at the end of each work shift, whichever comes first.
7. Maintain the periodic housekeeping inspections to ensure continued compliance with these administrative controls.	7. Periodic housekeeping inspections will be performed to ensure continued compliance with the requirements of these administrative controls.
8. Control the use of specific combustibles in safety-related areas. All wood used in safety-related areas during maintenance, modification, or refueling operations (such as lay-down blocks or scaffolding) shall be treated with a flame retardant. Equipment or supplies (such as new fuel) shipped in untreated combustible packing containers may be	8. Requirements for the use of combustible materials during maintenance, modifications, or refueling operations will have quantities of combustibles limited to those required to support the activity. Removal of excess combustibles from safety-related areas, such as packing containers or crates, is conducted in accordance with the

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
unpacked in safety-related areas if required for valid operating reasons. However, all combustible materials shall be removed from the area immediately following the unpacking. Such transient combustible material, unless stored in approved containers, shall not be left unattended during lunch breaks, shift changes, or other similar periods. Loose combustible packing material such as wood or paper excelsior, or polyethylene sheeting shall be placed in metal containers with tight-fitting self-closing metal covers.	requirements of housekeeping procedures.
9. Control actions to be taken by an individual discovering a fire, for example, notification of control room, attempt to extinguish fire and actuation of local fire suppression systems.	9. Actions to be taken by an individual discovering a fire. For example, notification of control room, attempt to extinguish fire, and actuation of local fire suppression systems.
10. Control actions to be taken by the control room operator to determine the need for brigade assistance upon report of a fire or receipt of alarm on control room annunciator panel, for example, announcing location of fire over PA system, sounding fire alarms, and notifying the shift supervisor and the fire brigade leader of the type, size, and location of the fire.	10. Actions to be taken by the control room operator to determine the need for brigade assistance upon report of a fire or receipt of an alarm(s) on the CRT at the main operator's desk. For example, announcing location of fire over PA system, sounding fire alarms, and notifying the shift supervisor and the fire brigade leader of the type, size, and location of the fire.
11. Control actions to be taken by the fire brigade after notification by the control room operator of a fire, for example, assembling in a designated location, receiving directions from the fire brigade leader, and discharging	11. Actions to be taken by the fire brigade after notification by the control room operator of a fire. The procedures will contain provisions such as assembly location, fire fighting responsibilies, fire fighting equipment selection, pro-

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
specific fire fighting responsibilities including selection and transporation of fire fighting equipment to fire location, selection of protective equipment, operating instructions for use of fire suppression systems, and use of preplanned strategies for fighting fires in specific areas.	tective equipment to be used, operating instructions for use of fire suppression systems and equipment transportation methods.
12. Define the strategies for fighting fires in all safety-related areas and areas presenting a hazard to safety-related equipment. These strategies shall designate:	12. Basic fire fighting strategies will be developed for use in training the fire brigade on attacking and extinguishing fires. Fire fighting strategies will be discussed during fire brigade training and drills. Methods for extinguishing fires from various positions and directions will be covered as well as possible problems encountered as a result of the fire brigade responding to and extinguishing a fire.
a. Fire hazards in each area covered by the specific prefire plans.	Developing detailed and inflexible fire fighting strategies for the brigade for each area may be ineffective and may hinder the actual fire fighting effort. Fire fighting strategies or guidelines must be flexible to be effective; fires are never exactly the same and fire fighting conditions vary. Based on a fire hazards analysis, it is apparent that the time a fire would most likely occur in any specific area would be when that area was subject to a transient fire loading. To write a procedure that consistently and accurately determines probable fire sources, locations of such sources, methodology of fire fighting, and the equipment necessary to fight such a fire, an exact knowledge of fire loading is necessary.
b. Fire extinguishants best suited for controlling the fires associated with the fire hazards in that area and the nearest location of these extinguishants.	
c. Most favorable direction from which to attack a fire in each area in view of the ventilation direction, access hallways, stairs, and doors that are most likely to be free of fire, and the best station or elevation for fighting the fire. All access and egress routes that involve locked doors should be specifically identified in the	

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
procedure with the appropriate precautions and methods for access specified.	Because transient fire loadings cannot be accurately forecast, no procedure can be adequately written to cover all the various possibilities. Consequently, while generalized fire fighting strategies for training are beneficial, we have concluded that detailed fire fighting procedures by fire area are not desireable or beneficial.
d. Plant systems that should be managed to reduce the damage potential during a local fire and the location of local and remote controls for such management (e.g., any hydraulic or electrical systems in the zone covered by the specific fire fighting procedure that could increase the hazards in the area because of overpressurization or electrical hazards).	
e. Vital heat-sensitive system components that need to be kept cool while fighting a local fire. Particularly hazardous combustibles that need cooling should be designated.	
f. Organization of fire fighting brigades and the assignment of special duties according to job title so that all fire fighting functions are covered by any complete shift personnel complement. These duties include command control of the brigade, transporting fire suppression and suppport equipment to the fire scenes, applying the extinguishant to the fire, communication with the control room, and coordination with outside fire departments.	

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g. Potential radiological and toxic hazards in fire zones.	
h. Ventilation system operation that ensures desired plant air distribution when the ventilation flow is modified for fire containment or smoke clearing operations.	
i. Operations requiring control room and shift engineer coordination or authorization.	
j. Instructions for plant operators and general plant personnel during fire.	
L. Alternative and Dedicated Shutdown Capability	L. Alternate and Dedicated Shutdown Capability
1. Alternative or dedicated shutdown capability provided for a specific fire area shall be able to (a) achieve and maintain subcritical reactivity conditions in the reactor; (b) maintain reactor coolant inventory; (c) achieve and maintain hot standby (as defined in the Standard Technical Specifications) conditions for a PWR (hot shutdown for a BWR); (d) achieve cold shutdown (as defined in the Standard Technical Specifications) conditions within 72 hours; and (e) maintain cold shutdown conditions thereafter. During the postfire shutdown, the reactor coolant system process variables shall be maintained within those predicted for a loss of normal A.C. power, and the fission product boundary integrity	1. The alternate shutdown capability provided for a specific fire area is able to achieve and maintain subcritical reactivity conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot standby conditions, and achieve and maintain cold shutdown in 72 hours. The reactor coolant process variables are maintained within those predicted for a loss of normal AC power.

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shall not be affected; i.e., there shall be no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary.	
2. The performance goals for the shutdown functions shall be:	2. The performance goals for the shutdown functions have been met as follows:
a. The reactivity control function shall be capable of achieving and maintaining cold shutdown reactivity conditions.	a. The reactivity control function is capable of achieving and maintaining cold shutdown reactivity conditions.
b. The reactor coolant makeup function shall be capable of maintaining the reactor coolant level above the top of the core for BWRs and be within the level indication in the pressurizer for PWRs.	b. The reactor coolant makeup function is capable of maintaining the reactor coolant inventory within the level indicating range of the pressurizer.
c. The reactor heat removal function shall be capable of achieving and maintaining decay heat removal.	c. The reactor heat removal function is capable of achieving and maintaining decay heat removal.
d. The process monitoring function shall be capable of providing direct readings of the process variables necessary to perform and control the above functions.	d. The process monitoring functions are capable of providing readings of the process variables necessary to perform and control the above functions.
e. The supporting functions shall be capable of providing the process cooling, lubrication, etc., necessary to permit the operation of the equipment used for safe shutdown functions.	e. The supporting functions are capable of providing the process cooling, lubrication, etc, necessary to permit the operation of the equipment used for shutdown functions.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
3. The shutdown capability for specific fire areas may be unique for each such area, or it may be one unique combination of systems for all such areas. In either case, the alternative shutdown capability shall be independent of the specific fire area(s) and shall accommodate postfire conditions where offsite power is available and where offsite power is not available for 72 hours. Procedures shall be in effect to implement this capability.	3. The alternate shutdown capability is independent of the specific fire areas and will accommodate post fire conditions for 72 hours. Procedures will be in effect to implement this.
4. If the capability to achieve and maintain cold shutdown will not be available because of fire damage, the equipment and systems comprising the means to achieve and maintain the hot standby or hot shutdown condition shall be capable of maintaining such conditions until cold shutdown can be achieved. If such equipment and systems will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. The number of operating shift personnel, exclusive of fire brigade members, required to operate such equipment and systems shall be on site at all times.	4. The capability to maintain hot standby until cold shutdown can be achieved has been verified. The required number of operating shift members, required to operate such equipment and systems will be onsite at all times.
5. Equipment and systems comprising the means to achieve and maintain cold shutdown conditions shall not be damaged by fire; or the fire damage to such equipment and systems shall be limited so that the systems can be made operable and cold shutdown can be achieved within 72 hours. Materials for such repairs shall be	5. The damage to systems required to achieve cold shutdown are limited so that cold shutdown can be achieved within 72 hours.

APPENDIX R REGULATORY POSITIONS	DESCRIPTION OF COMPLIANCE
readily available on site and procedures shall be in effect to implement such repairs. If such equipment and systems used prior to 72 hours after the fire will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. Equipment and systems used after 72 hours may be powered by offsite power only.	
6. Shutdown systems installed to ensure postfire shutdown capability need not be designed to meet seismic Catagory I criteria, single failure criteria, or other design basis accident criteria, except where required for other reasons, e.g., because of interface with or impact on existing safety systems, or because of adverse valve actions due to fire damage.	6. Alternate shutdown systems are designed to meet other design basis accident criteria as required by interfaces with existing safety systems.
7. The safe shutdown equipment and systems for each fire area shall be known to be isolated from associated non-safety circuits in the fire area so that hot shorts, open circuits, or shorts to ground in the associated circuits will not prevent operation of the safe shutdown equipment. The separation and barriers between trays and conduits containing associated circuits of one safe shutdown division and trays and conduits containing associated circuits or safe shutdown cables from the redundant division, or the isolation of these associated circuits from the safe shutdown equipment, shall be such that a postulated fire involving associated	7. A postulated fire involving associated circuits will not prevent a shutdown of the Midland Units.

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circuits will not prevent safe shutdown. (An acceptable method of complying with this alternative would be to meet Regulatory Guide 1.75 position 4 related to associated circuits and IEEE Std 384-1974 (Section 4.5) where trays from redundant safety divisions are so protected that postulated fires affect trays from only one safety division.)	
M. Fire Barrier Cable Penetration Seal Qualification	M. Fire Barrier Cable Penetration Seal Qualification
Penetration seal designs shall utilize only noncombustible materials and shall be qualified by tests that are comparable to tests used to rate fire barriers. The acceptance criteria for the test shall include:	Fire barrier penetration seals are designed and constructed to achieve a fire rating equivalent to the rating of the barrier being penetrated. Specimens of the seals will be tested in accordance with ASTM E 119, the NML reference standard IEEE 634 as modified by NML, and NRC Federal Register Vol. 45, No. 225, 10 CFR Part 50. The criteria used to evaluate the performance of fire stops and seals will follow the ANI-DIA/MAERP method for testing which is:
1. The cable fire barrier penetration seal has withstood the fire endurance test without passage of flame or ignition of cables on the unexposed side for a period of time equivalent to the fire resistance rating required of the barrier;	1. Fire shall not propagate to the unexposed side of the fire stop nor shall flaming be observed.
2. The temperature levels recorded for the unexposed side are analyzed and demonstrate that the maximum temperature is sufficiently below the cable insulation ignition temperature; and	2. The temperature on the unexposed surface of the fire stop is sufficiently below the cable insulation ignition temperature.

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3. The fire barrier penetration seal remains intact and does not allow projection of water beyond the unexposed surface during the hose stream test.	3. The wall fire stops shall withstand the hose stream test without causing an opening in the stop.
N. Fire Doors	N. Fire Doors
Fire doors shall be self-closing or provided with closing mechanisms and shall be inspected semiannually to verify that automatic hold-open, release, and closing mechanisms and latches are operable.	The fire hazard analysis presented in FSAR Section 9A.2 discusses each area and its fire barriers in detail. Watertight, missile resistant, and pressure resistant doors are considered to be equivalent to 3-hour fire doors. The rating of watertight doors is discussed in FSAR Subsection 9A.1.2.k.
One of the following measures shall be provided to ensure they will protect the opening as required in case of fire:	
1. Fire doors shall be kept closed and electrically supervised at a continuously manned location;	All fire doors are self-closing and have been identified as fire doors on the doors. Plant procedures have been established requiring all plant personnel to maintain the doors in their normally closed or locked closed position. A door which does not have an automatic hold-release mechanism and must be opened for extended periods will be monitored by a fire watch until it is returned to its normally closed or locked position.
2. Fire doors shall be locked closed and inspected weekly to verify that the doors are in the closed position;	
3. Fire doors shall be provided with automatic hold-open and release mechanisms and inspected daily to verify that doorways are free of obstructions; or	
4. Fire doors shall be kept closed and inspected daily to verify that they are in the closed position.	Fire doors are inspected semi-annually to verify that any automatic hold-open release and closing mechanisms and latches are operating properly.
The fire brigade leader shall have ready access to keys for any locked fire doors.	The fire brigade leader will have access to keys for any locked closed fire doors.

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Areas protected by automatic total flooding gas suppression systems shall have electrically supervised self-closing fire doors or shall satisfy option 1 above.	
O. Oil Collection System for Reactor Coolant Pump	O. Oil Collection System for the Reactor Coolant Pump
The reactor coolant pump shall be equipped with an oil collection system if the containment is not inerted during normal operation. The oil collection system shall be so designed, engineered, and installed that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will withstand the Safe Shutdown Earthquake (See Regulatory Guide 1.29- "Sesimic Design Classification" Paragraph C.2.).	The reactor coolant pump will be equipped with an oil collection system. The oil collection system will be designed, engineered, and installed so that failure will not lead to a fire during normal or design basis accident conditions. The collection system will be seismically analyzed to withstand a safe shutdown earthquake. The collection system will be designed to hold the entire lube oil system inventory of all four pumps. The collection system will be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites.
Such collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage shall be collected and drained to a vented closed container that can hold the entire lube oil system inventory. A flame arrester is required in the vent if the flash point characteristics of the oil present the hazard of fire flashback. Leakage points to be protected shall include lift pump and piping, overflow lines, lube oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and lube oil reservoirs where such features exist on the reactor coolant pumps. The drain line shall	

be large enough to accommodate the largest potential oil leak.