JULY 10 1978

Docket No. 50-305

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James
Senior Vice President
Post Office Box 1200
Green Bay, Wisconsin 54305

Gentlemen:

RE: Kewaunee Fire Protection Evaluation

We have completed our review of your responses to our previous requests and positions that you submitted by letters dated May 15 and May 26, 1978. As a result we have these additional requests for information which are included in Enclosure 1 to this letter. We also have five additional positions regarding the fire protection system design which are included in Enclosure 2. Enclosure 3 provides our positions in regard to administrative controls associated with the Fire Protection Program. These enclosures were forwarded to you in advance on June 23, 1978. Please respond to these positions and requests for additional information by July 24, 1978.

Sincerely,

/s/

A. Schwencer, Chief
Operating Reactors Branch#1
Division of Operating Reactors

Enclosures:
As stated

cc w/encl:
See next page

DISTRIBUTION
Docket
NRC PDR
LOCAL PDR
ORB#1 Reading
ASchwencer
RVWambach
CParrish
OELD
OI&E(3)
ACRS(16)
TBAbrrnathy
JRBuchanan
DEisenhut
JGuibert
VBenaroya
VPanciara

Ap 3
60

OFFICE	DOR:ORB#1	DOR:ORB#1				
SURNAME	TVWambach:lb	ASchwencer				
DATE	7/10/78	7/10/78				

NRC FORM 318 (9-76) NRCM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1976 — 626-624

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

July 10, 1978

Docket No. 50-305

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James
Senior Vice President
Post Office Box 1200
Green Bay, Wisconsin 54305

Gentlemen:

RE: Kewaunee Fire Protection Evaluation

We have completed our review of your responses to our previous requests and positions that you submitted by letters dated May 15 and May 26, 1978. As a result we have these additional requests for information which are included in Enclosure 1 to this letter. We also have five additional positions regarding the fire protection system design which are included in Enclosure 2. Enclosure 3 provides our positions in regard to administrative controls associated with the Fire Protection Program. These enclosures were forwarded to you in advance on June 23, 1978. Please respond to these positions and requests for additional information by July 24, 1978.

Sincerely,

A. Schwencer, Chief
Operating Reactors Branch#1
Division of Operating Reactors

Enclosures:
As stated

cc w/encl:
See next page

cc: Steven E. Keane, Esquire
Foley, Sammond & Lardner
777 East Wisconsin Avenue
Milwaukee, Wisconsin 53202

Bruce W. Churchill, Esquire
Shaw, Pittman, Potts & Trowbridge
1800 M Street, NW.
Washington, D. C. 20036

Kewaunee Public Library
314 Milwaukee Street
Kewaunee, Wisconsin 54216

Enclosure 1
Requests for Additional Information
Kewaunee Nuclear Power Plant
Docket No. 50-305

37. The response to staff request 34 describes a type of roof deck construction that appears to be combustible. Describe where this metal roof deck is located, and the potential for a fire in the roof or for collapse of the roof to affect safety-related equipment.

38. The response to staff position P2 notes the areas reachable from a hose station with a hose of not greater than 100 feet in length. During the site-visit it was noted that several hose stations were provided with hose lengths of less than 100 feet. Verify that all safety related areas are reachable with the hose stored at the interior hose station, or that additional hose is available at the hose station to provide the required length, not to exceed 100 feet of hose.

39. The response to staff position P.8 states that nozzles and service water hoses will be provided in the reactor building. Verify that the available hoses will be capable of reaching all significant cable concentrations and areas where oil fires may occur, and that fire suppression demands would not affect capability of the service water system to meet demands for safe shutdown.

P27. The response to staff request number 18 does not adequately verify the suitability of fire door frames. The response notes that the purchase specification required UL certified doors and frames. However, only the doors are labelled; there is no UL label on the frames. It appears that the frames are not UL listed. This situation has occurred at certain other plants. In these cases, the staff has accepted an evaluation that establishes the equivalency of the frames to fire rated frames. This provides reasonable assurance that the door frames will adequately support the fire doors in a fire situation. An evaluation should be performed that establishes the equivalency of the door frames to fire rated frames. The results of this evaluation should be submitted to the staff.

P28. The licensee response to staff request number 20 describes various systems that could be used for safe shutdown. Controls for these systems are routed through the relay room. The response to staff request 23 demonstrates that adequate time is available to manually operate required equipment for safe shutdown. However, it has not been demonstrated that such equipment would be available independent of the relay room, allowing for manual operation of valves and electrical breakers. Additionally, it appears that certain primary system and steam generator secondary side instrumentation is not independent of the relay room.

The staff does not agree with the licensee's conclusion that a fire in the relay room would not affect control of redundant systems or affect redundant instrumentation. The relay room is an area with a relatively high cable tray concentration from about 6 feet off the floor to the ceiling, which is about 18 feet. Although maximum separation of redundant cabling was attempted, there are several situations where redundant cabling crosses, and could be affected by a single fire at the crossing. Additionally, heat generated by a fire will concentrate at the ceiling, elevating the bulk room temperature as well. The result of the heat could be loss of redundant cables, even if they were at opposite sides of the relay room. There is not reasonable assurance that the CO_2 system will prevent the involvement of redundant cabling because the system's response could be delayed since it relies on manual operation; and because the system lacks cooling capability to totally extinguish a fire, allowing a glowing condition during the soak time which results in reflash after the soak time. To assure redundant safe shutdown equipment is not affected, a water spray system would be required. However, due to the electrical gear in the relay room, use of water may be undesirable.

Staff Position

To assure that safe shutdown may be achieved for a fire in the relay room, a capability to safety shut down independent of the relay room should be provided. As a minimum this capability should include: means for primary system boration and makeup; capability for

providing feedwater to the steam generators; steam generator level instrumentation; pressurizer level and pressure instrumentation. The shutdown method independent of the relay room should be capable of maintaining hot shutdown for a period in excess of 72 hours without offsite power.

P29. To provide adequate fire detection and suppression capability for all safety systems as required by GDC number 3 of Appendix A to 10 CFR 50, detectors should be located in the following areas:

AX-28 (Stairwell "A")
AX-34 (Stairwell "B")
AX-24 (El. 586'-along north wall)
AX-23 (lower level)
TU-94 (CO_2 tank room)
control area ventilation equipment rooms
turbine driven auxiliary feedwater pump room
corridor to the screenhouse

P30. The response to staff request 17 provides the results of hydraulic calculations for the hose stations in the auxiliary building. In seven of the eight hose stations, the pressures available are below the required pressure for operation of 1 1/2" spray nozzles. To provide adequate pressure for the spray mode, hose stations 1 through 6 and number 8 should be provided with 1" hose nozzles with limited flows, rated at about 15-30 gpm. These nozzles should still satisfy the commitment made in response to staff position P15 concerning electrically-safe nozzles in certain areas.

P31. To preclude loss of service water pumps and fire pumps due to a fire involving the circulating water pump lube oil, an automatic sprinkler or water spray system providing coverage of the circulating water pumps should be provided or an analysis must be provided which shows that heat buildup in the area of the service water pumps will not result in temperatures greater than the ambient temperature rating for the service water pumps. In this regard the assumptions used for any such analysis must be stated and justified (e.g., burning rate, pool size, air flow distribution, initiation and maintenance of ventilation, etc.).

Enclosure 3
Staff Positions
Administrative Controls
Kewaunee Nuclear Power Plant
Docket Number 50-305

PA1. The response to item 1.0-d.(4) of attachment No. 1 notes that a work request is reviewed by the maintenance supervisor and the shift supervisor, as well as the lead man. It is not stated whether review of the work request for fire hazards or fire protection is a specific item in the review. The work request should include a specific sign-off for review to identify fire hazards, to assure adequate fire protection will be provided, and to verify conformance with other fire protection requirements.

PA2. The response to item 1.0-f(1) states that responsibilities are assigned to brigade members "as applicable." This statement is not clear. Responsibilities should be established and assigned for the various brigade functions which must be performed in a fire situation, such as:

(a) quick review of the fire plan for the area;

(b) transporting various support equipment to the fire scene, including breathing apparatus, emergency communication equipment, smoke venting equipment;

(c) stringing of fire hose(s) and bringing portable extinguishers to the scene.

PA3. We have evaluated the conditions at the Kewaunee Plant pertinent to manual fire fighting and find that conditions in various safety-related areas do not justify a three-man fire brigade. To adequately fight fires in enclosed areas having significant cable loading or oil hazards, a minimum five man fire brigade is required.

In this five man fire brigade, one individual would provide brigade leadership and direction and coordination with the control room, two individuals would be required to handle a fire hose or portable extinguishers and two individuals would be required to provide relief and backup to the two firefighters, as well as assistance in handling the fire hose, obtaining, replacing, and replenishing air bottles, and set-up and operation of portable smoke exhaust equipment.

In addition, all five men are required to bring certain equipment to the fire scene - portable lights, portable communications, air breathing apparatus, additional portable extinguishers, and portable smoke removal fans and ducting.

This five man brigade constitutes the minimum fire brigade required to fight fires in safety-related areas at Kewaunee.

PA4. The response to items 1.0 and 3.0 of Attachment No.4 states that the use of open flame or combustiion smoke is allowed where the situation is procedurally controlled and specifically reviewed. This provision is unacceptable as it presents an unncessary ignition source in safety related areas and at interfaces between non-safety and safety related areas. The use of open flame or combustion smoke should be prohibited in safety related areas and where used in non-safety related areas to check leakage in the barriers separating the non-safety related areas from safety related areas. When using open flame or combustion smoke in non-safety related areas for other than checking leakage in the barrier separating non-safety and safety related areas (e.g., condenser in-leakage testing), the work should be procedurally controlled and specifically reviewed.

PA5. The response to item 2.a of Attachment No. 4 states that no specific authorization for cutting, welding, or grinding is currently required beyond the normal work request review and approval by the work supervisor and the shift supervisor. The response to items 2.b(1) and (2) indicates that these items are not in the Kewaunee administrative controls and apparently will not be added. The Kewaunee administrative controls are acceptable because they do not establish, as outlined in NEPA-51, proper controls to minimize the potential for work involving ignition sources to cause fires.

Before work requests are issued which include cutting, welding, or grinding operations, the responsible foreman or supervisor should physically survey the area where the work is to be performed and establish that the following precautions have been accomplished:

(1) All moveable combustible material below and within a 35 foot radius of the curring, welding, grinding, or open flame work has been removed. (See NFPA 51B).

(2) All immovable combustible material below and within a 35 foot radius has been thoroughly protected by asbestos curtains, metal guards, or flameproof covers, and fire extinguishers, hose, or other firefighting equipment are provided at the work site. (See NFPA 51B).

PA6. The response to item 2.b(3) of Attachment No.4 indicates that a fire watch is provided by the individual performing the work or the individual supervising the work. Both of these individuals are members of the fire brigade. The use of brigade members supervising the work to also serve as the fire watch is acceptable, provided this individual is observing the cutting, welding, or grinding operations. The individual performing the work cannot adequately serve as the fire watch since his visibility and span of view are restricted by face masks or face shields, and his attention is directed at the work being performed. To properly observe effects of sparks and hot slag resulting from cutting, welding, and grinding, a fire watch other than the individual performing the work should be provided. In general,

a fire watch t. .ned and equipped to prevent an. .ombat fires should be present throughout any operations in which there is potential for fire that might damage safety-related equipment. As a minimum, a fire watch should be provided where cutting, welding, grinding or open flame is performed above or within a radius of 35 feet of any open cables, flammable liquids, scaffold boards, paper, rags, or other objects on the same elevation of the work or if combustible materials are below the work area where openings exist. A fire watch should also be provided for all cutting, welding, grinding, and open flame work in the Control Room, Cable Spreading Room, Diesel Generator Rooms, and other safety-related areas that contain significant amounts of cable or flammable liquids. (See NFPA 51B).

The fire watch should remain on the work site while work is performed and remain in the area for at least 30 minutes after the work is completed to check for smoldering fires.

Where it is determined that a fire watch is not required, in meeting the above criteria, the concurrence should be obtained of the Shift Supervisor, the plant fire chief, or a quality control inspector certified to make this concurrence.

PA7. The response to item d. of Attachment No. 5 indicates that fire fighting strategies will not be developed the licensee prefers to rely on generalized training in fire fighting principles, techniques for fighting various types of fires, and use of equipment available. The concern with this type of approach is that the peculiarities of each fire zone, dictate different techniques, direction approach, and types of extinguishants. Each area is somewhat different in type and configuration combustibles, configuration, most favorable direction of attach, effects of ventilation systems, potential for heat and smoke buildup, type of hazardous or sensitive equipment, and radiological and toxic hazards.

These strategies may be used as lesson plans for certain training sessions,but should be simple and straight-forward enough so that they may also be used for quick reference in a fire situation.

To reiterate our position, fire fighting strategies should be established for fighting fires in all safety-related areas containing multi-level cable tray situations or oil hazards greater than approximately three gallons, and for areas presenting a hazard to safety-related equipment. As a minimum the following subjects should be covered:

(1) Identification of combustibles in each plant zone covered by the specific fire fighting procedures.

(2) Fire extinghuishants best suited for controlling the fires associated with the combustible loadings in that zone and the nearest location of these extinguishants.

(3) Most favorable direction from which to attack a fire in each area, in view of the ventilation direction, access hallways, stairs and doors which are most likely to be fire-free, and the best station or elevation for fighting the fire. A specific identification system shall designate the hallways, stairs, doors, fire equipment and system control locations, and other items described in the fire fighting procedures. This identification should be used in the procedures and the corresponding plant items should be prominently marked so that they can be recognized in dim light. All access and egress routes that involve locked doors should be specifically identified in the procedure with the appropriate precautions and methods for access specified.

(4) Designation of plant systems that should be managed to reduce the damage potential during a local fire; 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).

(5) Designation of vital heat-sensitive system components that should be kept cool while fighting a local fire. Critical equipment which are particularly hazardous combustible sources should be designated to receive cooling.

(6) 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 should include command control of the brigade, fire hose laying, applying the extinguishant to the fire, advancing support supplies to the fire scene, communication with the control room, coordination with outside fire departments.

(7) Identification of radiological and toxic hazards in fire zones.

(8) Ventilation system operation that assures desired plant pressure distribution when the ventilation flow is modified for fire containment or smoke clearing operations.

(9) Operations requiring control room and shift engineer coordination or authorization.

(10) Instructions for plant operators and general plant personnel during fire.