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June 2, 1986

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

Subject: Braidwood Station Unit 1
NFPA Code Deviations
NRC Docket No. 50-456

Dear Mr. Denton:

Attached for your review is a listing of NFPA deviations. Deviations from all applicable NFPA codes are not included at this time because we have not completed the reviews necessary for some of these codes. However, the deviations from the major codes covering the majority of the fire protection features in the plant are included in the attachment.

When all of the code reviews are complete these NFPA deviations will be put into a tabular format much like Table 3-1 currently in the Fire Protection Report for Byron Unit #1. We intend to file the complete table of NFPA deviations for Braidwood Unit #1 as an Amendment to the FPR in September immediately preceeding Fuel Load, in accordance with what was done for Byron Unit #1.

The difference between this submittal for Braidwood Unit #1 and Table 3-1 of the FPR for Byron Unit #1 are the following:

1. All code reviews are reflected in Table 3-1 for Byron, whereas for Braidwood only the codes shown in this submittal are covered.

2. Table 3-1 for Byron includes NFPA deviations which could affect non-safety related areas. This submittal for Braidwood does not include deviations affecting non-safety related areas.

3. Table 3-1 for Byron includes temporary NFPA deviations which were being worked on at the time of the submittal. This Braidwood listing only contains permanent deviations for which status is not expected to change.

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The attached list includes reviews of the following NFPA codes:

NFPA 13 - 1985,	Standard for the Installation of Sprinkler System
NFPA 14 - 1983,	Standard for the Installation of Standpipe and Hose Systems
NFPA 15 - 1985,	Standard for Waterspray Fixed Systems for Fire Protection
NFPA 20 - 1983,	Standard for the Installation of Centrifugal Fire Pumps
NFPA 24 - 1984,	Standard for the Installation of Private Fire Service Mains and Their Appurtenances
NFPA 72E - 1984,	Standard on Automatic Fire Detectors

Please direct any questions you may have regarding this matter to this office.

One signed original and fifteen copies of this letter and enclosure are provided for your review.

Very truly yours,

Anthony Miosi

A. D. Miosi
Nuclear Licensing Administrator

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cc: J. Stevens

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M&M Protection Consultants

Item	Reference	Deficiency	Comments
1.	NFPA 13, para. 3-14.1.1, and 3-14.2, All valves shall be listed.	The Powell, Anchor-Darling, ITT Grinnell and Rockwell Edwards valves are not listed.	The valves are extra heavy type built to ANSI Standards and are acceptable per M&MPC's letter of 2-18-86.
2.	NFPA 13, para. 3-15.1.2, Hanger assemblies shall be listed.	Hangers in safety related areas are not listed.	In Containment, Auxiliary Building and Fuel Handling all piping supports are seismically designed by Sargent & Lundy and are acceptable.
3.	NFPA 13, chapter 4, Spacing, location and position of sprinklers shall be made in accordance with this chapter.	During system walkdown deviating positions and locations of sprinklers were noted and documented.	Partially obstructed sprinklers will provide protection to the hazard in addition to overlap coverage from adjacent sprinkler heads. It will not be necessary to relocate or repipe the system. (Reference M&MPC letters of 11-27-85 and 4-10-86).
4.	NFPA 13, para. 2-7.1, A fire department connection shall be provided.	A fire department pumper connection is not provided.	The only source of water is the cooling lake. Therefore, a pumper connection would be of no value without a municipal water supply.
5.	NFPA 13, para. 3-10.3.4, Clearance shall be provided around all piping extending through walls and floors.	Some portions of piping pass through concrete without clearances.	Sargent & Lundy has designed anchor points on the fire protection piping. Therefore clearances need not be provided.
6.	NFPA 13, para. 3-11.2.5, Each interior sectional valve shall be provided with a sectional drain valve.	Drain is not provided at each sectional valve.	Drainage provisions are made throughout piping system other than at each sectional valve. This is adequate to drain portions of the system.

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Item	Reference	Deficiency	Comments
7.	NFPA 14, para. 4-2.1 & 4-4.2, Valves at the main riser including hose valves shall be approved.	Anchor-Darling, Anderson Greenwood, Powell, and ITT Grinnell valves are not listed.	The valves are extra heavy type built to ANSI Standards and considered acceptable per M&MPC's letter of 2-18-86.
8.	NFPA 14, para. 4-7.1, Where pressure at hose outlet exceeds 100 psi, an approved device shall be installed to reduce the pressure to 100 psi.	Pressure reducing devices are not installed at each hose outlet.	Fire brigade members have been trained for hose pressures in excess of 150 psi. With proper training, pressure reducers are not necessary for fire brigade use.
9.	NFPA 14, para. 3-3.1, Standpipes shall be located in fire rated stair enclosures, pipe shafts, or other appropriate locations.	Standpipes are located throughout the plant.	In order to provide adequate distribution of hose stations throughout the facility, it is not possible to enclose the entire standpipe system. Sectionalizing valves are provided to isolate a minimum number of hose stations if necessary. This design is considered acceptable.
10.	NFPA 14, para. 7-6.1.1, Pipe hangers shall be approved.	Pipe hangers in safety related areas are not listed.	In Containment, Auxiliary Building and Fuel Handling all piping supports are designed seismically by Sargent & Lundy in accordance with ASME/ANSI. Therefore, hanger design is acceptable.
11.	NFPA 15, para. 2-7, All valves shall be approved.	The Anchor-Darling, Target Rock solenoid, Rockwell Edwards, and ITT Grinnell valves on the charcoal filter units, are not listed.	The valves are extra heavy type designed to ANSI and are acceptable per M&MPC's letter of 2-18-86.
12.	NFPA 15, para. 2-1.2, Only listed devices shall be employed.	The Spraying Systems Co. nozzles on the charcoal filters, are not listed.	The unique configuration of each charcoal filter requires a specialized nozzle for adequate water spray application. There are no listed nozzles available for this purpose. The existing equipment is acceptable.

Item	Reference	Deficiency	Comments
13.	NFPA 15, para. 2-6, Hangers shall be approved.	Hangers not listed in safety related areas.	Hangers in Containment Auxiliary Building and Fuel Handling are seismically designed by Sargent & Lundy and considered acceptable.
14.	NFPA 15, para. 2-8.4 Automatic detection equipment shall be listed.	The following charcoal filters utilize United Electric or Conax heat detection devices that are not specifically listed for fire protection service: 1VP05FA & FB, 2VP05FA & FB, OVC05FA & FB, OVC06FA & FB, OVF04F, 1VQ09F, 2VQ09F,	The United Electric devices are U.L. listed for hazardous atmospheres and the Conax RTD thermocouples are standard industrial/nuclear grade heat sensing devices. The detectors are an acceptable design for alarm purposes since the water spray systems are actuated manually.
15.	NFPA 20, para. 2-10.5, Listed valves shall be installed on the system side of the check valve.	Powell gate valves are not listed.	Valves are extra heavy type designed to ANSI Standards and are acceptable per M&MPC's letter of 2-18-86.
16.	NFPA 20, para. 2-13.3.1, Hose valves shall be listed.	Vogt gate valves are not listed (test header).	Valves are extra heavy type designed to ANSI Standards and are acceptable per M&MPC's letter of 2-18-86.
17.	NFPA 20, para. 2-13.3.1, Test header pipe shall be 12".	A 10" pipe is installed.	Existing 10" test header pipe provides adequate flow as recorded on all previous tests. Therefore, 10" line is satisfactory.
18.	NFPA 20, para. 6-3.1.1, Fire pump feeder conductors inside buildings shall be enclosed by 2" of concrete or equivalent 1-hour fire resistance.	Some conductors are not in concrete (elec. pump).	All conductors are in heavy steel conduit that will provide limited fire resistance. Existing routing is adequate and not exposed.
19.	NFPA 20, para. 7-1.1.1, All controllers shall be listed for electric motor driven fire pump service.	Electric motor controller is not listed.	Justification is provided in T. R. Tramm's letter of 12-14-83 to H. R. Denton.

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20.	NFPA 20, para. 7-1.1.3, 7-3.7.1, 7-3.8 & 7-3.9, Wiring diagrams, marking of each motor control device, and instructions shall be mounted on the controller.	All electrical information is not attached to the controller on the electric motor-driven fire pump.	Complete electrical information including diagrams, ratings, and vendor manuals are permanently on file at the station. Necessary data can be obtained via equipment identification number. Therefore, pertinent data is available, but not specifically at the controller.
21.	NFPA 20, para. 7-4.3, An overcurrent protective device shall be located within the fire pump controller.	Overcurrent device is not located within the fire pump controller.	Overcurrent protection is provided from 4160V switchgear buss 144, cubicle 000 per Sargent & Lundy letter of 7-17-85.
22.	NFPA 20, para. 7-4.6, Alarms shall be provided for (b) loss of line power, and (c) phase reversal.	Line power monitored on feeder source and no phase reveral alarm.	Loss of power on the 4160V bus which feeds the fire pump motor is annunciated on control room panel 1PM07J. Phase reversal is highly improbable and not necessary for alarm purposes.
23.	NFPA 20, para. 7-6.2, An ammeter and voltmeter shall be provided on the controller.	An ammeter is attached to the electric pump controller, but not a voltmeter.	For testing purposes, provisions are made to record volts and amps. Therefore, permanently attached equipment is not necessary.
24.	NFPA 20, para. 8-2.7.2, The automatic electric solenoid valve in the cooling water line for the heat exchanger shall be listed for fire protection service.	The solenoid valve is not listed.	A listed valve is not available in the required pressure rating for the diesel engine pump. The existing valve has proven satisfactory during pre-op testing, and is considered acceptable.

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Item	Reference	Deficiency	Comments
25.	NFPA 20, para. 9-4.2.2, An alarm shall be provided indicating that the controller switch has been turned to off or manual position (separate signal).	The off and manual positions on the diesel engine pump are combined with other trouble condition alarms.	Control room alarm response procedure BWAR-0-38-C7 addresses trouble conditions including controller position "off". Since all trouble conditions will be promptly investigated, a separate signal is not necessary.
26.	NFPA 20, para. 2-4, Pumps shall be provided with a nameplate.	Nameplate data on electric motor-driven pump indicates BHP-3202.	Accurate brake horsepower data is provided on vendor drawings and manual.
27.	NFPA 24, para. 3-1.1, All control valves shall be listed.	Powell and Anchor-Darling valves are not listed.	The valves are extra heavy type built to ANSI Standards and considered acceptable per M&MPC's letter of 2-18-86.
28.	NFPA 24, para. 3-2.2, A check valve shall be installed in each water supply connection.	Check valves are not installed at the connections to essential service water (SX), make-up demineralized water, and the station air compressors.	The valves are normally closed and do not serve the fire protection system. In lieu of check valves, procedures are written to monitor potential leakage from the existing valves.
29.	NFPA 24, para. 3-3.2, Post indicator valves shall be located not less than 40 ft. from buildings.	The following valves are less than 40 ft. from a building: OFP579 OFP591 OFP580 OFP592 OFP581 OFP593 OFP582 OFP602	The valves are located along blank walls and are readily accessible. This is considered adequate.
30.	NFPA 24, para. 7-2, All ferrous metal pipe shall be lined.	Pipe is not lined.	Periodic flow tests will monitor the interior condition of the pipe. Hydraulic calculations will also utilize a conservative C factor of 100 to account for extended age. This is adequate in lieu of lining pipe.

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31.	NFPA 24, para. 8-6.2.10, Thrust blocks or other suitable means of restraint shall be provided at each change in direction of a pipeline, tees, plugs, caps, and bends.	Insufficient documentation to determine thrust restraint locations.	Procedure BwVs 100-4 will monitor any unusual system leakage. Thrust blocks are being provided as necessary during routine maintenance or hydrant repositioning.
32.	NFPA 72E, para. 2-5.1.1, All fire detection detection devices shall be listed.	The following charcoal filters utilize United Electric or Conax heat detection devices that are not specifically listed for fire protection service: 1VPO5FA & FB, 2VPO5FA & FB, OVCO5FA & FB, OVCO6FA & FB, OVFO4F, 1VQO9F, 2VQO9F,	The United Electric devices are U.L. listed for hazardous atmospheres and the Conax RTD thermocouples are standard industrial/nuclear grade heat sensing devices. These devices are an acceptable design for alarm purposes since the water spray systems are actuated manually.

(NFPA3/9)