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April 10, 1992  
JPN-92-018

U.S. Nuclear Regulatory Commission  
Mail Station P1-137  
Washington, DC 20555

Attn: Document Control Desk

SUBJECT: James A. FitzPatrick Nuclear Power Plant  
Docket No. 50-333  
Fire Protection Program  
Safe/Alternate Shutdown Using Low Pressure Systems

REFERENCES: 1. NYPA letter, R. E. Beedle to the NRC, dated March 27, 1992 (JPN-92-014),  
regarding a schedule for the fire protection program.

Dear Sir:

During the recent NRC fire protection inspection at FitzPatrick, the inspection team raised a concern about the extensive use of low pressure systems to safely shutdown the plant in the event of a fire. Specifically, they were concerned that the use of only low pressure systems (Automatic Depressurization, Low Pressure Coolant Injection and Core Spray Systems) to reflood the reactor could result in reactor water level dropping below the top of active fuel during the transition to safe shutdown. In response to this concern, the Authority committed to describe those conditions where low pressure systems would be used in FitzPatrick's new Safe/Alternative Shutdown Analysis (Reference 1). Attachment 1 provides this information.

High pressure systems will be available to safely shutdown the plant in thirteen of twenty fire areas. No core uncover will result in the event of a fire in any of these areas.

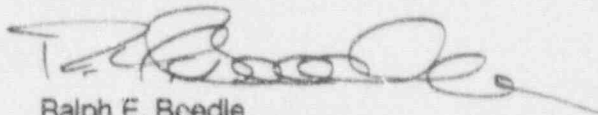
The information in Attachment 1 is based on the new analysis as it exists today. The Authority is working to determine what modifications can be installed to make high pressure systems available in more areas. Analyses are being done to determine the minimum reactor water level when low pressure systems are used. No exemptions are being requested at this time. Any exemptions necessary as a result of this new analysis will be submitted separately.

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If you have any questions, please contact Mr. J. A. Gray, Jr.

Very truly yours,



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James A. FitzPatrick Nuclear Power Plant

**USE OF LOW PRESSURE SYSTEMS TO ACHIEVE AND MAINTAIN SAFE  
SHUTDOWN FOLLOWING A CONTROL ROOM FIRE**

**Introduction**

During the recent NRC fire protection inspection at FitzPatrick, the inspection team raised a concern about the use of low pressure systems to safely shutdown the plant when the fire does not require operators to evacuate the Control Room. Specifically, they were concerned that the use of only low pressure systems (Automatic Depressurization, Low Pressure Coolant Injection and Core Spray Systems) to reflood the reactor could result in reactor water level dropping below the top of active fuel during the transition to safe shutdown. In response to this concern, the Authority committed to describe those conditions where low pressure systems would be used in FitzPatrick's new Safe/Alternative Shutdown Analysis (Reference 1). This attachment provides this information.

**Changes from 1985 Safe/Alternate Shutdown Analysis**

There are six fire areas where the system relied on for safe/alternate shutdown has changed from the 1985 to 1992 analyses. In three of these fire areas (ID, XI and XV) the Authority is proposing to use low pressure systems instead of high pressure systems used in the 1985 analysis. In two fire areas (II and IV), high pressure systems are being used instead of the low pressure systems. And, in one fire area (IA) a different high pressure system is being used. High pressure systems will be available in at least thirteen of the twenty fire areas.

These changes are summarized in Table 1. Table 2 lists the systems used to achieve and maintain safe shutdown in the 1985 and 1992 Safe/Alternate Shutdown Analyses. Table 3 describes the twenty fire areas at FitzPatrick.

TABLE 1

**SUMMARY OF CHANGES FROM 1985 TO 1992 FITZPATRICK  
SAFE/ALTERNATE SHUTDOWN ANALYSIS**

<u>FIRE AREA</u>	<u>SUMMARY OF CHANGE</u>
IA	The 1992 reanalysis uses HPCI instead of RCIC to achieve and maintain safe shutdown.
ID	The 1992 reanalysis uses ADS/LPCI instead of HPCI to achieve and maintain safe shutdown.
II	The 1992 reanalysis uses RCiC instead of low pressure systems (ADS/LPCI or ADS/CS) to achieve and maintain safe shutdown.
IV	The 1992 reanalysis uses RCIC instead of low pressure systems (ADS/LPCI or ADS/CS) to achieve and maintain safe shutdown.
XI	The 1992 reanalysis uses ADS/LPCI instead of RCIC to achieve and maintain safe shutdown.
XV	The 1992 reanalysis uses ADS/LPCI instead of HPCI or RCIC to achieve and maintain safe shutdown.

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Abbreviations used in table:

HPCI = High Pressure Coolant Injection  
 LPCI = Low Pressure Coolant Injection  
 ADS = Automatic Depressurization System  
 CS = Core Spray System  
 RCIC = Reactor Coolant Isolation Cooling



TABLE 2

**HOT SHUTDOWN (HSD) SYSTEMS USED IN 1985 AND 1992  
FITZPATRICK SAFE/ALTERNATE SHUTDOWN ANALYSES**

<u>FIRE AREA</u>	<u>1992 HSD SYSTEM***</u>	<u>1985 HSD SYSTEM</u>
IA	HPCI	RCIC
IB	HPCI	HPCI
IC	HPCI	HPCI
ID	ADS/LPCI	HPCI
IE	RCIC	RCIC
II	RCIC	Low Pressure*
III	HPCI	HPCI
IV	RCIC	Low Pressure
V	HPCI	HPCI
VI	RCIC	RCIC
VII	ADS/LPCI	ADS/LPCI
VIII	RCIC	RCIC
IX	Low Pressure	Low Pressure
X	Low Pressure	Low Pressure
XI	ADS/LPCI	RCIC
XII	RCIC	RCIC
XIII	HPCI	HPCI
XIV	HPCI	HPCI
XV	ADS/LPCI	HPCI or RCIC
XVI**	ADS/LPCI	ADS/LPCI

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\* Low Pressure = ADS/LPCI or ADS/CS

\*\* New Fire Area (Battery Room Corridor) added in 1992 analysis.

\*\*\* A low pressure system will be available in all areas.

TABLE 3

## FITZPATRICK FIRE AREAS/ZONES

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
IA	AD-1	Administration Bldg. el. 272-0
	AD-2	Administration Bldg. el. 272-0
	AD-3	Administration Bldg. el. 272-0
	AD-4	Administration Bldg. el. 286-0
	AD-5	Administration Bldg. el. 286-0
	AD-6	Administration Bldg. el. 300-0
	AS-1	Auxiliary Boiler Rm. el. 272-0
	MG-1	Motor Generator Rm. el. 300-0
IB	FP-1	Diesel Fire Pump Rm. el. 272-0
	CR-2	Radwaste Bldg. Control Rm. el. 284-0
	RW-1	Radwaste Bldg. and Pipe Tunnel
	SH-13	Screen Well House
IC	CT-1	Cable Tunnel West el. 260-0
	SW-1	Switchgear Rm. el. 272-0, Turbine Bldg.
ID	CT-4	Cable Tunnel 4 el. 286-0
IE	FP-2	Foam Rm. el. 272, Turbine Bldg.
	TB-1	Turbine Bldg. (Basement) el. 252-0, Mezzanine el. 292-0 and Operating Fl. El 300-0
	OR-1	Turbine Oil Storage Rm. el. 252-0, Turbine Bldg.
	OR-2	Turbine Oil Storage Rm. el. 272-0, Turbine Bldg.
	OR-3	Misc. Oil Storage Rm. el. 272-0, Turbine Bldg.
	CT-2	Cable Tunnel East el. 260-0
	SW-2	Switchgear Rm. el. 272-0, Turbine Bldg.
III	BR-1	Battery Rm. 1 el. 272-0
	BR-2	Battery Rm. 2 el. 272-0
IV	BR-3	Battery Rm. 3 el. 272-0
	BR-4	Battery Rm. 4 el. 272-0

TABLE 3 (cont'd)

FITZPATRICK FIRE AREAS/ZONES

<u>FIRE AREA</u>	<u>FIRE ZONE</u>	<u>AREA DESCRIPTION</u>
V	EG-1	Emerg. Diesel Gen. Rm. el. 272-0
	EG-2	Emerg. Diesel Gen. Rm. el. 272-0
	EG-5	Emerg. Diesel Gen. Swgr. Rm. el. 272-0
VI	EG-3	Emerg. Diesel Gen. Rm. el. 272-0
	EG-4	Emerg. Diesel Gen. Rm. el. 272-0
	EG-6	Emerg. Diesel Gen. Swgr. Rm. el. 272-0
VII	CR-1	Main Control Rm. el. 300-0
	RR-1	Relay Rm. el. 284-0
	CS-1	Cable Spreading Room el. 272-0
VIII	RB-1C	Reactor Bldg. el. 300-0 NE and NW quadrants
IX	SB-1	Standby Gas Filter Rm. el. 272-0
	RB-1E	Crescent Area East el. 227-0, Reactor Bldg.
	RB-1A	Reactor Bldg. el. 272-0, east side, el. 300-0 (SE quadrant) and entire el. 326-0, 344-0, and 369-0.
X	RB-1W	Crescent Area West el. 272-0, Reactor Bldg.
	RB-1B	Reactor Bldg. el. 272-0 west side and el. 300-0 SE quadrant
XI	CT-3	Cable Tunnel 3, el. 286-0
XII	SP-1	Service Water Pump Rm.
XIII	SP-2	Service Water Pump Rm.
XIV	PC-1	Primary Containment (Drywell)
XV	SU-1	Torus Area
XVI	BR-5	Battery Rm. Corridor el. 272-0

### **Potential For Core Uncovery Using Low Pressure Systems**

FitzPatrick currently has an exemption from Appendix R to 10 CFR 50 that permits water level to briefly drop below the top of active fuel during depressurization and reflooding using alternate safe shutdown, in the event of a fire in the Control Room/Relay Room/Cable Spreading Room (Fire Area VII, Reference 2). The new FitzPatrick Safe/Alternate Shutdown Analysis takes full credit for this exemption.

The Authority is preparing analyses to determine if reactor water level will drop below the top of active fuel during the transition to safe shutdown for fires in areas where high pressure systems are not available. Preliminary analysis indicate that the core will not be uncovered in the event of a fire in Fire Areas IX, X and XV. For the remaining areas, any core uncovery is expected to be less severe than that experienced for a fire in Fire Area VII (Control Room/Relay Room/Cable Spreading Room).



**References**

1. NYPA letter, R. E. Bendle to the NRC, dated March 27, 1992 (JPN-92-014), regarding a schedule for the fire protection program.
2. NRC letter, R. M. Bernero to J. C. Brons dated September 15, 1986, regarding an exemption from Appendix R to 10 CFR 50 concerning core uncover during alternative shutdown.
3. NRC letter, D. B. Vassallo to J. P. Bayne dated July 1, 1983, regarding exemption requests - 10 CFR 50.48 Fire Protection and Appendix R to 10 CFR 50.