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Amd't to DPR-49/Change to Teeh Specs.. Consisting of fire protection system info. replacing submittal of 01-18-77....

24 pages

ACKNOWLEDGED

PLANT NAME: DUANE ARNOLD
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DISTRIBUTION OF FIRE PROTECTION INFO PER S.SHEPPARD 9-22-76 FOR OPERATING REACTORS

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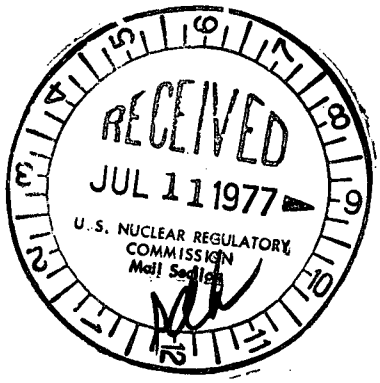

Regulatory File Cy.

Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20545

Dear Mr. Case:

In accordance with 10CFR50.59 and 50.90, we hereby apply for amendment to DPR-49 and the Technical Specifications (Appendix A to license) for the Duane Arnold Energy Center (DAEC).

The attached proposed Technical Specifications for the fire protection system replace those submitted January 18 as requested by the NRC letter of June 17, 1977. As stated in our January 18, 1977 letter, we propose to implement the Technical Specifications by September 1, 1977.

Three signed and notarized originals and 40 additional copies of this application are transmitted herewith. This application consisting of the foregoing letter and attachments hereto, is true and accurate to the best of my knowledge and belief.

Iowa Electric Light and Power Company

By Larry D. Root
Lee Liu for
Vice President-Engineering

LL/OCS/D
Enc.
cc: D. Arnold
R. Lowenstein
J. Shea (NRC)
J. Keppler (NRC)
L. Root
A-117
P-72a

Subscribed and sworn to before me on this 5th day of July 1977.

Jean R. Smith
Notary Public in and for the State of Iowa.

Jean R. Smith
NOTARY PUBLIC
STATE OF IOWA
Commission Expires
September 30, 1978

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PROPOSED CHANGE RTS-79A TO DAEC TECHNICAL SPECIFICATIONS

I. Affected Technical Specifications

Appendix A of the Technical Specifications for the DAEC (DPR-49) does not provide Limiting Conditions for Operation, Surveillance Requirements and Bases for fire protection.

II. Proposed Change in Technical Specifications

The licensees of DPR-49 propose the following change in the Technical Specifications set forth in I above:

Add Specifications 3.13 and 4.13, Limiting Conditions for Operation, Surveillance Requirements and Bases for Fire Protection Systems as contained in the attached. Also attached are supporting changes to Specifications 1.0 and 6.0. These proposed changes replace the proposed changes submitted previously (Letter IE-77-138; Mr. L. Liu, Vice President-Engineering, Iowa Electric Light and Power Company, to Mr. B. Rusche, Director, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission; January 18, 1977).

III. Justification for Proposed Change

This proposed Technical Specification addition is being submitted at the request of the Nuclear Regulatory Commission (Letter; Mr. G. Lear, Chief, Operating Reactors Branch #3, Division of Operating Reactors, to Mr. D. Arnold, President, Iowa Electric Light and Power Company; June 17, 1977).

IV. Review Procedures

This proposed change has been reviewed by the DAEC Operations Committee and Safety Committee which have found that this proposed change does not involve a significant hazards consideration.

27. Fire Suppression Water System

A fire suppression water system shall consist of a water source, pumps, and distribution piping with associated sectionalizing control or isolation valves. Such valves include yard hydrant curb valves, the first valve ahead of the water flow alarm device on each sprinkler, hose standpipe or spray system riser.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENT
3.13 FIRE PROTECTION SYSTEMS	4.13 FIRE PROTECTION SYSTEMS
Applicability:	Applicability:
Applies to the operational status of the Fire Protection Systems.	Applies to the surveillance requirements of the Fire Protection Systems.
Objective:	Objective:
To assure the ability of the Fire Protection Systems to protect safety related systems required for safe plant shutdown.	To verify the ability of the Fire Protection Systems to protect safety related systems required for safe plant shutdown.
Specification:	Specification:
A. Fire Detection Instrumentation	A. Fire Detection Instrumentation
1. The fire detection instrumentation for each fire detection zone shown in Table 3.13-1 shall be operable.	1. Fire Detection Instrumentation testing.
	a. Each fire detection instrument listed in Table 3.13-1 shall be demonstrated operable by performance of the manufacturers recommended tests at least once per six months.
	b. At least once per 12 months by performance of a channel calibration.
	c. The circuitry associated with the detector alarms shall be demonstrated operable at least once every two months.
2. If the number of instruments operable for any zone is less than the minimum required;	
a. Within 1 hour, establish a fire watch to inspect the zone with the inoperable instrument(s) at least once per hour, and	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
b. Restore the inoperable instrument(s) to operable status within 14 days. 3. If Specification 3.13.A.2.b cannot be met, prepare and submit a Special Report to the Commission pursuant to Specification 6.11 within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrument(s) to operable status.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
B. Fire Suppression Water System	B. Fire Suppression Water System
1. The Fire Suppression Water System shall be operable with:	1. The Fire Suppression Water System shall be demonstrated operable:
a. The river water supply system operable.	a. By verifying that the river water supply system is operable per Specification 3.5.J.
b. Two (2) fire pumps operable and aligned to the fire suppression yard header.	b. At least once every week by starting the diesel-driven fire pump and operating it for at least 30 minutes.
c. Automatic initiation logic for each fire pump.	c. At least once per month by starting the motor-driven fire pump and operating it for at least 15 minutes on recirculation flow.
	d. At least once per six months by a flush of the exterior ring header.
	e. At least once per 18 months by verifying that each pump will develop a flow of at least 3100 gpm with a discharge pressure of 129 psig.
	f. At least once per three years by verifying the hydraulic performance of the system as required by the insurance carrier.
2. If only one fire pump is operable, the reactor may remain in operation for a period not to exceed seven days, provided the requirements of Specification 3.13.B.1.a and 3.13.B.1.c are met.	2. When it is determined that only one pump is operable, that pump shall be demonstrated operable immediately and daily thereafter until Specification 3.13.B.1 can be met.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3. If Specification 3.13.B.2 cannot be met, prepare and submit a Special Report to the Commission pursuant to Specification 6.11 within 10 days outlining the cause of inoperability and the plans for restoring the system to operable status.	
4. When maintenance on the circulating water/fire water pump pit is performed, the river water supply system will be maintained in a condition to restore fire water supply within one hour and a roving fire watch will be established in all power block buildings.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
C. Spray and/or Sprinkler Systems	C. Spray and/or Sprinkler Systems
1. The spray and/or sprinkler systems located in the following areas shall be operable:	1. The spray and/or sprinkler systems shall be demonstrated to be operable:
a. RCIC Room (Deluge System #1)	a. At least once per 18 months cycle:
b. HPCI Room (Deluge System #2)	1) By performing a system functional test which includes simulated automatic actuation of the system and verifying that the automatic valves in the flow path actuate to their correct positions.
c. Diesel Generator Diesel Fuel Oil Day Tank Rooms (Sprinkler Systems #2 and #3)	2) By visual inspection of spray headers to verify their integrity
d. Control Building air conditioning charcoal beds.	3) By inspection of each nozzle for obstructions or damage.
e. Gas Treatment System charcoal beds.	b. At least once per three years by an air flow test of the open head spray and/or sprinkler system.
2. If any of the above listed spray and/or sprinkler systems is found to be inoperable,	
a. Within 1 hour, establish a fire watch with portable fire extinguishing equipment to ensure that each area where protection is lost is checked hourly, and	
b. Restore the system to operable status within seven days.	
3. If Specification 3.13.C.2.b cannot be met, prepare and submit a Special Report to the Commission pursuant to Specification 6.11 within 10 days outlining the cause of inoperability and plans for restoring the system to operable status.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
D. CO_2 System	D. CO_2 System
1. The CO_2 System for the cable spreading room shall be operable with a minimum level of 90% and a minimum pressure of 275 psi in the storage tank.	1. The CO_2 System shall be demonstrated operable:
	a. At least once per seven days by verifying CO_2 storage tank level and pressure.
	b. At least once per 18 months by verifying the system valves and associated ventilation dampers actuate automatically and manually to a simulated actuation signal. A brief flow test shall be made to verify flow from each nozzle ("puff test").
2. If Specification 3.13.D.1 cannot be met,	
a. Verify immediately that hose station #35 outside the cable spreading room is operable per Specification 4.13.E.1.a,	
b. Within 1 hour, establish a fire watch with portable fire extinguishing equipment to ensure that the cable spreading room is checked hourly, and	
c. Restore the system to operable status within seven days.	
3. If Specification 3.13.D.2.c cannot be met, prepare and submit a Special Report to the Commission pursuant to Specification 6.11 within 10 days outlining the cause of inoperability and the plans for restoring the system to operable status.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
E. Fire Hose Stations	E. Fire Hose Stations
1. The fire hose stations in the following locations shall be operable: (See Table 3.13-2)	1. Each fire hose station shall be verified to be operable: a. At least once every three months by visual inspection of the station to assure all equipment is available and the pressure in the standpipe is within limits, and that all valves in the flowpath to the hose station are open. b. At least once per 18 months by removing the hose for inspection and repacking and replacing all gaskets in the couplings that are degraded. c. At least once per three years partially open hose station valves to verify valve operability and no blockage.
2. With a hose station inoperable, route an additional hose to the unprotected area from an operable hose station within 1 hour.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
F. Fire Barrier Penetration Fire Seals	F. Fire Barrier Penetration Fire Seals
1. All fire barrier penetration seals protecting safety related areas shall be intact.	1. Fire barrier penetration seals shall be verified to be functional by:
	a. A visual inspection of at least 20% of the fire barrier penetration seals per operating cycle, with 100% of the fire barrier penetration seals visually inspected within a period not to exceed five years.
2. If Specification 3.13.F.1 cannot be met, a continuous fire watch shall be established within 1 hour on at least one side of the penetration until work is completed and the penetration is resealed.	b. A visual inspection of a fire barrier penetration seal following maintenance to verify that it has been returned to its original design specification.

3.13 BASES

The Fire Protection specifications are provided in order to meet the preestablished levels of operability during a fire. Requiring a patrolling fire watch with portable fire equipment if the automatic initiation is lost will provide (as does the automatic system) for early reporting and immediate fire fighting capability in the event of a fire occurrence.

The Fire Protection System is supplied by two pumps aligned to the fire header. The reactor may remain in operation for a period not to exceed seven days if one pump is out of service. If two pumps are not made operable in seven days or if all pumps are lost during this seven day period, the reactors will be placed in the cold shutdown condition within 24 hours.

The fire pumps take suction from the circulating water pump pit, which is supplied water from the river via the River Water Supply (RWS) pumps. The capacity of one RWS pump will meet the maximum requirement of the Fire Suppression Water System. However, the Technical Specification for the RWS System does not allow the plant to operate with less than two RWS pumps operable (Specification 3.5.J). Therefore, the limiting conditions for operation for the water supply to the Fire Suppression Water System will be dictated by the limiting conditions for operation of the River Water Supply System.

The fire pump size is based on the largest automatic system demand plus 1000 gpm for hose streams with the shortest portion of the fire loop out of service, per NEL-PIA recommendations. The fire pumps were purchased with a standard rating of 2500 gpm @ 125 psig, but have adequate capacity to meet the following worst requirement:

1.	Sprinkler System #4 (0.20 gpm/ft^2/10000 ft^2 area)	2100 gpm
2.	Hose Streams	1000 gpm
	Total	3100 gpm

The head required at the fire pump discharge nozzle is 129 psig at 3100 gpm assuming the shortest leg of the fire loop to Sprinkler System #4 is out of service.

The CO_2 Fire Protection System is considered operable with a minimum of 9 tons (0.9 tank) CO_2 in storage. An immediate and hourly fire watch in the cable spreading room will be established if CO_2 fire protection is lost in this room and will continue until CO_2 fire protection is restored.

Early reporting and immediate fire fighting capability in the event of a fire occurrence will be provided (as with the automatic system) by requiring a patrolling fire watch if the number of detectors for a given protected zone is below the minimum operable required.

Only hose stations and sprinkler/spray systems protecting safety related systems are required to be operable per the requirements of this Technical Specification. All other hose stations and sprinkler/spray systems are maintained per the regular plant maintenance and inspection procedures.

4.13 BASES

Periodic testing of the Fire Protection System will provide positive indication of its operability. If only one of the pumps supplying the Fire Protection System is operable, the pump that is operable will be checked immediately and daily thereafter to demonstrate operability. If the CO_2 System becomes inoperable in the cable spreading room, an hourly fire watch will be established.

Wet fire header flushing, spray header inspection for blockage, and nozzle inspection for blockage will prevent, detect, and remove buildup of sludge or other material to ensure continued operability.

Semiannual tests of heat and smoke detectors are in accordance with the NFPA code.

One detector in zones 1 or 3 (control auxiliary panel room) may be inoperable without making that fire detection zone inoperable due to the number of adjacent detectors in these zones providing coverage. All the fire detection equipment in zones 15 and 16 (essential switchgear rooms), zones 13, 14 and 17 (battery rooms), zones 21 and 22 (diesel-generator rooms) and zone 2 (control auxiliary panel room) are considered essential for adequate fire detection in these areas and are therefore all required to be operable. Up to three detectors for each zone in the cable spreading room (zones 5, 6, 7 and 8) can be inoperable without making that zone inoperable, as long as there are no adjacent detectors which are also inoperable. Adjacent detectors will provide coverage.

Smoke detectors will be tested "in-place" using inert gas applied by a pyrotronics type applicator which is accepted throughout the industrial fire protection industry for testing products of combustion detectors or by use of the MSA chemical smoke generators.

Circuits checks by initiation of end of the line or end of the branch detectors will more thoroughly test the parallel circuits than testing on a rotating detector basis. This test is not a detector test, but is a test to simulate the effect of electrical supervision as defined in the NFPA Code 72 A-18, Article 240.

Testing of circuits which actuate CO_2, water, or ventilation systems requires disabling the automatic feature of the fire protection system for the area. A surveillance program which disables these circuits monthly would significantly reduce the ability of these circuits to provide fire suppression.

The CO_2 System manufacturer recommends semiannual testing of CO_2 system fire detection circuits.

Weekly testing of the diesel-driven fire pump is required by NFPA 20.

Cable and cable tray penetrations of fire barriers are fire sealed by materials and methods consistent with the recommendations of NEL-PIA at the time of construction. The fire barrier penetration seals are constructed such that a visual inspection at least once every five years will maintain their integrity.

TABLE 3.13-1

FIRE DETECTION INSTRUMENTS

INSTRUMENT LOCATION	MINIMUM INSTRUMENTS OPERABLE	
	Infra-Red	Smoke
1. Control Auxiliary Panel Room El. 786'-0"		
a. Zone 1	-	3
b. Zone 2	-	3
c. Zone 3	-	8
2. Cable Spreading Room El. 772'-6"		
a. Zone 5	-	9*
b. Zone 6	-	9*
c. Zone 7	-	9*
d. Zone 8	-	9*
3. Station Battery Rooms El. 757'-6"		
a. 125V DC Zone 13	-	1
b. 125V DC Zone 14	-	1
c. 250V DC Zone 17	-	1
4. Essential Switchgear Rooms El. 757'-6"		
a. Zone 15	-	2
b. Zone 16	-	2
5. Diesel-Generator Rooms El. 757'-6"		
a. 1G-21 Zone 21	4	-
b. 1G-31 Zone 22	4	-

*No two adjacent detectors may be inoperable at the same time. Otherwise that zone is inoperable.

TABLE 3.13-2

REQUIRED FIRE HOSE STATIONS

a.	Hose Station #7	Turbine Building, Column N-13, El. 734'-0"
b.	Hose Station #21	Reactor Building, Column F-5.2 El. 757'-6"
c.	Hose Station #22	Reactor Building, Column E-9.1 El. 757'-6"
d.	Hose Station #23	Reactor Building, Column H-11.1 El. 757'-6"
e.	Hose Station #24	Control Building, Column H-14 El. 757'-6"
f.	Hose Station #25	Reactor Building, Column H-5.2 El. 796'-0"
g.	Hose Station #26	Reactor Building, Column E-7.1 El. 796'-0"
h.	Hose Station #27	Reactor Building, Column G-10.1 El. 796'-0"
i.	Hose Station #28	Reactor Building, Column H-7.1 El. 812'-0"
j.	Hose Station #29	Reactor Building, Column F-10.1 El. 812'-0"
k.	Hose Station #35	Control Building, Column F-14 El. 772'-6"

6.0 ADMINISTRATIVE CONTROLS

6.1 MANAGEMENT - AUTHORITY AND RESPONSIBILITY

6.1.1 The Chief Engineer has primary responsibility for the safe operation of the DAEC-1 plant, and reports, under the Chairman of the Board and President, to the Vice President-Generation.

6.1.2 The overall responsibility for the fire protection program for DAEC is assigned to the Vice President - Generation. The DAEC Maintenance Superintendent is delegated the responsibility of directing the operating plant fire protection program.

e. At least one member of each operating shift crew shall be qualified to implement radiation protection procedures.

f. A fire brigade of four members shall be maintained on site at all times. This excludes three members of the shift crew.

6.4 RETRAINING AND REPLACEMENT TRAINING

6.4.1 A training program shall be established to maintain the overall proficiency of the operating organization. This program shall consist of both retraining and replacement training elements and shall meet or exceed the minimum provisions outlined in ANSI N18.1-1971.

6.4.2 A training program for the fire brigade shall be maintained under the direction of the Maintenance Superintendent and shall meet or exceed the requirements of Section 27 of the NFPA Code.

g. Any other area of facility operation considered appropriate by the Safety Committee or the President.

h. Design change request safety evaluations.

i. The DAEC Fire Protection Program and implementing procedures at least once per 24 months.

6.5.2.9 Authority

The Safety Committee shall report to and advise the President on those areas of responsibility specified in Specifications 6.5.2.7 and 6.5.2.8.

6.5.2.10 Records

Records of Safety Committee activities shall be prepared, approved and distributed as indicated below:

a. Minutes of each Safety Committee meeting shall be prepared, approved and forwarded to the President within 14 days following each meeting.

b. Reports of reviews encompassed by Specification 6.5.2.7 above, shall be prepared, approved and forwarded to the President within 14 days following completion of the review.

c. Audit reports encompassed by Specification 6.5.2.8 above, shall be forwarded to the President and to the management positions responsible for the areas audited within 30 days after completion of the audit.

6.5.3 Other Review and Audit

6.5.3.1 Fire Protection Inspection

6.5.3.1.1 An independent fire protection and loss prevention inspection and audit shall be performed annually utilizing either qualified off-site licensee personnel or an outside fire protection firm.

6.5.3.1.2 An inspection and audit by an outside qualified fire consultant shall be performed at intervals no greater than three years.

7. Procedures required by the Preparedness Plan.

8. Procedures required by the plant Security Plan.

9. Operation of radioactive waste systems.

10. Fire Protection Program implementation.

6.8.2 Procedures described in 6.8.1 above, and changes thereto, shall be reviewed by the Operations Committee and approved by the Chief Engineer prior to implementation, except as provided in 6.8.3 below.

6.8.3 Temporary minor changes to procedures described in 6.8.1 above which do not change the intent of the original procedure may be made with the concurrence of two members of the plant management staff, at least one of whom shall hold a senior operator license. Such changes shall be documented and promptly reviewed by the Operations Committee and by the Chief Engineer. Subsequent incorporation, if necessary, as a permanent change, shall be in accord with 6.8.2 above.

6.8.4 Selected drills of emergency procedures shall be conducted quarterly in accordance with the provisions of the Preparedness Plan.

a. Reactor vessel base, weld and heat affected zone metal test specimens (Specification 4.6.A.2).

b. I-131 dose equivalent exceeding 50% of equilibrium value (Specification 4.6.B.1.h).

c. Inservice inspection (Specification 4.6.G).

d. Reactor Containment Integrated Leakage Rate Test (Specification 4.7.A.2.f).

e. Auxiliary Electrical System - Operation with inoperable components (Specification 3.8.B.4).

f. Fire Protection Systems (Specifications 3.13.A.3, 3.13.B.3, 3.13.C.3, and 3.13.D.3).