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

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 182
License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Iowa Electric Light and Power Company, et al., dated August 30, 1991, and supplemented with additional information in a letter dated January 27, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 182, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of the date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Clyde Y. Shiraki, Sr. Project Manager
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Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of issuance: March 24, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 182

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Page

3.1-4
3.1-7a
3.1-9
3.1-12
3.1-14
3.1-18
3.2-5
3.2-19
3.2-29
3.2-33
3.2-39
3.2-44
3.7-19b
3.7-27

TABLE 3.1-1 (Continued)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

Minimum No. of Operable instrument Channels for Trip System (1)	Trip Function	Trip Level Setting	Modes in Which Function Must be Operable			Number of Instrument Channels Provided By Design	Action (1)
			Refuel (6)	Startup	Run		
2	High Drywell Pressure	≤ 2.0 psig	x(7)	x(8)	x	4 Instrument Channels	A
2	Reactor Low Water Level	≥ +170" Indicated Level (15)	x	x	x	4 Instrument Channels	A
2	High Water Level in Scram Discharge Volume	≤ 60 Gallons	x(2)	x	x	4 Instrument Channels	A
4	Main Steam Line Isolation Valve Closure	≤ 10% Valve Closure	x (3)(13)	x (3)(13)	x(13)	8 Instrument Channels	A or C
2	Turbine Control Valve Fast Closure (Loss of Control Oil Pressure)	Within 30 milliseconds of the Start of Control Valve Fast Closure			x(4)	4 Instrument Channels	A or D
4	Turbine Stop Valve Closure	≤ 10% Valve Closure			x(4)	8 Instrument Channels	A or D
2	First Stage	Bypass below 165 psig	x	x	x	4 Instrument Channels	A or D

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TABLE 4.1-1 (Continued)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT FUNCTIONAL TESTS
MINIMUM FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTRUMENT AND CONTROL CIRCUITS

	Group (2)	Functional Test	Minimum Frequency (3)
High Drywell Pressure	A	Trip Channel and Alarm	Every 1 month (1)
Reactor Low Water Level (5)	A	Trip Channel and Alarm	Every 1 month (1)
High Water Level in Scram Discharge Volume	A	Trip Channel and Alarm	Every 3 months
Main Steam Line Isolation Valve Closure	A	Trip Channel and Alarm	Every 1 month (1)
Turbine Control Valve EHC Oil Pressure	A	Trip Channel and Alarm	Every 1 month
Turbine First Stage Pressure Permissive	A	Trip Channel and Alarm	Every 3 months (1)
Turbine Stop Valve Closure	A	Trip Channel and Alarm	Every 1 month (1)
Reactor Pressure Permissive	A	Trip Channel and Alarm	Every 3 months

TABLE 4.1-2

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT CALIBRATION
MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration (4)	Minimum Frequency (2)
IRM High Flux	C	Comparison to APRM on Controlled Shutdowns	On Controlled Shutdown
APRM High Flux			
Output Signal	B	Heat Balance	Daily
Flow Bias Signal	B	With Standard Pressure Source	Once/operating cycle
LPRM Signal	B	TIP System Traverse	Every 1,000 EFPH
High Reactor Pressure	A	Standard Pressure Source	Every 3 months
High Drywell Pressure	A	Standard Pressure Source	Every 3 months
Reactor Low Water Level	A	Pressure Standard	Every 3 months
High Water Level in Scram Discharge Volume	A	Water Column	Once/operating cycle
Main Steam Line Isolation Valve Closure	A	Note (5)	Note (5)
Turbine First Stage Pressure Permissive	A	Standard Pressure Source	Every 6 months
Turbine Control Valve Oil Pressure Trip	A	Note (6)	Once per operating cycle

Amendment No. 22,142,182

NOTES FOR TABLE 4.1-2

1. A description of three groups is included in the bases of this Specification.

2. Calibration test is not required on the part of the system that is not required to be operable or is tripped. Calibration test shall be performed prior to returning the system to an operable status with a frequency not less than those defined in the applicable table. However, if maintenance has been performed on those components, calibration shall be performed prior to returning to service.

3. Deleted

4. Response time is not a part of the routine instrument channel test but will be checked once per operating cycle.

5. Physical inspection and actuation of these position switches will be performed once per operating cycle.

6. Measure time interval base line data for each operating cycle as follows: From energization of fast acting solenoid, measure time interval to response of oil pressure switch, HFA relay (RPS) and position response of control valves.

The MSIV closure scram is set to scram when the isolation valves are 10% closed in 3 out of 4 lines. This scram anticipates the pressure and flux transient which would occur when the valves close. By scramming at this setting, the resultant transient is less severe than either the pressure or flux transient which would otherwise result.

A reactor mode switch is provided which actuates or bypasses the various scram functions appropriate to the particular plant operating status.

The manual scram function is active in all modes, thus providing for a manual means of rapidly inserting control rods during all modes of reactor operation.

TABLE 3.2-A

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION

Minimum No. of Operable Instrument Channels Per Trip System (1)	Instrument	Trip Level Setting	Number of Instrument Channels Provided by Design	Valve Groups Operated by Signal	Action (2)
2 (6)	Reactor Low Water Level	≥ +170" Indicated Level (3)	4	2,3,4,5 (Sec. Cont., 3	A E)
1	Reactor Low Pressure (Shutdown Cooling Isolation)	≤ 135 psig	2	4	C
2	Reactor Low-Low-Low Water Level	≥ +18.5" indicated level (3)	4	1	A
2 (6)	High Drywell Pressure	≤ 2.0 psig	4	2,3,4,8,9* (Sec. Cont., 3	A E)
2	High Radiation Main Steam Line Tunnel	≤ 3 X Normal Full Power Background (8)	4	1**	B
2	Low Pressure Main Steam Line	≥ 850 psig (7)	4	1	B
2 (5)	High Flow Main Steam Line	≤ 140% of Rated Steam Flow	4	1	B
2	Main Steam Line Tunnel/Turbine Bldg. High Temperature	≤ 200° F.	4	1	B
1	Reactor Cleanup System High Diff. Flow	≤ 40 gpmd	2	5	D

* Group 9 valves isolate on high drywell pressure combined with reactor steam supply low pressure
** Operates Group 1 valves except Main Steam Line Isolation Valves.

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TABLE 3.2-D

RADIATION MONITORING SYSTEMS THAT INITIATE AND/OR ISOLATE SYSTEMS

Minimum No. of Operable Instrument Channels	Trip Function	Trip Level Setting	Number of Instrument Channels Provided by Design	Valve Groups Operated by Signal	Action (1)
1	Refuel Area Exhaust Monitor	Upscale, < 9 mr/hr	2 Inst. Channels	3	A or B
1	Reactor Building Area Exhaust Monitors	Upscale, < 11 mr/hr	2 Inst. Channels	3	B
1	Offgas Radiation Monitors	Note 2	2 Inst.	Note 2	C
2	Main Steam Line Radiation Monitor	<3x Normal Full Power Background	4 Inst. Channels	Note 3	D

NOTES FOR TABLE 3.2-D

1. Action

   A. Cease operation of the refueling equipment.
   B. Isolate secondary containment and start the standby gas treatment system.
   C. Refer to Subsection 3.2.D.1.
   D. Refer to Specification 3.7.F.

2. For trip setting and valves isolated, see Specification 3.2.D.1.a

3. Trips Mechanical Vacuum Pump which results in a subsequent isolation of the Mechanical Vacuum Pump suction valves.

TABLE 4.2-D

MINIMUM TEST AND CALIBRATION FREQUENCY FOR RADIATION MONITORING SYSTEMS

Instrument Channels	Instrument Functional Test (9)	Calibration (9)	Source Check	Instrument Check
1) Refuel Area Exhaust Monitors	Once/3 months	Once/operating cycle	Once/month	Once/day
2) Reactor Building Area Exhaust Monitors	Once/3 months	Once/operating cycle	Once/month	Once/day
3) Offgas Post-treatment Radiation Monitors	Once/3 months (10)	Once/operating cycle	Once/month	Once/day
4) Offgas Pre-treatment Radiation Monitors	Once/3 months (10)	Once/operating cycle	Once/month	Once/day
5) Main Steam Line Radiation Monitors	(1) (3)	Once/operating cycle	Once/ operating cycle	Once/shift

Logic System Functional Test (6)	Simulated Automatic Isolation and Logic Test Frequency (9)
1) Reactor Building Isolation	Once/operating cycle
2) Standby Gas Treatment System Actuation	Once/operating cycle
3) Steam Jet Air Ejector Offgas Line Isolation	Once/operating cycle
4) Steam Jet Air Ejector Charcoal Bed Bypass	Once/operating cycle
5) Mechanical Vacuum Pump Trip and Isolation	Once/operating cycle

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These instrument channels will be calibrated using simulated electrical signals.

4. Deleted

5. Reactor low water level and high drywell pressure are also included on Table 4.1-2.

6. The logic system functional tests shall include a calibration of time delay relays and timers necessary for proper functioning of the trip systems.

7. These signals are not PCIS trip signals but isolate the Reactor Water Cleanup system only.

8. This instrumentation is excepted from the functional test definition. The functional test will consist of comparing the analog signal of the active thermocouple element feeding the isolation logic to a redundant thermocouple element.

9. Functional tests and calibrations are not required on the part of the system that is not required to be operable or is tripped. Functional tests shall be performed prior to returning the system to an operable status with a frequency not less than once per month. Calibrations shall be performed prior to returning the system to an operable status with a frequency not less than those defined in the applicable table. However, if maintenance has been performed on those components, functional tests and calibration shall be performed prior to returning to service.

10. The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exist:
    1. Instrument indicates measured levels above the alarm/trip setpoint.
    2. Instrument indicates a downscale failure.
    3. Instrument controls not set in operate mode.

11. A functional test shall be performed for the ADS manual inhibit switches as part of the ADS subsystem tests.

Temperature monitoring instrumentation is provided in the main steam line tunnel and turbine building to detect leaks in this area. Trips are provided on this instrumentation and when exceeded, cause closure of isolation valves. See Spec 3.7 for Valve Group. The setting is 200°F for the main steam line tunnel detector. For large breaks, the high steam flow instrumentation is a backup to the temperature instrumentation.

High radiation monitors in the main steam line tunnel have been provided to detect gross fuel failure as in the control rod drop accident. A trip setting of 3 times normal full-power background is established to close the main steam line drain valves, recirculation loop sample valves, and trip the Mechanical Vacuum Pump. For changes in the Hydrogen Water Chemistry hydrogen injection rate, the trip setpoint may be adjusted based on a calculated value of the radiation level expected. Hydrogen addition will result in an increase in the nitrogen (N-16) activity in the steam due to increased N-16 carryover in the main steam. Reference Subsection 15.4.7 of the Updated FSAR.

Pressure instrumentation is provided to close the main steam isolation valves in RUN Mode when the main steam line pressure drops below 850 psig. The Reactor Pressure Vessel thermal transient due to an inadvertent opening of the turbine bypass valves when not in the RUN Mode is less severe than the loss of feedwater analyzed in Subsection 15.6.3 of the Updated FSAR, therefore, closure of the Main Steam Isolation valves for thermal transient protection when not in RUN Mode is not required.

closure (valve CV-4134A open and CV-4134B closing to route offgas through the charcoal) and another (Hi Hi Hi) to initiate offgas system isolation valve (valve CV-4108) closure. The third trip point (Hi Hi) is for alarm initiation, and will initiate prior to the offgas isolation trip. Customarily, the trip setting for bypass valve closure is lower than the trip setting for offgas system isolation valve closure.

Two sets of two radiation monitors are provided which initiate the Reactor Building Isolation function and operation of the standby gas treatment system. Two instrument channels monitor the radiation from the refueling area ventilation exhaust ducts and two instrument channels monitor the building ventilation below the refueling floor.

Trip settings of < 9 mr/hr for the monitors in the refueling area ventilation exhaust ducts are based upon initiating normal ventilation isolation and standby gas treatment system operation so that none of the activity released during the refueling accident leaves the Reactor Building via the normal ventilation path but rather all the activity is processed by the standby gas treatment system.

High radiation monitors in the main steam line tunnel have been provided to detect gross fuel failure. In the event of a gross fuel failure, the established setting of 3 times normal full power background radiation levels (accounting for the N-16 carryover due to Hydrogen Water Chemistry) will trip the Mechanical Vacuum Pump, which in turn isolates the suction of the Mechanical Vacuum Pump from the high and low pressure condensers. This prevents the release of untreated fission products to the environment via the Mechanical Vacuum Pump.

Flow integrators are used to record the integrated flow of liquid from the drywell sumps. The alarm unit in each

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
F. Mechanical Vacuum Pump	F. Mechanical Vacuum Pump
1. The mechanical vacuum pump shall be capable of being isolated and secured on a signal of high radioactivity in the steam lines whenever the main steam isolation valves are open.	1. Surveillance requirements are given in Table 4.2-D.
2. During mechanical vacuum pump operation the release rate of gross activity except for halogens and particulates with half lives longer than eight days shall not exceed 1 curie/sec.	
3. If the requirements of 3.7.F.1 or 3.7.F.2 are not met, the Mechanical Vacuum Pump suction valves shall be closed.	

NOTES FOR TABLE 3.7-3

1. Isolation Signals are as follows:

Group 1:

The valves in Group 1 are closed upon any one of the following conditions:

1. Reactor vessel low-low-low water level.
2. Main steam line high flow.
3. Main steam line tunnel/turbine building high temperature.
4. Low main steam line pressure at turbine inlet (run mode only).
5. Main condenser low vacuum.
6. Main steam line high radiation (main steam line drain valves and recirculation loop sample valves only)

Group 2:

The valves in Group 2 are closed upon any of the following conditions:

1. Reactor vessel low water level.
2. High drywell pressure.