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Mr. Edson G. Case

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Iowa Elec. Light & Pwr. Company  
Cedar Rapids, Iowa  
Lee Liu

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License No. DPR-49 Appl for Amend: tech specs proposed change concerning the changing of the sample analysis frequency from "monthly and annual" to "quarterly".....

(1/8')

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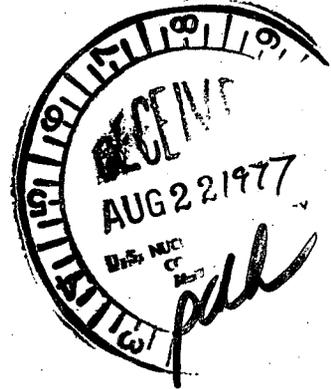
CEDAR RAPIDS, IOWA

August 16, 1977  
IE-77-1553

LEE LIU  
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Regulatory

File Cys



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

Dear Mr. Case:

Transmitted herewith in accordance with the requirements of 10CFR50.59 and 50.90 is an application for amendment of DPR-49 (Appendices A and B to License) for the Duane Arnold Energy Center.

This application consisting of proposed Technical Specification changes ETS-21 and ETS-22 (Appendix B) and RTS-85 and RTS-92 (Appendix A) has been reviewed and approved by the DAEC Operations Committee and the DAEC Safety Committee. This application does not involve a significant hazards consideration.

Three signed and notarized originals and 37 additional copies of this application are transmitted herewith. This application, consisting of the foregoing letter and enclosures hereto, is true and accurate to the best of my knowledge and belief.

Iowa Electric Light and Power Company

By Lee Liu  
Lee Liu  
Vice President-Engineering

LL/OCS/D

Encl.

cc:D. Arnold  
K. Meyer  
R. Lowenstein  
J. Keppler (NRC)  
R. Clark (NRC)  
L. Root  
File A-117

Subscribed and sworn to before me  
on this 16<sup>th</sup> of August, 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

772340015

## PROPOSED CHANGE ETS-21 TO DAEC TECHNICAL SPECIFICATIONS

### I. Affected Technical Specifications

Appendix B of the Technical Specifications for the DAEC (DPR-49) provides as follows:

Table 4.3-1, Environmental Radioactivity Monitoring Program for the Duane Arnold Energy Center, provides for the monthly and annual analysis of badges for ambient radiation samples (page 4.3-4).

### II. Proposed Changes in Technical Specifications

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

Change the sample analysis frequency from "monthly and annual" to "quarterly".

### III. Justification for Proposed Change

At the present time one badge is collected at each location and analyzed monthly by Iowa Electric Light and Power and two badges are collected at each location annually. One of these is analyzed by Iowa Electric Light and Power Company and the other by their environmental consultant. Thus, there is only one opportunity each year to compare results between Iowa Electric and their consultant. By going to the proposed quarterly analysis, each sample will be analyzed by Iowa Electric and their consultant four times per year, thus giving the resultant data more reliability and added opportunity to make adjustments should that be necessary. In addition, quarterly analysis meets the guidelines set out by Regulatory Guide 4.8, Environmental Technical Specifications for Nuclear Power Plants.

### IV. Review Procedure

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.

TABLE 4.3-1 (Continued)

ENVIRONMENTAL RADIOACTIVITY MONITORING PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

SAMPLING DESCRIPTION		SAMPLE FREQUENCY		ANALYSIS	REMARKS
Type of Sample	Sample Point	Sampling Point Description	Operational Program		
Air Iodine	4	Morris	Weekly Analysis Continuous Collection	Radiiodine	Analyzed weekly as two composite samples unless absence of radioiodine can be demonstrated. If radioiodine is detected, each charcoal cartridge will be analyzed individually.
	5	Palo			
	7	Shellsburg			
	8	Urbana			
	11	Toddville			
	12	Iowa City			
	14	Alice			
	15	On-site			
22. Ambient Radiation	1-16	Same as Airborne Particulates	Quarterly Analysis  Continuous Collection	Radiation Dose	Each dosimeter will consist of 5 hot pressed Lif chips.  Two badges at each location changed quarterly.

4.3-4

PROPOSED CHANGE ETS-22 TO DAEC TECHNICAL SPECIFICATIONS

I. Affected Technical Specifications

Appendix B of the Technical Specifications for the DAEC (DPR-49) provides as follows:

Specification 2.3.1.C.8 states:

"One reactor building exhaust vent and one plant stack monitoring system shall be operable, and the off-gas radiation monitors shall be operable or operating whenever steam pressure is available to the air ejectors. If these requirements are not satisfied, a normal orderly shutdown shall be initiated and the reactor shall be in the hot shutdown condition within 10 hours in the case of the stack monitor or 10 days in the case of the building vent monitor."

II. Proposed Changes in Technical Specifications

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

Specification 2.3.1.C.8.a:

"One reactor building exhaust vent monitor shall be operable. If this requirement cannot be met, continued release of gaseous effluents from the source shall be permitted only during the succeeding 7 days provided that daily grab samples are taken."

Specification 2.3.1.C.8.b:

"One plant stack monitor shall be operable. If this requirement cannot be met, continued release of gaseous effluents from the source shall be permitted only during the succeeding 7 days provided that daily grab samples are taken."

III. Justification for Proposed Change

The purpose of this proposed change is to clarify the Technical Specifications concerning which monitors need to be operable, the action required if one or the other becomes inoperable, and the time during which corrective action must be taken. At the present time, if the stack monitoring system becomes inoperable, the reactor must be in the hot shutdown condition within 10 hours. Shutdown does not, however, terminate the releases

immediately; these could go on for some hours afterward. With the proposed change, grab samples would be taken daily and if these showed that limits were being exceeded, appropriate corrective action would be taken. The proposed change in the reactor building exhaust vent monitoring system is much more conservative than the present Technical Specifications, since they would require daily grab samples and appropriate corrective action if the limits are exceeded.

IV. Review Procedure

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.

## 2.0 ENVIRONMENTAL PROTECTION CONDITIONS

## 2.3.1 Radioactive Effluents

Specification (Cont'd.)

- b. Automatic isolation devices capable of limiting gaseous release rate to within the values specified in 2.3.1.C.1 above shall be operating.
8. a. One reactor building exhaust vent monitor shall be operable. If this requirement cannot be met, continued release of gaseous effluents from the source shall be permitted only during the succeeding 7 days provided that daily grab samples are taken.
- b. One plant stack monitor shall be operable. If this requirement cannot be met, continued release of gaseous effluents from the source shall be permitted only during the succeeding 7 days provided that daily grab samples are taken.
9. The containment shall not be purged except through the standby gas treatment system except that following a Type "A" containment leakage rate test, the containment may be depressurized directly to the reactor building and subsequently released via the reactor building ventilation system, within the limits of Specification 2.3.1.C.2.

D. 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.
- 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 limits of 2.3.1.D.2 are not met, the vacuum pump shall be isolated.

## 3.0 MONITORING REQUIREMENTS

## 3.3.1 Radioactive Effluents

Specification (Cont'd.)D. Mechanical Vacuum Pump

- 1. At least once during each operating cycle verify automatic securing and isolation of the mechanical vacuum pump.

## PROPOSED CHANGE RTS-85 TO DAEC TECHNICAL SPECIFICATIONS

### I. Affected Technical Specifications

Appendix A of the Technical Specifications for the DAEC (DPR-49) provides as follows:

Specifications 3.7.B and 4.7.B Bases for the Standby Gas Treatment System (pages 3.7-44 and 3.7-45) state, in part, as follows:

"If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N101.1-1972. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52."

Specification 4.10.A Bases for Main Control Room Ventilation (pages 3.10-5 and 3.10-6) states, in part, as follows:

"If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N101.1-1972. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52."

### II. Proposed Changes in Technical Specifications

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

Delete the references to Table 1 of Regulatory Guide 1.52 and include the referenced Table as Table 4.7-1 and Table 4.10-1 of the Technical Specifications. Delete the references to Regulatory Position C.3.d of Regulatory Guide 1.52 and include the actual requirements of C.3.d as part of these Technical Specifications. These changes are incorporated in the attached sheets.

### III. Justification for Proposed Change

This proposed change is to clarify the requirements of HEPA replacement filters and filter adsorbent material without cross-referencing documents extraneous to the Technical Specifications. This proposed change does not change the present material or performance requirements of the HEPA filters or adsorbent material.

IV. Review Procedure

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.

to Table 4.7-1. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N101.1-1972. Any HEPA filters found defective shall be replaced. The replacement HEPA filters should be steel cased and designed to military specifications MIL-F-51068C and MIL-F-51079A. The HEPA filters should satisfy the requirements of UL-586. The HEPA filter separators should be capable of withstanding iodine removal sprays. HEPA filters should be tested individually by the appropriate Filter Test Facility listed in the current USNRC Health and Safety Bulletin for Filter Unit Inspection and Testing Service. The Filter Test Facility should test each filter at 100% and 20% of rated flow, with the filter encapsulated to disclose frame and gasket leaks.

All elements of the heater are demonstrated to be functional and operable during the test of heater capacity. Demonstration of 11 KW capability assures relative humidity below 70%.

System drains are present in the filter/adsorber banks, loop-seal water level is checked to ensure no bypass leakage from the banks.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significant shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

DAEC

Demonstration of the automatic initiation capability and operability of filter cooling is necessary to assure system performance capa-

TABLE 4.7-1

## SUMMARY TABLE OF NEW ACTIVATED CARBON PHYSICAL PROPERTIES

TEST	ACCEPTABLE TEST METHOD	ACCEPTABLE RESULTS	TEST SCHEDULE	
			ON BASE MATERIAL	ON FINISHED ADSORBENT
1. Particle Size Distribution	ASTM D 2862	Retained on #6 ASTM E11 Sieve: 0.0% Retained on #8 ASTM E11 Sieve: 5.0% maximum Through #8, retained on #12 Sieve: 40% to 60% Through #12, retained on #16 Sieve: 40% to 60% Through #16 ASTM E11 Sieve: 5.0% maximum Through #16 ASTM E323 Sieve: 1.0% to maximum	-	Batch <sup>c</sup>
2. Hardness Number	MIL-C17605B para. 4.6.4		Batch	
3. Ignition Temperature	RDT M16-1T, Appencic C	340°C minimum at 100 fpm	-	Batch
4. Surface Area	BET Surface Area	1000 m <sup>2</sup> /gr minimum	Batch	
5. Radioiodine Removal Efficiency				
a. Elemental Iodine, DBA Temperature and Pressure	RDT M16-1T, para. 4.5.2 except DBA Temperature and pressure are used <sup>a</sup>	99.9%	-	Qualification <sup>b</sup>
b. Methyl Iodide, DBA Temperature and Pressure	RDT M16-1T, para. 4.5.4 except DBA Temperature and pressure are used <sup>a</sup>	95% for 95% relative humidity 99.5% for 70% relative humidity	-	Batch
c. Retention	RDT M16-1T, para. 4.5.5	99%	-	Qualification
6. Moisture Content Efficiency	ASTM D2867, Xylene Method	3% maximum		Batch
7. Ash Content	ASTM D2866	.6% maximum	Qualification	-
8. Bulk Density	ASTM D2854	Report value	-	Batch
9. Impregnant Content	State Procedure	State type (not to exceed 5% by weight)	-	Batch
10. Impregnant Leachout	State Procedure	Report value	-	Qualification

<sup>a</sup> DBA Maximum Temperature (rounded to the next highest decade in °F, i.e., 252°F is 260°F) and Maximum Pressure (rounded to the next highest decade in psig, i.e., 51 psig is 60 psig).

<sup>b</sup> Qualification test: Test which establishes the suitability of a product for a general application normally a one-time test reflecting historical typical performance of material.

<sup>c</sup> Batch test: Test made on a production batch of product to establish suitability for a specific application.

## 4.10.A BASES

MAIN CONTROL ROOM VENTILATION

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with USAEC Report DP-1082. Iodine removal efficiency tests shall follow RDT Standard M-16-1T. Test cartridges are provided to allow removal of a representative charcoal sample without affecting the operation of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 4.10-1. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N101.1-1972. Any HEPA filters found defective shall be replaced. The replacement HEPA filters should be steel cased and designed to military specifications MIL-F-51068C and MIL-F-51079A. The HEPA filters should satisfy the requirements of UL-586. The HEPA filter separators should be capable of withstanding iodine removal sprays. HEPA filters should be tested individually by the appropriate Filter Test Facility listed in the

current USNRC Health and Safety Bulletin for Filter Unit Inspection and Testing Service. The Filter Test Facility should test each filter at 100% and 20% of rated flow, with the filter encapsulated to disclose frame and gasket leaks.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significant shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

B. EMERGENCY SHUTDOWN LOCAL CONTROL PANEL

Once per week verification of the panel being properly secured is considered adequate. The associated equipment is proven operable during surveillance testing of that equipment. An operability verification by functional test at each refueling outage is adequate to assure that the panel is available and can perform its design function.

TABLE 4.10-1

## SUMMARY TABLE OF NEW ACTIVATED CARBON PHYSICAL PROPERTIES

TEST	ACCEPTABLE TEST METHOD	ACCEPTABLE RESULTS	TEST SCHEDULE	
			ON BASE MATERIAL	ON FINISHED ADSORBENT
1. Particle Size Distribution	ASTM D 2862	Retained on #6 ASTM E11 Sieve: 0.0% Retained on #8 ASTM E11 Sieve: 5.0% maximum Through #8, retained on #12 Sieve: 40% to 60% Through #12, retained on #16 Sieve: 40% to 60% Through #16 ASTM E11 Sieve: 5.0% maximum Through #16 ASTM E323 Sieve: 1.0% to maximum	-	Batch <sup>c</sup>
2. Hardness Number	MIL-C17605B para. 4.6.4		Batch	
3. Ignition Temperature	RDT M16-1T, Appencic C	340°C minimum at 100 fpm	-	Batch
4. Surface Area	BET Surface Area	1000 m <sup>2</sup> /gr minimum	Batch	
5. Radioiodine Removal Efficiency				
a. Elemental Iodine, DBA Temperature and Pressure	RDT M16-1T, para. 4.5.2 except DBA Temperature and pressure are used <sup>a</sup>	99.9%	-	Qualification <sup>b</sup>
b. Methyl Iodide, DBA Temperature and Pressure	RDT M16-1T, para. 4.5.4 except DBA Temperature and pressure are used <sup>a</sup>	95% for 95% relative humidity 99.5% for 70% relative humidity	-	Batch
c. Retention	RDT M16-1T, para. 4.5.5	99%	-	Qualification
6. Moisture Content Efficiency	ASTM D2867, Xylene Method	3% maximum		Batch
7. Ash Content	ASTM D2866	.6% maximum	Qualification	-
8. Bulk Density	ASTM D2854	Report value	-	Batch
9. Impregnant Content	State Procedure	State type (not to exceed 5% by weight)	-	Batch
10. Impregnant Leachout	State Procedure	Report value	-	Qualification

<sup>a</sup> DBA Maximum Temperature (rounded to the next highest decade in °F, i.e., 252°F is 260°F) and Maximum Pressure (rounded to the next highest decade in psig, i.e., 51 psig is 60 psig).

<sup>b</sup> Qualification test: Test which establishes the suitability of a product for a general application normally a one-time test reflecting historical typical performance of material.

<sup>c</sup> Batch test: Test made on a production batch of product to establish suitability for a specific application.

## PROPOSED CHANGE RTS-92 TO DAEC TECHNICAL SPECIFICATIONS

### I. Affected Technical Specifications

Appendix A of the Technical Specifications for the DAEC (DPR-49) provides as follows:

Specification 6.11.2.a(4):

"Reactivity anomalies, involving disagreement with the predicted value of reactivity balance under steady state conditions during power operation, greater than or equal to 1%  $\Delta$  k/k; a calculated reactivity balance indicating a shutdown margin less conservative than specified in the Technical Specifications; short-term reactivity increases that correspond to a reactor period of less than 5 seconds or, if sub-critical, an unplanned reactivity insertion of more than 0.5%  $\Delta$  k/k or occurrence of any unplanned criticality."

### II. Proposed Changes in Technical Specifications

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

Change the portion underscored above to read as follows:

"... reactivity increases that correspond to a sustained reactor period of less than 5 seconds that increase power by more than one-half of a decade or a factor of 3.162 or, ..."

### III. Justification for Proposed Change

The purpose of this proposed change is to clarify the Technical Specifications. Region III inspectors are applying the current language of the Specifications to transient flux spikes at power which we do not believe is the intent of the subject specification. This stringent interpreting could result in a large number of nonsignificant reportable occurrences.

### IV. Review Procedure

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.

of the limiting condition for operation established in the technical specifications.

Note: If specified action is taken when a system is found to be operating between the most conservative and the least conservative aspects of a limiting condition for operation listed in the technical specifications, the limiting condition for operation is not considered to have been violated and need not be reported under this item, but it may be reportable under item 6.11.2.b(2) below.

- (3) Abnormal degradation discovered in fuel cladding, reactor coolant pressure boundary, or primary containment.

Note: Leakage of valve packing or gaskets within the limits for identified leakage set forth in technical specifications need not be reported under this item.

- (4) Reactivity anomalies, involving disagreement with the predicted value of reactivity balance under steady state conditions during power operation, greater than or equal to  $1\% \Delta k/k$ ; a calculated reactivity balance indicating a shutdown margin less conservative than specified in the technical specifications; short-term reactivity increases that correspond to a sustained reactor period of less than 5 seconds that increases power by more than one-half of a decade or a factor of 3.162 or, if sub-critical, an unplanned reactivity insertion of more than  $0.5\% \Delta k/k$  or occurrence of any unplanned criticality.