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

July 26, 1976

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Posted

Docket No. 50-331

Iowa Electric Light & Power Company
Attn: Mr. Duane Arnold, President
Security Building
P. O. Box 351
Cedar Rapids, Iowa 52406

*Amndt -22
to DPR-49*

Gentlemen:

The Commission has issued the enclosed Amendment No.22 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center. This amendment is in response to your requests dated May 5, 1975, December 15, 1975, and April 23, 1976.

The amendment involves changes to the Appendix B Technical Specifications. Certain of these changes update the specification to reflect completion of requirements applicable only to the preoperational stage or to the first year of plant operation (by now completed), or to monitoring and surveillance requirements which no longer yield useful information regarding the impact of plant operation. The removal of such requirements from the Technical Specifications does not lessen the effectiveness of the sampling, monitoring and surveillance programs, and is appropriate to keep the Specifications current and to facilitate the proper implementation of the Specifications.

The amendment also involves the discontinuation or change in location of certain sample stations and addition of new sample stations, where appropriate, to reflect the change in availability of certain sample types at given locations, and changes in frequency of sampling where such changes are appropriate because of the unavailability of samples under changing seasonal conditions or because data already accumulated have shown the nonproductivity of continued sampling at frequencies required in the past. We have determined that such allowed modifications in sampling stations and sampling frequency are appropriate and do not lessen the effectiveness of the sampling and monitoring programs.

The amendment also involves changes in wording where such changes are appropriate to clarify the intent of the specifications, or eliminate possible inconsistencies in the specifications. Such changes are made for purposes of clerical correction, clarification and consistency, and therefore we find that such changes as are allowed are appropriate.

-2-

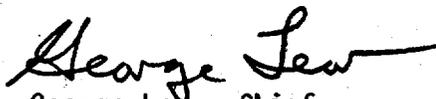
Finally, the amendment involves administrative changes that reflect changes in the corporate structure of the licensee and changes in the organization of the Commission. These changes we find to be appropriate as reflecting the current structure in each organization.

We have evaluated the potential for environmental impact of plant operation in accordance with the enclosed amendment. The justifications presented by the licensee have been carefully examined and an independent evaluation has been made of the proposed changes. Based on this evaluation, we have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level, and will not result in any significant environmental impact. Having made this determination, we have further concluded, pursuant to 10 CFR Part 51.5(d)(4) that an environmental statement, environmental impact appraisal or negative declaration need not be prepared in connection with the issuance of this amendment.

Since this amendment involves changes in the radiological monitoring program sampling types, location, and frequencies, we have evaluated the amendment from the standpoint of radiological impact on the site environs. We have concluded that the amendment does not involve a significant increase in the probability or consequences of an accident, does not involve a significant decrease in a safety margin, and therefore does not involve a significant hazards consideration. We have also concluded that there is reasonable assurance that the health and safety of the public will not be endangered by this action.

A copy of the Federal Register Notice is also enclosed.

Sincerely,



George Lear, Chief
Operating Reactors Branch 3
Division of Operating Reactors

Enclosures:

1. Amendment No. 22 to DPR-49
2. Federal Register Notice

cc w/encl: (see attached list)

cc w/encl:

July 26, 1976

Jack R. Newman, Esquire
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

IOWA ELECTRIC LIGHT AND POWER COMPANY

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22
License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Iowa Electric Light and Power Company (the licensee) dated May 5, 1975, December 15, 1975, and April 23, 1976, comply 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 applications, 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;
 - E. After weighing the environmental aspects involved, 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 a change to the Technical Specifications as indicated in the attachment to this license amendment.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script that reads "George Lear".

George Lear, Chief
Operating Reactors Branch 3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 26, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 22

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

Replace the existing pages of the Appendix B Technical Specifications listed below with the attached revised pages bearing the same numbers. Changes on these pages are shown by marginal lines.

Pages	2.2-1
	2.2-2
	2.3-4
	2.3-6
	4.1-3
	4.1-4
	4.1-5
	4.1-6
	4.3-1
	4.3-2
	4.3-3
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	4.3-6
	4.3-7
	4.3-8
	4.3-9
	4.3-10
	4.3-11
	4.3-13
	5.2-1
	5.4-3
	5.4-4
	5.4-5

Also, page 6.11-12 of Appendix A Technical Specifications erroneously omitted when Amendment 12 was issued December 3, 1975.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

2.2 Chemical

2.2.1 Chlorine

Objective

To maintain levels of total residual chlorine equal to or less than those specified in the Final Environmental Statement which are designed to protect aquatic life and to give sufficient latitude to allow a determination of optimum methods of chlorination.

Specification

While the plant is discharging cooling tower effluent, total residual chlorine concentration shall be limited to 0.1 mg/l or less. The duration of chlorination shall not exceed two hours per day.

3.0 MONITORING REQUIREMENTS

3.2 Chemical

3.2.1 Chlorine

Objective

To assure that total residual chlorine discharges are maintained within the technical specifications.

Specification

Samples will be taken from the discharge canal just prior to each chlorination and every 15 minutes thereafter, when discharge is taking place, until the concentration has decreased to less than 0.1 mg/l. If automatic recording equipment, acceptable to the staff, is installed, the above manual samples shall be deleted. Samples will be taken from the discharge canal just prior to the outfall into the Cedar River. Total and free residual chlorine levels will be determined by the amperometric method.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

Bases

A level of chlorine allowed (0.1 mg/l for not more than 2 hrs/day) is sufficient to accomplish the purpose of chlorination, but does not exceed the normal restriction required for the protection of aquatic life.

2.2.2 Other Chemicals

Objective

To specify significant amounts of chemical usage which result in effluent discharges to the river.

Specification

Chemicals which are used in large quantities at the plant are listed in Table 2.2-1.

3.0 MONITORING REQUIREMENTS

Bases

The chlorine monitoring program is designed to provide a reliable record of chlorine concentration in the discharge canal as a function of time after chlorination has started and to assure that chlorine residuals are maintained within the limits of the technical specifications.

3.2.2 Other Chemicals

Objective

To specify record keeping requirements for chemicals used at the DAEC site and to specify monitoring requirements.

Specification

Appropriate receipt records of all chemicals brought into the plant will be maintained. Reports of sulphuric acid usage shall be in accordance with section 5.4. Chemical analyses of samples taken from the river are described in subsection 4.1.1.

The neutralizing tank shall be sampled prior to discharge to ensure pH is within State limits.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

2.3.1 Radioactive Effluents

Specification (Cont'd.)

5. The maximum activity to be contained in either liquid radwaste sample tank shall not exceed 10 curies.
6. When the release rate of radioactive effluents, excluding tritium and noble gases, exceeds 2.5 curies during any calendar quarter, the licensee shall notify the Director, Directorate of Licensing, within 30 days, identifying the causes and describing the proposed program of action to reduce such release rates.

C. Airborne Effluents

1. The release rate of gaseous activity except for halogens and particulates with half lives longer than eight days and except for mechanical vacuum pump operation as described in 2.3.1.D.1 when integrated over a period of one hour shall not exceed:

$$\frac{Q_s \bar{E}}{0.21} + \frac{Q_v}{(1.4 \times 10^5)(MPC_i)} \leq 1.0$$

where:

Q_s = stack release rate in Ci/sec

\bar{E} = average γ energy of release in Mev

Q_v = ventilation system release rate in Ci/sec.

MPC_i = maximum permissible concentration for isotope i as defined in 10 CFR Part 20, Appendix B, Table II, Column 1.

3.0 MONITORING REQUIREMENTS

3.3.1 Radioactive Effluents

Specification (Cont'd.)C. Airborne Effluents

1. The gaseous activity released from the reactor building ventilation stacks and the offgas stack shall be monitored and recorded continuously. The particulate filters and iodine cartridges monitoring the activity released from the reactor building ventilation stacks, the offgas stack and the turbine building exhaust fans shall be collected and analyzed in accordance with Table 3.3-2.
 - a. For effluent streams having continuous monitoring capability, the activity and flow rate shall be monitored and recorded.
 - b. For effluent streams without continuous monitoring capability, the activity and release volume shall be monitored and recorded and the release rate shall be controlled to within the limits specified in 2.3.1.C.1.

2.0 ENVIRONMENTAL PROTECTION CONDITIONS

2.3.1 Radioactive Effluents

Specification (Cont'd.)

5. When the release rate exceeds 4% of 2.3.1.C.1 for a period of 48 hours notify the Director, Directorate of Licensing, in writing within 10 days, identifying the causes of activity. The report should include the flow rate of the off-gas system, and the activity measured downstream of the condenser prior to holdup, and at a point upstream of the point of release.
6. Radioactive gases released from all environmental release points shall be monitored and recorded as specified in 3.3.1.C.1.
7. During release of gaseous wastes through the off-gas stack, the following conditions shall be met:
 - a. The gross (β, γ) activity monitor, the iodine collection device and the particulate monitor shall be operating.
 - 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. 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.

3.0 MONITORING REQUIREMENTS

3.3.1 Radioactive Effluents

Specification (Cont'd.)

5. All effluent gas monitors shall be calibrated at least quarterly by means of a built-in check source and annually with a known radioactive source. Each monitor shall have an instrument channel test at least monthly and sensor check at least daily.
6. At least annually, automatic initiation and closure of waste gas system shall be verified.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1.1 Specification (Cont'd.)4.1.1.3 Plankton Studies

- A. Frequency: Twice per month routinely and as necessary when conditions warrant.
- B. Location: At all four river locations and the discharge canal.
- C. Analyses to be made: Numbers and kinds (to genus whenever possible) of organisms present.

4.1.1.4 Bacteriological Studies

- A. Frequency: Twice per month. Additional determinations of fecal coliforms will be conducted on samples from the effluent from the station's sewage treatment plant.
- B. Location: At all four river locations and the discharge canals.
- C. Analyses to be made:
 - 1. Total plate count (20 C.)
 - 2. Total coliform (MF)
 - 3. Fecal coliform (MF)
 - 4. Fecal streptococci (MF)

4.1.1.5 Benthic (bottom organism) Studies

- A. Frequency: Three times per year, during spring, summer, and fall, as available
- B. Location: At all four river sites
- C. Analysis: Kinds (to genus whenever possible) and numbers of organisms present will be determined. Sediment type will also be determined.

4.1.1.6 Periphyton

- A. Frequency: Three times per year during spring, summer and fall, as available.
- B. Location: Artificial substrates will be installed at Site 2, above the plant intake, and at Site 3, below the plant.
- C. Analyses to be made: Substrates will be removed after two weeks to one month. The biomass and generic composition will be determined.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1.1 Specification (Cont'd.)4.1.1.7 Fisheries Studies

The present fisheries studies will be continued three times per year (spring, summer and fall) in consultation with the Iowa Conservation Commission. Sampling is carried out at the DAEC site and upstream in the vicinity of Lewis Access. Seining, baited hoop nets and electroshocking are utilized in collecting the fish which are then identified, weighed, and measured. Preliminary age and growth studies, stomach sample analysis and pesticide residue determinations are carried out.

4.1.1.8 Entrainment

Quarterly determinations of the species and biomass of organisms in the intake water will be determined by placing plankton nets at the intake structure. The total volume of organisms subject to condenser passage may be calculated by determining the area of the plankton net, the velocity of the water, and the volume of water entering the plant. This study will continue for a minimum of two years.

4.1.1.9 Impingement

Once a day, the number of fish found in the trash collection basket on the station's intake will be determined by the station personnel. These data will be forwarded monthly to Iowa Electric's consultant for analysis. An inventory of species, numbers, and size of all fish taken from the trash collection baskets on a given day will be conducted quarterly. A report of this data and analysis will be submitted to the staff as detailed in subsection 5.4. If excessive numbers of fish are taken from the travelling screens, Iowa Electric's consultant will be immediately notified and the cause determined. Additional studies and corrective action will be initiated as required.

4.1.1.10 Fish Basket Studies

Live boxes containing native fish taken from the Cedar River will be placed in the river upstream of the plant intake and at the mouth of the discharge canal. These studies will be conducted in conjunction with the summer quarterly studies. Live boxes will be left in place for a period of 48 hours. During this time, the fish will be observed for evidences of distress and other erratic behaviour, and mortality rates in boxes above the plant and in the discharge will be compared.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1.1 Specification (Cont'd.)

4.1.1.11 Thermal Plume Mapping

Temperature measurements in the river will be made during representative low flow conditions (300-400 cfs) to verify the extent of the thermal plume. A report of these findings will be submitted to the staff upon completion.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1.1 Bases (Cont'd)

The Final Environmental Statement presented the Thermal Plume which is expected as a result of plant operation. The measurement of the thermal plume will allow verification of this analysis.

4.1.2 Terrestrial

Objective

1. To determine the characteristics of the terrestrial plant and animal communities in the vicinity of the DAEC following plant startup. Comparison of the results of these determinations with preoperational studies will make it possible to assess the effects of the operation of the DAEC on the terrestrial ecology.
2. To determine significant effects of cooling tower operation on the plant communities adjacent to the site by periodic visual inspection of plant foliage downwind of the towers.

Specification

The terrestrial monitoring program as reported in the DAEC Terrestrial Flora Study (August 1972) and Terrestrial Fauna Study (October 1972) will be repeated two years after commercial operation of the plant commences..

A monthly visual inspection during the growing season (May through September) will be made of the vegetation on and around the site in the direction of prevailing winds to determine any possible salt drift damage. If symptoms of salt damage are apparent, samples of affected and unaffected individuals of the same plant species will be photographed, sampled and unwashed samples analyzed for total salts. The results of these inspections will be reported as detailed in Section 5.4. This program will continue for a minimum of two years.

Bases

The terrestrial flora and fauna studies established the baseline ecology prior to the operation of the DAEC. These studies will be repeated in order to document any significant effects of plant operation on the terrestrial environment. Review of visual examination of plant foliage will document any significant effects of cooling tower operation on plant communities adjacent to the station.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.3 Radiological

4.3.1 Monitoring Requirements

Objective

An environmental radiological monitoring program shall be conducted to verify that radioactive releases are within allowable limits and that plant operations have no detrimental effects on the environment.

Specification

- A. Environmental samples shall be collected and analyzed according to Table 4.3-1 at the locations shown in Figure 4.3-1.
- B. Reports shall be submitted in accordance with the requirements of Section 5.4 (Plant Reporting Requirements).
- C. During the seasons that animals producing milk for human consumption are on pasture, samples of fresh milk will be obtained weekly from these animals at locations shown in Table 4.3-1, and analyzed for their radioiodine content, calculated as iodine-131. Analysis will be carried out within eight days (one I-131 half-life) of sampling. Suitable analytical procedures will be used to determine the radioiodine concentration to a sensitivity of 0.5 picocuries per liter of milk at the time of sampling. For activity levels at or above 0.5 picocuries per liter the overall error (one sigma confidence level) of the analysis will be within $\pm 25\%$. Results will be reported, with associated calculated error, as picocuries of I-131 per liter of milk at the time of sampling, in accordance with Reporting Requirements for Environmental Radiological Monitoring.

Special attention will be paid to those locations where milk is produced for direct consumption by humans - e.g., the family farm.

- D. A census of milch animals shall be conducted at the beginning and at the middle of the grazing season to determine their location and number with respect to the site. The census shall be conducted in May and July under the following conditions:
 1. Within a 1 mile radius from the plant site or the 15 mrem/yr isodose line --whichever is larger: A door to door or equivalent counting technique shall be utilized.
 2. Within 5 miles: Enumeration by using referenced information from such as county agricultural agents or other reliable sources.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.3.1 Specification (Cont'd.)

If it is learned from this census that milch animals are present at a location which yields a calculated infant thyroid dose greater than from previously sampled animals, the new location shall be added to the surveillance program as soon as practicable. The sampling location having the lowest calculated dose may then be dropped from the surveillance program at the end of the grazing season during which the census was conducted. Also, any location from which milk can no longer be obtained may be dropped from the surveillance program after notifying the NRC in writing that milch animals are no longer present at that location.

- E. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability or to malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be described in the annual report.

Bases

The number and distribution of sampling locations and the various types of measurements described in Table 4.3-1 together with the preoperational background data, will provide verification of the effectiveness of plant effluent control and indication of measurable changes in the activity of the environment.

A concentration of I-131 in milk of 2.4 picocuries per liter will result in a dose to the thyroid of a 0-2 year old child of 15 mrem/year, based upon consumption of one liter per day for the year. To assure that no child will receive a dose of greater than 15 mrem/year to the thyroid, it is necessary to know the radioiodine concentration in the milk to the sensitivity given above, 0.5 pCi/liter.

TABLE 4.3-1

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			
Airborne	1	Cedar Rapids	Weekly Analysis		Analyzed for Gross beta after a minimum of 24 hr. decay. Gamma spectrum analysis will be performed on each sample showing measureable gross beta activity ₃ i.e. 10 pCi/m ³	
Particulates	2	Marion		Gross beta		
	3	Hiawatha				
	4	Morris				
	5	Palo	Continuous Collection			
	6	Center Point				
	7	Shellsburg				
	8	Urbana				
	9	Route W26				
	10	Atkins				
	11	Toddville				
	12	Iowa City				
	13	Alburnett				
	14	Alice				
	15	On-site	Quarterly Analysis	Composite Sr-89, 90		Gamma isotopic and Sr-89, 90 analyses will be performed quarterly on a composite of each sample station
	16	On-site	Quarterly Composite	Gamma isotopic analysis		

4.3-3

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	Radioiodine 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		
Ambient Radiation	1-16	Same as Airborne Particulates	Monthly and Annual Analysis Continuous Collection	Radiation Dose Each dosimeter will consist of 5 hot pressed LiF chips. Two badges at each location one changed monthly and one changed annually.

4.3-4

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		
Ambient Radiation	17-32	At centerline of each 22-1/2° sector intersecting the site boundary	Monthly and Annual Analysis	Radiation Dose	Two badges at each location, one changed monthly and one changed annually
Ambient Radiation	33-48	At centerline of each 22-1/2° sector at a distance of 1 to 3 miles from the plant stack	Monthly and Annual Analysis	Radiation Dose	Two badges at each location, one changed monthly and one changed annually.
Surface Water	49	Lewis Access	Monthly	Gross beta Gamma isotopic Analysis	Routine gross alpha during preoperation-al phase. Gamma isotopic analysis will be performed on each sample.
	50	Plant Intake			
	51	Plant Discharge*			
	52	Cedar Rapids City Park			
	73	Hansen Farm Pond			
	75	Krewson Farm Pond		Tritium	Monthly samples will be composited quarterly for tritium analysis.

*In addition to the routine monthly sample, sampling is also to be performed during liquid radioactive waste discharge operation.

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		
Surface Water (Cont'd.)	49-52			⁸⁹ Sr, ⁹⁰ Sr	Performed if gross beta activity exceeds 10 pCi/l and on a quarterly basis.
Ground Water	53	Treated Municipal Water	Monthly	Gross beta Gamma isotopic analysis	Gamma isotopic analysis will be performed on each sample in which the gross beta activity exceeds 10 pCi/l. Daily grab sample of untreated municipal water is composited for monthly analysis. Two hour grab sample of treated municipal water is composited for monthly analysis.
	54	Inlet to Municipal Water Treatment Sys.			
	57-60	4 off-site wells (in vicinity of site)			

4.3-6

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		
Ground Water (Cont'd.)				Tritium	Monthly samples will be composited quarterly for tritium.
				⁸⁹ Sr, ⁹⁰ Sr	Performed if gross beta activity exceeds 10 pCi/l and on a quarterly basis.

4.3-7

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		
Bottom Sediments	49	Lewis Access	Semi-Annually	Gamma isotopic analysis 90 Sr	
	50	Plant intake			
	51	Plant Discharge			
	61	One-half mile below plant discharge			
Soil	15	On-site	Triannually during growing season	Gamma isotopic analysis 90 Sr	Surface sample from undisturbed area.
	16	On-site			
	62-64	Farms (within 10 miles of the site) that			
	66	raise food crops			
	72-73	Irrigated farm			
	93-96	downstream of plant			
Vegetation	62-64	Farms that raise	Annually at harvest time	Gamma isotopic analysis 90 Sr	Only the edible portion of crops will be analyzed.
	66	food crops			
	72-73				
	93-96				
Meat and Poultry		Farms (within 10 miles of the site) that raise poultry or animals for human consumption	Annually during or immediately following grazing season	Gamma isotopic analysis on edible portions	The specific location of these samples will vary with availability

4.3-8-1

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	
Aquatic Biota (Periphyton)		Cedar River	Quarterly (as available)	Gamma isotopic analysis
Aquatic Biota (Periphyton) and Fish		Cedar River, control station at suitable location upstream of plant	Semi-Annually	Gamma Isotopic analysis
Wildlife		Palo Marsh (or other areas as required to obtain representative samples)	Semi-Annually	Gamma isotopic analysis
Fish		Cedar River	Semi-Annually	Gamma isotopic analysis

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	
Milk	62	Control Farm near Brendon, Iowa	Weekly	131 _I
	63-64	Dairy farms within 10 mi. of site		<p>During the grazing season samples from locations 63, 94 and 93 will be analyzed individually.</p> <p>During the grazing season samples from locations 64, 66, 67, 68, 71 & 72 will be composited and analyzed. If the composite sample is greater than 2.4 pCi/l the location will be resampled and samples analyzed individually.</p> <p>During the grazing season samples from locations 62 and 73 will be composited and analyzed. If the composite sample is greater than 2.4 pCi/l the location will be resampled and samples analyzed individually.</p>
	66	Dairy farms within 10 mi. of site		
	72	Dairy farms within 10 mi. of site		
	73	Control farm near Amana, Iowa		
	94	Dairy farm within 10 mi. of site		
	93-96	Dairy farm within 10 mi. of site		

4.3-10.

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		
Milk	62	Control farm near Brendon, Iowa	Monthly	89 Sr	During the grazing season a portion of the weekly sample from each location will be composited for analysis.
	63-64	Dairy farms within 10 mi. of site		90 Sr	
	66	Dairy farms within 10 mi. of site		137 Cs	
	72	Dairy farms within 10 mi. of site		140 Ba - 140 La	
					Elemental Ca
	73	Control farm near Amana, Iowa	Monthly	131 I	During the non-grazing season a sample from all locations except locations 62 and 73 will be composited and analyzed.
	94	Dairy farm within 10 mi. of site			During the non-grazing season a sample from locations 62 & 73 will be composited and analyzed.
	93-96	Dairy farm within 10 mi. of site			

4.3-11

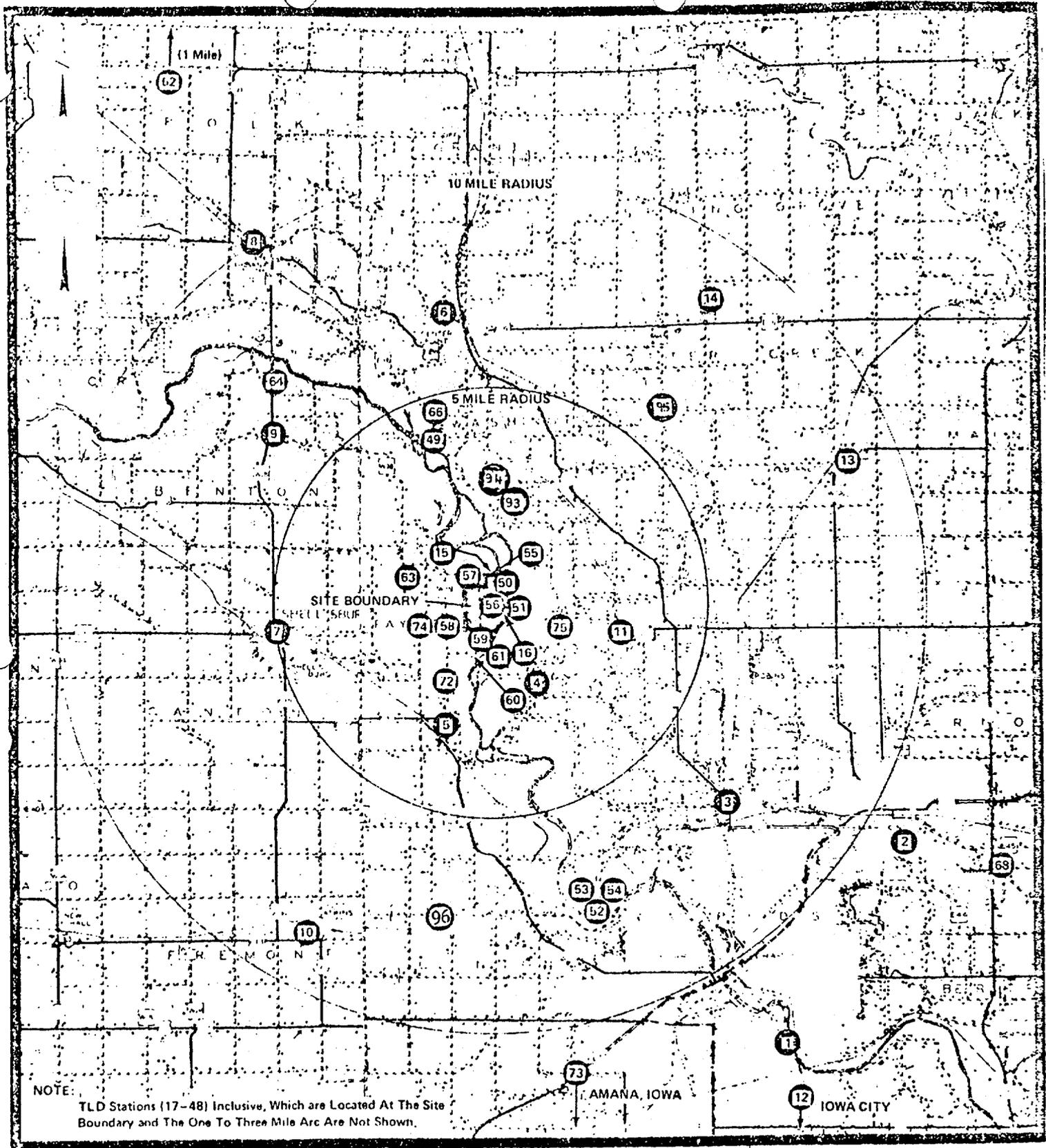


FIGURE 4.3-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SAMPLING STATION

5.0 ADMINISTRATIVE CONTROL

5.2 Action to be taken in the Event of Violation of an Environmental Technical Specification

- A. Any Environmental Technical Specification (ETS) violation will be reported immediately to the Chief Engineer and the Vice President-Generation and promptly reviewed as specified in Section 5.1.
- B. As specified in Section 5.4.2, a separate report for each ETS violation will be prepared. This report will include an evaluation of the cause of the occurrence, a record of the corrective action taken, and recommendations for appropriate action to prevent or reduce the probability of a recurrence.
- C. Copies of all such reports will be submitted to the Vice President-Generation and Safety Committee for review and approval of any recommendations.
- D. Iowa Electric will report the circumstances of any ETS violations to the NRC as specified in Section 5.4.2.

5.0 ADMINISTRATIVE CONTROL

5.4.1 Semi-Annual Operating Reports (Cont'd.)

2. The total estimated gross radioactivity (in curies) of packaged material.
3. Disposition of material including date and destination if shipped offsite.

C. Annual Radiological Environmental Operating Report

A report on the radiological environmental surveillance programs for the previous 12 months of operation shall be submitted to the Director of the Regional Inspection and Enforcement Office (with a copy to Director of the Office of Nuclear Reactor Regulation) as a separate document within 90 days after January 1 of each year. The period of the first report shall begin with the date of initial criticality. The reports shall include summaries, interpretations, and statistical evaluation of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate) and previous environmental surveillance reports, and an assessment of the observed impacts of the plant operation on the environment. If harmful effects or evidence of irreversible damage are detected by the monitoring, the licensee shall provide an analysis of the problem and a proposed course of action to alleviate the problem.

Results of all radiological environmental samples taken shall be summarized on an annual basis following the format of Table 5.4.1. In the event that some results are not available within the 90 day period, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

5.4.2 Non-Routine Reports

5.4.2.1 Violations

Notification of violations of an ETS should be made within 24 hours by telephone or telegraph to the Director of the Regional Inspection and Enforcement Office, followed by a written report within 10 days to the Director of Nuclear Reactor Regulation with a copy to the Director of the Regional Inspection and Enforcement Office.

The written report and, to the extent possible, the preliminary telephone or telegraph report, should: (a) describe, analyze and evaluate safety implications, (b) outline the measures taken to assure that the cause of the condition

is determined, (c) indicate the corrective action (including any significant changes made to the procedures and the quality assurance program) taken to prevent repetition of the occurrence and to prevent similar occurrences involving similar components or systems, and (d) evaluate the safety implications of the incident in light of the cumulative experience obtained from the record of previous failures and malfunctions of similar systems and components.

The following conditions will be considered as violations of ETS unless otherwise specified by a particular specification.

- A. The occurrence of any condition in violation of an ETS.
- B. Any other conditions that indicate a significant environmental impact.
- C. Anomalous Measurements

If a confirmed measured level of radioactivity in any environmental medium exceeds ten times the control station value, a written report shall be submitted to the Director of the Regional Inspection and Enforcement Office (with a copy to Director of the Office of Nuclear Reactor Regulation) within 10 days after confirmation.*

This report shall include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous result.

- D. Milk Pathway Measurements

If milk samples collected over a calendar quarter show average I-131 concentrations of 4.8 picocuries per liter or greater, a written report shall be submitted to the Director of the Regional Inspection and Enforcement Office (with a copy to Director of the Office of Nuclear Reactor Regulation) within 30 days. This report shall advise the NRC of the licensee's proposed action to ensure the plant related annual doses will be within the design objective of 15 mrem/yr to the thyroid of any individual.

*A confirmatory reanalysis of the original, a duplicate or a new sample may be desirable, as appropriate. The results of the confirmatory analysis shall be completed at the earliest time consistent with the analysis, but in any case within 30 days. If the high value is real, the report to the NRC shall be submitted.

5.4.2.2 Changes

1. When a change to the plant (that affects the environmental impact evaluation contained in the Environmental Report and the Environmental Statement) or to the environmental monitoring procedures or equipment is planned, a report of the change will be submitted to the NRC for information prior to implementation of the change. This is not intended to preclude making changes on short notice that are significant in terms of decreasing adverse environmental impact, etc. However, these changes will be promptly reported.
2. Changes or additions to permits and certificates required by Federal, State, local and regional authorities, for the protection of the environment, will be reported. When the required changes are submitted to the concerned agency for approval, they will also be submitted to the Director of Site Safety and Environmental Analysis, Office of Nuclear Reactor Regulation, USNRC, for information. The report will include an evaluation of the impact of the change.
3. Request for changes in ETS will be submitted to the Director of Site Safety and Environmental Analysis, Office of Nuclear Reactor Regulation, USNRC, for prior review and authorization. The request will include an evaluation of the impact of the change.

TABLE 6.11-1

REPORTING SUMMARY - ROUTINE REPORTS

<u>Requirement</u>	<u>Report</u>	<u>Timing of Submittal</u>
TS ¹	Startup	Within (1) 90 days of following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If all three events are not completed, supplementary reports every 3 months.
TS	First Year Operation	Within 60 days after completion of the first year of operation.
TS	Annual	Within 60 days after January 1
§20.407	Personnel Exposure and Monitoring	Within first quarter of each calendar year.
§20.408	Personnel Exposure on Termination of Employment or Work	Within 30 days after the exposure of the individual has been determined or 90 days after date of termination of employment or work assignment, whichever is earlier.
§40.64 (a)	Transfer of Source Material	Promptly upon transfer.
§40.64 (a)	Receipt of Source Material	Within 10 days after material is received.
§40.64 (b)	Source Material Inventory	Within 30 days after June 30 of each year.
§50.59 (b)	Changes, Tests, and Experiments	Annually or at shorter intervals as may be specified in the license.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-331

IOWA ELECTRIC LIGHT AND POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 22 to Facility Operating License No. DPR-49 issued to Iowa Electric Light and Power Company which revised Technical Specifications for operation of the Duane Arnold Energy Center, located in Linn County, Iowa. The amendment is effective as of its date of issuance.

The amendment permits changes in the environmental monitoring program, sampling frequency, sampling location, a change in the corporate structure, and changes in administrative details.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR § 51.5(d)(4) an environmental statement, negative declaration or

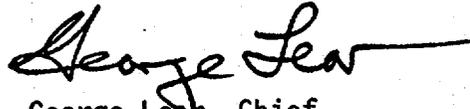
environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the applications for amendment dated May 5, 1975, December 15, 1975, and April 23, 1976, and (2) Amendment No. 22 to License No. DPR-49. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street N. W., Washington, D. C. and at the Cedar Rapids Public Library, 426 Third Avenue, S. E., Cedar Rapids, Iowa.

A copy of item (2) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Site Safety and Environmental Analysis.

Dated at Bethesda, Maryland, this 26th day of July, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION



George Lear, Chief
Operating Reactors Branch 3
Division of Operating Reactors