Docket No. 50-331

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

Gentlemen:

This letter will confirm the August 9 and 10 site visit and meeting related to our environmental review of the Duane Arnold Energy Center.

AUG - 1 1972

1

I am enclosing a proposed agenda and detailed list of topics to guide the discussions during this meeting.

Dr. Louis B. Werner of the Directorate of Licensing is the Project Manager responsible for preparation of the environmental statement, and will represent the regulatory staff at this meeting. Accompanying him will be several members of the Argonne National Laboratory (ANL) who are providing technical support in our environmental review. The ANL team leader will be Dr. Kerry Dance.

Although it is not essential that your staff will have prepared written answers to all areas of inquiry, it is recommended that the Company have available staff specialists and such reference material as may be needed to address the topics for discussion. Where reference is made to tabulated data, calculations, drawings, maps, sketches, pictures, etc., the team will greatly appreciate having a copy made available to it for subsequent use. When possible, copies should be of a form and content which can be reproduced, should they be determined later to be appropriate for use in the DES or at AEC hearings.

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Iowa Electric Light & Power Company

Such assistance, complemented by a completely free and open exchange during the meetings, will greatly expedite the preparation of a responsible independent draft statement. Fulfillment of this objective will enhance public understanding and expedite the licensing process. Since team members who contribute to the environmental statement also may be called upon to testify as authorities at hearings, we believe that the applicant's responsibility toward seeing that the information which he delivers is completely satisfying cannot be overestimated.

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Please feel free to contact Dr. Werner at 301/973-7455 if additional information pertaining to the site visit is required.

Sincerely,

Gungblood

Daniel R. Muller, Assistant Director for Environmental Projects Directorate of Licensing

Enclosures:

- 1. Agenda
- 2. Proposed Discussion Topics
- cc: Mr. R. Lowenstein Lowenstein and Newman 1100 Connecticut Avenue, N.W. Washington, D. C. 20036

DISTRIBUTION: AEC PDR Local PDR W. C. Redman, ANL Docket File (ENVIRON) (2) RP Reading File EP-2 Reading File A. Giambusso, DDRP, L H. Denton, ADSS, L D. R. Muller, ADEP, L R. Boyd, ADBWR's, L G. K. Dicker, EP-2, L L. B. Werner, EP-2, L

G. Lear, BWR-1, L J. Gallo, OGC R. L. Wade, EP-2, L DRO (3) K. Dance, ANL

P. Gustafson, ANL

EP-2:L OFFICE GKD SURNAME mer:neh GKDicker 7/26/72 7/28/72 7/3 DATE ► Form AEC-318 (Rev. 9-53) AECM 0240

PROPOSED AGENDA FOR SITE VISIT AND DISCUSSIONS DUANE ARNOLD ENERGY CENTER

DIRECTORATE OF LICENSING

AUGUST 9-10, 1972

August 9, 1972 (AM):

Visit to DAEC (Meet at General Office, Cedar Rapids, Iowa, 8:30 A.M.)

5

August 9-10, 1972:

Discussions with Iowa Electric Light and Power Company at DAEC and Cedar Rapids, Iowa.

Site

Location Demography and Land Use Geology Hydrology Meteorology Ecology

Station

External Appearance Heat Dissipation Radioactive Waste System Chemical and Biocide Systems Sanitary and Other Waste Systems

Environmental Effects of Site Preparation and Station and Transmission Line Construction

Effect on Land Use Effects on Site Ecology

Environmental Effects of Station Operation

Effects on Water Use Effects on Terrestrial and Aquatic Environment Radiological Effects on Biota Other than Man Radiological Effect on Man Effects on the Community Effluent and Environmental Measurement and Monitoring Programs

Pre-operational and Operational Environmental Monitoring Programs

Environmental Effects of Accidents

Plant Accidents

Evaluation of Proposed Action

Need for Power

Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Plant Design Alternatives

Cooling System

Benefit-Cost Analysis

Alternatives Selected for Benefit-Cost Analysis Evaluation of Benefits Evaluation of Costs

Those expected to attend:

AEC

L. B. Werner, Environmental Project Manager ANL

Ed Daniels, Biologist (Ecology) Barbara Lewis, Biologist (Ecology) Bill Mecham, Chemical Engineer (Cost/Benefit) Rowen Tacker, Chemical Engineer (Plant Description and Trans-

mission Lines) Marty Schumacher, Radiological

Physicist (Radiological Impact)

PROPOSED

DISCUSSION TOPICS

DUANE ARNOLD NUCLEAR CENTER

AUGUST 9-10, 1972

2. THE SITE

2.1 Site Location

Of the alternative sites identified in Figure 8.1-2, explain the selection of the present site over that one at Iowa City (II-H)
 and that one below Cedar Rapids (II-E). Discuss differences in aesthetic impact among alternative sites.

2.2 Demography and Land Use

- Describe topography and present use of the proposed Pleasant Creek Reservoir. What is the status of this reservoir project: i.e; design, cost, approvals, etc.
- 2. Provide long-range comprehensive land use (planning) maps and current zoning maps of Linn and of Benton Counties. To the extent that any of these is unavailable, provide the name, address and telephone number of the official at each county seat with whom DAEC has had contact on planning-zoning matters. Also, name the chairmen of the municipal plan commission and zoning board of Cedar Rapids, and of comparable bodies existing for Villages of Palo, Toddville and Shellsburg. (2.3-1)
- 3. Outline plans, if any, by the Village of Palo to incorporate or otherwise to move toward creating a unified water supply and distri-

bution system for its residents.

4. Name the group that motivated establishment of the Wickiup Hills Conservation Area. Over what years was it established? and what was the prior land ownership and use? (2.8-2)

(2.4-4)

(2.8 - 2)

and 2.8-3)

(2.7 - 3)

(2.4 - 6)

(2.4 - 1)

-2-

- 5. Outline in detail the manner and degree to which Wickiup Hills Conservation Area and Morgan Park are "undeveloped" for intended uses. Outline serious plans by jurisdictional authorities of these and other areas listed for improvements aimed toward enhancing their values as public lands.
- 6. Elaborate on why 500 acres of farm and forested land will be "displaced"? Justify requirements (would not fewer acres suffice?)

2.4 Geology

 Indicate the type of clay (or clays) in the soils of the site and below the shallow aquifer (e.g., micacious, montmorillonitic, kaolinitic)

2.5 Hydrology

1.a) On a suitably large map, indicate approximate locations of the 12 low head dams which are on tributaries upstream from the plant. For each dam, give type of construction, year completed, impoundment volume, level regulation device, and level management guidelines if other than fixed level overflow, and emergency release measure, if any. If impoundments are made, include names.

- b) On a suitably large map, indicate information requested above for all impoundments on or associated with the Cedar River up to 40 miles downstream from the Plant.
- 2. Sketch somewhat to scale (using enlarged inserts where helpful) and explain the system by which Iowa Electric will withdraw water from the reservoir to supplement cooling water withdrawal.

(3.2-21)

- 3. Include in the description of the proposed reservoir the following:
 - a) clarification as to the degree to which flows will be continuous or intermittant,
 - b) rates of discharge from the reservoir to the river under the various modes of operation which are anticipated,
 - c) types of barriers to mud and debris at the reservoir discharge,
 - d) depth of water at the withdrawal point within the reservoir (epilimnion, thermocline, or hypolimnion), and
 - e) degrees of freedom of overall operation to be permitted by the Iowa Conservation Commission after the lake is stocked for game fish research and established as a recreational facility. (3.2-19 to 3.2-24)
- 4. Cite sources of information for the statements "the water quality of the Cedar River in the vicinity of the Duane Arnold Energy Center is largely influenced by runoff from agricultural land..." and "Municipal and industrial waste discharges upstream are of significance, but probably have

-3-

less environmental impact than do agricultural pollutants."

-4-

5. Please give complete reference citations for "Morris 1970", "McDonald and Schmickle, 1965," "McDonald, Fisher, and Long, ' 1969, and "Morris 1962."

2.6 Meteorology

- Indicate if this includes a typographical error: "The mean annual frequency of tornadoes - - - was 1.1"
- Furnish updated site meteorological data including annual averaged joint frequency distributions of wind direction, speed and stability conditions.
- 3. Describe the meteorological study and model which was used to develop the estimates of cooling tower effects presented in Section 3.2 of the DAEC Environmental Report.

2.7 Ecology

1.

Supply lists of specific animals (genus, species and common names) including birds, and plants including trees, as well as other available ecological data (e.g., habitat characteristics) and data or estimates of abundance, for the following areas:

a) site property; b) Palo Marsh Wildlife Refuge; c) Lewis
Game Preserve; d) Wickiup Hills Conservation Area; e)
Lewis Bottom Access; f) Chain Lakes Island Park; g) Seminole Valley Park and Campground; h) Morgan Creek Park; i)
Ellis Park; J) Twin Pines Park; k) Wildcat Bluff; and
1) Benton City - Fry Access. Supply available data of a
similar nature on areas between and around these parks and preserves.

(2.9-1)

(2.9-2)

(2.5-5)

Supply genus, species, and common name lists as well as other data (abundance, seasonal variations, etc.) on the biota of the Cedar River in the site region, and about 5 miles upstream and downstream. Include the following aspects based on monthly or seasonal sampling, and give data on methods:

-5-

a. Plankton

2.

- 1) phytoplankton
- 2) zooplankton
- 3) periphyton
- 4) bacteria
 - a) total coliforms
 - b) fecal coliforms
 - c) fecal strep
- 5) fungi
- 6) viruses
- 7) surface samples of microorganisms
- b. Benthic biota near the site (5 Miles above and 5 miles below the effluent)
- c. Fish (some are mentioned in ER p.2.7-3 and 2.7-8)
- d. Amphibia
- e. Reptiles

f. Mammals

- g. Waterfowl (permanent and transient)
- h. Insects (mosquitoes, etc.)

i. Other invertebrates

j. Macrophytes

3. Furnish the total yield of fish (lb/year), sport and commercial, from the Cedar River downstream of the plant.

- Support the statement that there is an absence of signifi cant numbers of pelagic larval fish.
 (B-3, Amendment 1)
- 5. Cite documentation or source of the statements "Most of the elm trees in the area are dead or dying from Dutch Elm disease" and "many foxes have died of mange in this area." Also, please indicate meaning of "most" and "many" in terms of approximate proportions of healthy to affected organisms.
- 6. Submit data on the diurnal fluctuation of dissolved oxygen at given depths in the Cedar River at or close to the DAEC site. If possible, also furnish data on seasonal fluctuations.

(B-4, Amendment 1)

(2.7-3)

(2.7-1)

- 7. Clarify the apparent discrepency between the calendar period of the fish populations study (i.e., June 9-12, 1969) and the time period of the study (i.e., a total of 30 net days).
- 8. Indicate fish species which will be stocked in the reservoir. Will such fish have access to the river? Will they be discharged into the river along with the water during periods of low river flow?

(3.2-22)

-6-

3. THE STATION

3.1 External Appearance

- Provide low altitude aerial photographs or comparable realistic drawings of the site before construction, during construction and present (or fully completed appearance.)
- 2. The shores of the river are heavily wooded. Describe the extent of removal of trees and use made of trees to conceal plant structures from various directions, and new plantings which are planned.

(3.9-1)

(3.9-2)

3. Exposed aggregate precast concrete tends to discolor (often aggravated by irregular leaching) over a period of years. If this occurs to the reactor buildings, describe steps which DAEC might_or will take to maintain the appearance as a harmonious balance with the surrounding area.

Name by title local authorities who feel that the plant in no way detracts from the local scenery, and outline their bases for and the conditions under which they expressed this view: also indicate whether they were at the time of their expressions speaking for themselves or as official spokesman for their constituents. Are their positions documented in official public records? (B-21, Amendment

3.1

3.3 Heat Dissipation System

 Tabulate the thermal power, gross electrical, net electrical, and waste heat energy (all in MW) for initial full power rating and maximum (or stretch) capability.

8

- On a copy of Figure 3.3-1 indicate heat loads (in Btu/hr) for plant cooling systems including the main condenser.
- Outline the water quality standards of the Iowa Water Pollution Control Commission against which heat releases of the Plant are interpreted.
- 4. Present performance characteristic correlations or equations which form the basis for the cooling tower temperatures of Table 3.3-1 over the full range of weather conditions encounted. Provide annual statistics which verify this range.
- 5. Give the breakdown of water loss from the towers by vaporization and drift (entrainment), and partitioning into plume, fog and glare ice for the range of conditions anticipated. Can this partitioning be altered?
- Outline details of measurement and control of the mineral content in the circulating water for the range of conditions anticipated.
- 7. Provide the basis of calculation for thermal plume areas given on B-4, Supplement 1 under a representative range of weather and river conditions. Also, give details of thermal

outfall and mixing characteristics for the stretch of river which was chosen as representative.

- Tabulate wet-and dry-bulb temperature statistics for the plant region.
- Describe methods of measurement and disposition of debris, including fish, from water the intake structure, forebay, trash rack, traveling screens, etc.
- 10. Provide as completely as possible on a sketch showing relative locations and distances, the depth, width, and flow rate (also velocity) at all points of the inlet and discharge structures (between the river and wet well) at which significant changes occur. What is the travel time from intake to discharge of cooling water? At which depths and at what distances from the shoreline will intake from and discharge to the the river occur? Also, outline details (various dimensions, materials, etc.) of the trash rack and traveling screen.
- 11. State the frequency (i.e., monthly, yearly, or other) with which the 10-year low flow figure (one day or 7-day average?) is to be revised as the standard at which specific surface water criteria are fixed. List and define the specific surface water criteria.

(3.3-2)

12. State where and how the background or natural temperature of the river will be measured and continuously (or intermittently) recorded.

-9.-

3.4 Radioactive Waste System

- Provide backup for basing the release of radioactivity to the discharge canal on a coolant activity consistent with a 30-minute-old diffusion mix of 25,000 µCi/sec of noble gases. (3.6-17)
- 2. Discuss evidence for the conviction that existing BWR operating experience has produced radwaste systems which represent the best technology available, in contrast to being the best technology possible. (4.4-1)
- 3. Furnish up-to-date schematic drawings relating to the following systems: Radioactive

Ventilation

Gas Treatment

Reactor Coolant

Containment

Reactor Water Cleanup

Also furnish scaled plant layout drawings.

- Furnish ventilation air flow rates through the reactor and turbine buildings, the discharge points and the treatment before discharge.
 Also, give the expected leak rates of primary coolant and/or steam to these buildings.
- 5. Describe the steam treatment, flow rate, estimated burden of radioactivity and release scheme of the steam for the turbine gland seals. If the reactor is the source, provide a cost figure for providing clean steam from an alternate source.

-10-

Give the flow rates of off-gas at various stages in the main condenser off-gas system. Describe the treatment and the holdup of noble gases and iodines by this path. What is the expected and design source term (30 minutes) of gaseous radioactivity by this route? Where is the release point for the system?

7. Discuss in detail the monitoring of liquid and gaseous discharge. Give monitor sensitivities and set points, and estimate the activity

.11

that could be released undetected.

8. Discuss the potential leakage of primary coolant water across the residual heat removal heat exchangers and the subsequent discharge to the environment. Discuss magnitudes of leaks which are expected, and which can be tolerated. Also, discuss remedial action contemplated if magnitudes are within and exceed tolerances.

3.5 Chemical and Biocide Systems

6.

- 1. Describe in detail means to be used for controlling cooling tower fouling (design and chemical).
- 2. Summarize amounts and procedures for addition of chemicals to the circulating water system and release to the river (including biocides and demineralizer regeneration). Also, was the Marshalltown experience used only to estimate the concentration factor for water? How often is chlorination? Will discharge of chlorinated water to the river be continuous or intermittent? Has mechanical defouling of condensers been considered as an alternative to chlorination? What was the basis for using 3 mg/liter chlorine in the makeup water? Was the chlorine demand of the Cedar River water at DAEC determined? (3.2-25)

- 3. "The free residual chlorine of 0.3 ppm in the cooling tower blowdown should be dissipated -- within a few feet downstream ---." This concentration seems high and the statement about dissipation is too vague. Also, is chlorine injection continuous? Please discuss. (3.2-27)
- 4. State whether some form of CaO will be added to the river to neutralize the H_2SO before it is discharged to the river. If so, please calculate the concentration of suspended solids in the blowdown due to CaSO₄ discharge and after mixing with the Cedar River. (3.2-25)
- 5. Give the chemical and physical analysis of the sewage effluent before discharge into the Cedar River (particularly, content of residual chlorine, BOD, phosphate, nitrate, and ammonium ions) and sanitary disposal data for 300 persons (during construction) and an estimated 65-70 persons during the operational period.
- Enumerate all types and quantities of chemicals (if any) used in cleaning piping system, and describe how and where they are discharged into the river or elsewhere.
 (3.5-3)
- Describe how the sodium sulface, phosphoric acid, and other waste chemicals are to be discharged. If any are discharged directly to the river, describe the frequency and concentrations. (3.5-3)
- Name chemicals to be stored "outside," together with their quantities, storage conditions, rates of turnover, etc. (3.5-5)
- 9. Show data and calculations used to arrive at the figure of 15 lbs/acre/yr of NaCl deposition at the site boundary. (B-22, Amendment)

-12-

10. Cite the literature references for the figures on coastal and natural NaCl fallout. (B-22, Amendment 1)

3.6 Sanitary and Other Waste Systems

1. Summarize the performance of the package sanitary waste system as a function of input. Also, present in tabulated or graphical form quantities of chemical and biological materials in the effluent and the character of dispersion of outfalls as function of input. Where is the sanitary outfall to the river located relative to the plant cooling system intake and discharge?

4. ENVIRONMENTAL EFFECTS OF SITE PREPARATION, AND STATION AND TRANSMISSION LINE CONSTRUCTION

4.1 Effect on Land Use

- 1. Provide simple sketches of the design and material of transmission line poles, a map showing existing and newly acquired rights-ofway and substation locations relative to parks, historic sites, significant wooded area, etc., and to highways and municipalities. Also describe how bluffs, streams, and major highways are spanned (types of poles and distances, methods used, etc.) to preserve esthetic appearances and minimize environmental disturbances. How many acres of new right-of-way were acquired, and what is the breakdown by marshland, wooded or timbered, pasture and hayland, and cultivated cropland?
- 2. Describe transmission line and substation maintenance commitments from esthetic and environmental preservation points of view. To what extent is joint use of the right-of way for water pipelines, oil pipelines, etc., permissible and possible in future decades?
- 3. Indicate locations, widths, lengths, and volumes involved whereever dredging of the river has or will occur in connection with the Plant and the recervoir.
- 4. Describe the details of the procedure to achieve the first paragraph on page 3.4-2 of the DAEC Environmental Report.

-14-

5. Describe how digested wastes from the sanitary waste treatment system are disposed of during construction and after the Plant is completed. If they are at any time to be disposed of off site, describe quantities, method of removal, location, and safety of the off-site location. Repeat for on-site disposition.

4.3 Effects on Site Ecology

- State details for the basis of the conclusion that wildlife areas are not adversely affected by present and past site use.
 State what methods are used to determine whether these areas have not been and are not being adversely affected during site preparation and Station construction. (8-1-22)
- 2. Cite sources of information or references for the following
 - statements:

"There are no unique species peculiar to the Palo site." (8.1-21)

". . there are no endangered species associated with Codar River ecosystems." (0.1-21)

"There are no known anthropological or archeological interest areas near the site." (8.1-22)

5. ENVIRONMENTAL EFFECTS OF STATION OPERATION

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5.2 Effects on Water Use

1.

2.

3.

Document the source location, amounts, and quality of all water used in Plant systems; also, the treatment and disposition of such water, including discharge procedures and contained chemicals and radioactivity, and boundaries of variations due to natural and Plant conditions.

Provide all known evidence and details concerning the recharging of on-site and neighboring off-site wells used for supply water, and concerning the anticipated quantitative effect of on-site pumping on existing off-site wells.

Specifically, how will DAEC determine whether claims by owners of wells in the vicinity are justified, should the capacities of their wells diminish after the Plant becomes operational. What reimbursement, corrective and replacement measures will be employed; and how broadly (area and time duration) will DAEC continue to make known that an avenue of friendly recourse is available to them?

(B-14, Amendment I

5.3 and 5.4 Effects on Terrestrial and Aquatic Environment

 Describe Plant procedures which will be followed in allowing downtime for maintenance and repair of cooling tower and associated equipment, as functions of season, weather conditions, etc. In relation to these procedures, describe anticipated alterations to river conditions and short- and long-term impacts on biota. Are problems anticipated in operating all cooling towers continuously throughout winter months, and if so, how will they be met?

- 2. What data and experience from cooling towers are available to aid in the prediction of the impact of mineral fallout on the floras and faunas of the site land and surrounding area? (3.10-1)
- 3. List the species and estimate quantity of organisms that will be entrained in the cooling water.
- 4. Show main plant water intake and discharge locations and elevations in relation to the local geography of the Cedar River and identify the habitats of local biota in this region.
- 5. The assumption may be erroneous in regard to no effect of chlorine on the biological communities in the Cedar River. The "small 'chlorine residual" may actually affect more than certain microorganisms in the immediate area of the discharge. Also, the combination of the effluent chlorine and organic matter in the river will produce secondary toxins such as chloramine. Please comment and give pertinent references. (3.2-27)

6. State details for the basis of the conclusion that wildlife areas will not be adversely affected by future site use. What methods are being and/or will be used to determine whether these areas will not be adversely affected when the Plant is operable? (8.1-22)

- 7. What data are available (i.e., provide supportive evidence) to validate the following:
 - a) That no effect on wildlife is anticipated. (B-6, Amendment 1)

b) That no thermal barrier to fish movement will occur.

(B-6, Amendment 1)

c) That no effect on aquatic biota is anticipated.

- d) The outcome of the Cedar River ecology program. (B-7, Amendment 1)
 e) That the effects to trees and other deep-rooted vegetation will be insignificant. (B-14, Amendment 1)
- f) -That the terrestrial program will confirm that effects are
 or will be insignificant.
 (B-17, Amendment)
- g) That no significant effects of the DAEC on the wildlife are
 likely to occur. (B-21, Amendment 1
- 8. Is the term "insignificant" meant in a statistical sense? If not, please use other terminology or define the intended framework of its use.
 (B-7 and

(B-7 and B-17, Amendment 1)

5.5 Radiological Effects on Biota Other Than Man

- Relative to radiological impact, supply a map giving the locations of dairy herds (and sizes) within five miles of the Plant and indicate the fraction of this production which is sold as Grade A milk. Give the location of the nearest family cows if different from above and the location of the nearest pasture land.
 - 2. Furnish the annual grade A milk production for the entire 50 mile region.

5.6 Radiological Effect on Man

- Relative to radiological impact, furnish population wheels for 10-50 mile regions based on 22 1/2° sectors centered on 16 cardinal compass points for 1970 and for projected population in 1980 or 1985. Similarly, give 1980 population projections for 0-5 mile region. Give distance to nearest occupied dwellings in these directions.
- Relative to radiological impact, identify downstream users of Cedar River water for such uses as potable water, irrigation, and livestock watering.
- 3. Relative to radiological impact, furnish information regarding the recharge of shallow aquifers from the Cedar River. What is the downriver population using these aquifers for domestic water?
- 4. Furnish details regarding the shipment of new fuel, spent fuel, and radioactive wastes to or from the Plant. Include, where applicable, information about the number of shipments per year,

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the number of containers per shipment, the number of curies per container, and the expected dose rate at the surface. Indicate the shipping destinations, routes, and furnish information about populations and traffic along these routes.

5.7 Effects on the Community

 Indicate the "remedial means" to reduce noise (Why not design for least noise at the start?)
 (3.8-10)

2. Present in tabular or graphical form radii around the Plant which will fall within the nonacceptable category of noise around the Plant? What will the decibel readings be at representative positions near the cooling towers? (B-20, Amendment 1)

6. EFFLUENT AND ENVIRONMENTAL MEASUREMENT AND MONITORING PROGRAMS

6.1

and

6.3 <u>Pre-operational and Operational Environmental Monitoring Program</u> 1. Supply a set of pre-operational radiological monitoring program reports.

- 2. Give details of sampling methods, locations, and replications for the pre-operational and operational periods. (Summarize the analytical methods and cite references. Please give a detailed description of sampling techniques, reasons for the choice of a particular sampling location and sampling technique, and cite published information on the particular sampling method chosen). (3.1-13)
- 3. Submit the plans (with as much detail as is available) for the "Cedar River Ecology Study," and any terrestrial ecology studies to be conducted before and during operation. Please give names and qualifications of personnel who will carry out these studies, summaries of analytical techniques, and as much detail as possible with regard to sampling methods, sites, and replications. (3.10-1)
- 4. Describe criteria which will be used to determine the acture and extent of synergistic effects and the basis for the conclusion of "no significant interaction" or "deleterious effect." (3.10-1)

7. ENVIRONMENTAL EFFECTS OF ACCIDENTS

-22-

7.1 Plant Accidents

1. Furnish information regarding the proposed on-site storage of chlorine and the examination of accidents involving it.

8. EVALUATION OF PROPOSED ACTION

8.1 Need for Power

Name any municipalities or other corporate entities within a 50-mile radius of the DAEC Plant which purchase electric power for resale. Name the five largest industrial electric power consumers (also listing kind of character of products manufactured or processed) in Cedar Rapids and between the corporate limits of Cedar Rapids and the DAEC site.

- 8.3 Relationship Between Local Short-Town Here of it. I. E. Literate and the Maintenance and Enhancement of Long-Term Productivity
 - 1. Provide the key to the Environmental Impact Matrix. (Figure 8.2-2)
 - Show agricultural distribution, similar to that for population (i.e., 0-50 mile radial sectors), in terms of tons of produce and head of livestock marketed annually and their market values.

10. PLANT DESIGN ALTERNATIVES

-23

10.1 Cooling System

For cooling towers at DAEC, provide a cost breakdown as follows:

a) direct construction cost;

b) backfitting;

c) interest during construction;

d) operating and annual maintenance;

-e) water treatment (annual);

f) major component replacement (scheduled);

g) power consumption (kw);

h) capability loss (%);

i) total lifetime present worth cost;

j) total annual levelized cost.

11. BENEFIT-COST ANALYSIS

-24.

11.1 Alternatives Selected for Benefit-Cost Analysis

 Explain how information given in Amendment 1 is selected for "Alternatives"; that is, to differences in Plant design and operation with reference to the design actually being proposed for licensing, in contrast to designs which would evolve a different conjugation of environmental effects. Also identify and distinguish such alternatives with respect to the text of the DAEC Environmental Report of April 1971. (B-1, C-

(B-1, C-1 thru 3, and D-1 thru 3 of Amendment 1)

2. Intensive studies of Commonwealth Associates, Inc. are used as a basis for both Plant size and site selection (DAEC Environmental Report, p. 4.2-1) and for cost differentials for alternatives (Amendment 1, p. C-2). Furnish information as to the basic assumptions, method, and scope of these studies.

11.2 Evaluation of Benefits

 Indicate the present economic importance of electric energy for regional commercial and agricultural users, and indicate powerintensive trends, if any.

11.3 Evaluation of Costs

 In Table C-2, no quantitative estimates are made of the effect on aquatic and terrestrial biota. Supply an order-of-magnitude estimate under typical and maximum conditions in terms of Plant and site characteristics, identify the maximum risk (probably biotic effect), and discuss the assurance provided by monitoring that any uncertainties in the estimated effects will not go unreported and ignored as part of the company commitment to optimally low environmental costs. As part of this, furnish the program of the Cedar River Ecology Program and the results to date. Include description and references to other relevant studies and monitoring programs. (C-6, Amendment I

-25-

YELLOW

JUL 3 1 1972

Docket No

For

50-331

Dr. Chester P. Siess Chairman, Advisory Committee on Reactor Safeguards U. S. Atomic Energy Commission Washington, D. C. 20545

ENVIRON

Dear Dr. Siess:

Sixteen copies of the following are transmitted for the information of the Committee:

IOWA ELECTRIC LIGHT AND POWER COMPANY (Duane Arnold Energy Center)

Iowa Electric Light and Power Company letter dated July 12, 1972, transmitting source term data in response to our letter of June 23, 1972.

Sincerely,

ENVIRON

Original signed by Daniel R. Muller Daniel R. Muller, Assistant Director for Environmental Projects Directorate of Licensing

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