



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

JAN 2 1981

Docket No.: STN 50-483

Mr. John K. Bryan
Vice President
Union Electric Company
1901 Gratiot Street
P. O. Box 149
St. Louis, Missouri 63166

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Dear Mr. Bryan:

Subject: Request for Additional Information for the Review of the
Callaway Plant, Unit 1

As a result of our continuing review of the Callaway Plant, Unit 1
Environmental Report, we find that we need additional information to
complete our evaluation. The specific information required is presented
in the Enclosure.

To maintain our licensing review schedule for the Callaway Plant
Environmental Report, we will need responses to the enclosed request
by January 23, 1981. If you cannot meet this date, please inform us
within seven days after receipt of this letter of the date you plan
to submit your responses so that we may review our schedule for any
necessary changes.

Please contact Mr. Dromerick, Callaway Licensing Project Manager, if
you desire any discussion or clarification of the enclosed request.

Sincerely,

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page

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REQUEST FOR ADDITIONAL INFORMATION
ENVIRONMENTAL REPORT
CALLAWAY PLANT, UNIT 1
DOCKET NO. STN 50-483

Cooling Tower Operation and Noise

- 290.1 (Section 3.4.3) Provide the flow rate of air through the cooling tower at maximum operating capacity.
- 290.2 (Section 3.5.11) The chemical composition of the cooling tower drift as listed in Table 3.6-7 differs noticeably from the analysis presented in the ER-CP (Revision 1, Question D15). Moreover, drift composition as discussed on page 5.1-7 (ER-OL) does not agree with the information in Table 3.6-7. Discuss the changes in drift composition which occur between the ER-CP and ER-OL, and address the discrepancies which appear between sections of the ER-OL, concluding the discussion with a recommendation of the analysis to be used in subsequent review.
- 290.3 (Section 3.6.11 and 5.1.4.2) These two sections contain apparently independent analyses of cooling tower drift deposition. Explain the presentation of the two analyses and discuss their comparative applicability for use in subsequent review.
- 290.4 (Section 5.1.4.2) Expand on the information presented in Table 5.1-6 by listing deposition rates as a function of distance from the cooling tower (i.e., provide deposition rates as functions of both distance and direction from tower).

290.5 (Section 5.1.4.2) The buoyancy flux equation given on page 5.1-8 is $F = 2.59 \times 10^{-5} Q_H$. The equation typically used in this situation is $F = 3.7 \times 10^{-5} Q_H$. Explain specifically how/where the 2.59×10^{-5} coefficient was obtained.

290.6 Provide a discussion of noise sensitive land uses in the vicinity of the plant site and the Missouri River pump house. The discussion should describe the type of land use (e.g., towns, hospital, school, residence, wildlife management area), and its location and distance from plant noise sources such as cooling towers, circulating water pumps, plant transformers, switchyard, steam vent locations and outdoor paging system.

290.7 Provide, if available, ambient (i.e., pre-construction) day-night equivalent sound level data for the identified noise sensitive locations and for the area in the vicinity of the plant boundary.

290.8 Provide a discussion of all significant barriers (natural or otherwise) to noise propagation and ground cover (such as groves of trees and other vegetation) that could possibly affect sound propagation to offsite areas. Indicate their location, extent, elevation, proximity to noise sources and noise sensitive land uses, and estimate their effect on noise propagation offsite.

290.9 Provide a discussion of the expected day-night equivalent sound levels due to operation of the plant at the noise sensitive locations identified above, as well as at the plant site boundaries. (Selection of locations on the site boundary for consideration should be based on proximity to noise source locations due to the irregular shape of the site.) Indicate clearly the bases for these estimates (i.e., reference for source data, distances considered, allowances taken for barriers, groundcover, intermittent operation, etc.). For infrequently operated noise sources, such as the PA system, estimate the noise levels produced at the various locations and the percentage of time that the sound source operates. Sound level estimates should include ambient sound levels for the locations considered, if such data are available.

Terrestrial Ecology and Land Use

290.10 What are the descriptive data and the impacts on terrestrial ecology that will result from the construction and operation of the sludge ponds for improving the quality of the discharge water?

290.11 What reclamation procedures will be used when the sludge ponds are filled?

290.12 What are the descriptive data and the impacts on terrestrial ecology of the construction and operation of the new Technical Support Center, the Secondary Access Facility and the Emergency Operation Facility?

- 290.13 Specifically where has the wild turkey hunting data been incorporated in the previous sections. Page 6.3-2.
- 290.14 Were any construction activities engaged in that were not evaluated by NRC? Appendix 4A, page 4.0-3. If yes, provide the location and size, the previous land use of the areas and if any are on prime agricultural land.
- 290.15 Determine the total amount of prime agricultural land on site, the amount utilized for permanent structures (e.g., containment building), the amount used for temporary facilities (e.g., lay down area) and the percent of each type to the total site area. This item is not covered in the ER.
- 290.16 Provide a map of the floodplain indicating the areas of construction activities and identifying the affected plant communities and any prime agricultural land.
- 290.17 Provide an indication of the commonness or rarity of the affected plant communities in the area.
- 290.18 Provide the following omitted reference citations:
- (1) Page 2.1-15 Reference to U.S. Dept. of Agriculture, 1967, not provided.
 - (2) Page 2.2-82 Sojda, 1979, reference not provided.
 - (3) Section 6.1 No references provided.

- 290.19 Please provide an updated list of the Threatened and Endangered Species on the Federal and State of Missouri lists.
- 290.20 From Chapter 4 it is not possible to determine if all the land needs for construction given in Table 4.1 of the FES have been disturbed yet. That is, by delaying the construction of Unit 2 will less area have to be disturbed for lay down or other uses than originally anticipated.
- 290.21 Predict the maximum field strength and the field strength at the edge of the transmission line rights-of-way. Based upon the predicted field strengths discuss the long-term biological effects, i.e., non-shock hazards, from these low level electrical fields. Section 5.5.
- 290.22 Specifically where in the terrestrial ecology section have the 1970 to 1979 mid-winter waterfowl and the 1978 to 1979 midwinter eagle surveys been incorporated? Page 6.3-1.

Aquatic Ecology

- 291.1 (page 2.2-24) The staff requests additional information on the abundance, diversity, spawning, etc., of fishes in the Missouri River (vicinity of Callaway), Logan Creek, and Mollie Dozier Chute. Provide the following references and any additional pertinent information that may be available:
- (1) Union Electric Company. 1974a. Callaway Plant Units 1 and 2. Environmental Baseline Inventory. Unpublished report. Union Electric Company. St. Louis, Missouri.
 - (2) Union Electric Company. 1974b. 1974 Annual summary, Callaway Plant Units 1 and 2. Preconstruction monitoring. Unpublished report.
- 291.2 (page 3.4-4) What measures have been made or are planned to prevent the entrainment or impingement of larvae and young fish that exit from the Mollie Dozier Chute immediately upstream from the intake structure?
- 291.3 (page 3.4-6) It is not clear from the discussion or from Fig. 3.4-2 how the low velocity fish escape openings function, and how their design will avoid fish aggregation in the intakes quiescent waters. Clarify.
- 291.4 (page 3.4-7) What will be the temperature of the spray water under winter conditions? What will be the winter water temperature in the forebays, especially at the lowest elevation of the traveling screens?

Water Treatment and Chemical Discharges

- 291.5 Referring to Table 3.6-6, footnote, provide the basis for the 94 mg/l reduction in total alkalinity in the plant effluent attributable to aeration in the cooling tower. Indicate whether alkalinity (1182 mg/l) includes the effect of sulfuric acid addition.
- 291.6 There are inconsistencies between the flow rates given in Tables 3.6-4 and 3.6-5 and those shown in Figure 3.3-1. For example, Figure 3.3-1 gives a blowdown rate (2 towers) of 9355 gpm, which is 13,471,200 gal/day; Table 3.6-4 gives 10,967,000 gal/day. Please resolve these discrepancies and provide corrected values.
- 291.7 The maximum concentrations of sulfate and mercury in the river as given in Table 3.6-6 appear to be abnormally high (cf. Table 2.4-7).
- 291.8 Please discuss the ultimate fate, including disposal method and location, of the water treatment system clarifying sludge.
- 291.9 Please specify the organic composition of the dispersant (organic phosphonate), the EPA registration number, toxicity data for aquatic organisms (if available), the form in which it will be discharged, the basis for the estimate of the amount used, the amount discharged, and discuss the possible chemical decomposition in water.

- 291.10 Explain how the proposed sulfuric acid treatment level was estimated.
- 291.11 In reference to question 291.10, discuss the effect of adding sulfuric acid on the action of organic phosphonates for scaling control; in particular, the effectiveness of organophosphonates at different pH values. How does the amount of sulfuric acid that would be needed to control scaling without using organophosphonates compare with the amount needed when both are used?
- 294.12 Specify whether the inhibition of scaling by phosphonates will affect the corrosion protection normally afforded by slightly scaling conditions (positive saturation index). Provide a quantitative discussion of the effects that the phosphonates may have on the soluble fractions of heavy metals (such as copper, nickel) cooling system corrosion products and the resultant impact on discharge water quality and receiving water biota.

Socioeconomics

- 310.1 Update all population estimates and projections using U.S. Bureau of the Census data for 1975.
- 310.2 Provide a 1980 monthly estimate of the number of users of the Reform Management Area and project yearly averages of the number of area users for the lifetime of the facility.
- 310.3 Provide a copy of the Dames & Moore demographic study which is discussed in Section 8.1.2.1.1.
- 310.4 Provide an update of Table 8.1.7. Please add to the table for each personal category the approximate number of people who are currently employed by U.E. and have or will be transferred to the Callaway Plant.
- 310.5 Provide a full citation and description for the "State Model" discussed in Section 8.1.2.1.2.
- 310.6 Update the numbers in Table 8.1.9 to Table 8.1-15, Table 8.2-6, and Table 8.2-7.
- 310.7 Provide evidence to verify the statements in paragraphs one and three of Section 8.1.2.4.2.
- 310.8 Clarify, in Section 8.2.2.2.1, the number of residences not razed and the number currently rented. Discuss the intended disposition of these residences during the operation of the facility.

Cultural Resources

- 310.9 Provide a detailed description of the research design developed for cultural resource site identification on all plant properties and all methods utilized in the field reconnaissance. Describe and identify on a map the kinds of field strategies utilized in all areas that were surveyed and the different topographic and vegetation settings in each survey location. Include a discussion and map notation of the field conditions at the time of the field work in each survey area.
- 310.10 Provide a detailed description of the criteria used to evaluate the cultural resource sites identified on the plant properties. Describe each of these sites including the sites' structure, function, chronology, cultural affiliation and current condition. Which of these sites still remain on the plant property and what mitigative measures were used for sites and parts of sites that do not remain?
- 310.11 Describe the natural resources or locations on the plant properties of cultural or religious importance to Native Americans living in or utilizing the nearby area. If Native Americans no longer reside in the area, when did they last reside in the area?

310.12 Provide a detailed description of the settlement-subsistence system for all cultural phases known in the nearby area and a correlation of site type, cultural-phase and environmental setting over time. Provide a list of references which illustrate examples of site types and typical locations at which to expect sites for various temporal periods and cultural groups.

310.13 What are the major research problems for this general region? How do the nearby cultural resource sites relate to these problems? How do the sites located on the plant property relate to these problems and do they provide information contributing to a better understanding of the local culture history? Explain why.

Offsite Hazards

- 311.1 As published in the Federal Register (Vo. 45, No. 116, June 13, 1980, Pages 40101-40104) the Nuclear Regulatory Commission (NRC) has revised its policy regarding accident considerations in National Environmental Policy Act (NEPA) reviews. Information regarding the site as well as events arising from causes external to the plant which are considered possible contributors to the risk associated with the plant are to be discussed. References to safety evaluations is acceptable provided the Environmental Report contains a complete overview with references to specific sections of the FSAR. Accordingly, please provide an analysis of all offsite activities and an assessment of potential hazards including: (1) transportation, (2) mining and mineral exploration and/or operations, (3) industrial activities, and (4) military activity.
- 311.2 Paragraph 2.1.1.2 (Page 2.1-1) states "...acreage on the site not directly preempted for the power production process is being made available for various levels of public use or development..." Paragraph 2.1.3.3.4 (Page 2.1-17) and your responses to FSAR Question 310.02 discusses land use in greater detail. An indication of possible "research" use, etc., is of concern. Please provide a more explicit list of activities contemplated and those activities which will be excluded.

311.3 Section 2.1.2.3, Page 2.1-6 (and FSAR Section 2.1.3.3, Page 2.1-10) states that "Last Canyon Lakes is a recreational vehicle and trailer park development approximately 2.2 miles north of the site. The development has approximately 800 sites currently in use, and its developers hope to sell an additional 500 to 600 sites by September, 1980. No permanent residential structures are allowed within Last Canyon Lakes.

"Current average summer weekend use of Last Canyon Lakes is estimated to be around 400 persons with usage on peak holiday weekends approaching 1,000 persons (Utley, 1979)"

Please update this information and include:

- (1) Projected total number of sites at completion of project.
- (2) Projected end of project usage on a seasonal, weekday, and weekend basis if significantly different.

311.4 Please identify ownership of land within the plant corridor (Section 2.1.1.2.1.3 of the FSAR identifies tracts of land within the plant corridor area that are not owned).

311.5 Please confirm that explosives are not shipped via County Roads 335 and 337 through the Exclusion Area. Please identify the shipping routes and maximum single shipment quantity of explosives discussed in Section 2.2.1.2.4 of the FSAR.

POOR ORIGINAL

Radiological Impacts

- 470.1 On p.5.2-7, it is stated that the GASPAR and LADIAP computer codes were used to estimate doses. Provide a listing of input parameters that were used in the GASPAR and LADTAP computer runs.
- 470.2 On p.2.1-22, it is stated that "According to HDC (1976b), no public access points exist on the Missouri River downstream of the discharge." Is there a more current reference? When you state "downstream of the discharge", do you mean within 10 miles, 50 miles, or to the Mississippi River?