Reading FILE

APR 10 2003

Mr. Jack Cushing
Chief, Rules Review and Directives Branch
Division of Administrative Services
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Cushing:

RE: Generic Draft Environmental Impact Statement (DEIS) for License Renewal of Nuclear Plants, Supplement 12, Fort Calhoun Station, Unit 1

Pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has reviewed the document entitled, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 12, Fort Calhoun Station, Unit 1." The proposed federal action is the renewal of the Operating License (OL) for Fort Calhoun Station, Unit 1, near Omaha, Nebraska. The Generic DEIS discusses the proposed action of renewing the OL for Fort Calhoun Station, Unit 1. The Omaha Public Power District (OPPD) is the applicant for this renewal. The document also presents and analyzes energy production alternatives to the proposed federal action.

Given the 10-year lead time for this action to be implemented and the absence of a discussion of past, present or reasonably expected future actions (including non-federal) that could reduce the assimilative capacity (heat) of the Missouri River, EPA rates the DEIS "EC-2" (Environmental Concerns-Insufficient Information). To address information deficiencies, EPA recommends that the Nuclear Regulatory Commission (NRC) discuss (in the Final EIS) the cumulative effects of current and projected heat contributors to the Missouri River within Fort Calhoun's geographic scope of impact/influence, or provide details of control strategies that OPPD could undertake under increasing discharge limitation scenarios. For the purpose of assisting the NRC with this analysis, EPA has enclosed a thermal discharge technical report and modeling data.

JCothern:bnichols:4/9/03:F:NEPA Stuff/Heatdraftfinal2.4.8.03.wpd

ENSV ENSV

Thank you for the opportunity to provide our comments regarding this project. If you have any questions, please contact Mr. Joseph Cothern, NEPA Team Leader at (913) 551-7148.

Sincerely,

U. Gale Hutton
Director
Environmental Services Division

Enclosure

EPA Comments on Generic Draft Environmental Impact Statement for License Renewal of Fort Calhoun Unit 1

General:

The document does not mention whether power demands on the Fort Calhoun facility are expected to change significantly from present levels during the license renewal period (up to 20 years). If consumer power needs in the service area increase significantly, please clarify how this would this affect operations, expansions/upgrades, effluent release and waste quantity. The anticipated growth rate of the service area during the renewal period should be taken into consideration.

Specific:

Page 1-1, Lines 21-23: The Draft Environmental Impact Statement (DEIS) states that "This OL will expire in August 2013. On January 9, 2002, the OPPD submitted an application to the NRC to renew the Fort Calhoun Station Unit 1 for an additional 20 years under 10 CFR Part 54." The EPA notes that application for renewal is submitted 11 years in advance of current Operating License (OL) expiration (2013). Given this time period, EPA believes that Nuclear Regulatory Commission (NRC) should be cognizant of the expectations of the Council on Environmental Quality (CEQ) with respect to information currency. Per the 1981 memorandum entitled "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," "...if the proposal has not yet been implemented, or if the EIS concerns an ongoing program, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement. If an agency has made a substantial change in a proposed action that is relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, a supplemental EIS must be prepared for an old EIS so that the agency has the best possible information to make any necessary substantive changes in its decisions regarding the proposal. Section 1502.9(c)."

Page 2-38, Lines 22-23: The DEIS states that "there are currently no growth-control measures in place to restrict development." Does this fact have utility for the decision-maker in the re-licensing process? If so, how would growth around the plant affect licensing considerations?

Page 2-49, Lines 18-21: The DEIS limits discussion of cumulative impacts to only the U.S. Army Corps of Engineers' revisions of the *Missouri River Main Stem Reservoir System Master Manual* (1979). The CEQ regulations on NEPA are specific on the need for cumulative impacts analysis (Sec. 1502.16 Environmental consequences, Sec.1508.7 Cumulative effects and Sec. 508.8 Effects). The EPA recommends that the NRC evaluate all potential actions (increasing universe of thermal dischargers and planned OPPD expansions) and causes (drought, climate change) which may reduce available Missouri River cooling capacity over the renewed OL period. In making this evaluation, NRC should also keep abreast of potential Missouri River Master Manual (flow regime) revisions and, also, any water quality standards revisions that may be made by the State of Nebraska.

PREDICTION OF HEAT MIXING ZONE FROM THE FORT CALHOUN NUCLEAR POWER PLANT

INTRODUCTION

When power is produced in a steam electric plant, a large portion of the energy released from the fuel is lost in the form of heat and must be dissipated on the plant site. The Omaha Public Power District (OPPD) Fort Calhoun Nuclear Power Plant uses water from the Missouri River to cool condensers, generators and other components of the power plant. Water from the river is pumped through the plant in large volumes and is then discharged back into the river with heat as the only added pollutant.

In 2001, the Environmental Protection Agency (EPA), with the help of the United States Geological Service (USGS) and the Oregon Graduate Institute (OGI), collected and analyzed heat data from the Missouri River at Fort Calhoun and three other power plants owned by OPPD and the Nebraska Public Power District. The purpose of this study was to map heat in the Missouri River and to predict compliance with Nebraska State Water Quality Standards under various river conditions for the purpose of establishing appropriate NPDES permit limits.

STATE WATER QUALITY STANDARDS

Title 117 of the Nebraska Surface Water Quality Standards states that "The temperature of a receiving water shall not be increased by a total of more than 5° F (3°C) from natural outside the mixing zone." "For warm waters, the maximum limit is 90° F (32°C)." (Title 117 Chapter 4.003.01B). "Chronic mixing zones in Warmwater Class A streams shall be designated to not exceed 5,000 feet in length." (Title 117 Chapter 2.010.06A2). Chronic mixing zones are set based on the 7-day, 10-year low flow. (Title 117 Chapter 2.010.06C).

Translated to plain English, the Fort Calhoun plant must not discharge levels of heat which would cause the Missouri River to be warmed more that 5° F (from natural/upstream temperature) at the end of a 5,000-foot mixing zone under 7Q10 drought conditions. In addition, the plant must not cause the temperature of the Missouri River to exceed 90° F at the end of the mixing zone. This is an important limiting factor, since summer background temperature in the Missouri River can exceed 85° F at the same time that river flows are lowered by summer drought conditions or by a reduction of stream flow volume via U.S.Army Corps of Engineers' management actions.

ASSESSMENT OF KEY LIMITING CONDITIONS

Examination of records from several power plants and records of river conditions showed several key limiting conditions. The EPA's monitoring and modeling strategy was based on predictions of heat levels in the Missouri River under three key conditions:

- Winter 7Q10 - During the winter months (November-February-March) releases from the Gavin's Point Dam are low when navigation service is curtailed. Ice jams can also limit river flow significantly. Winter modeling was based on seasonal calculations of historical low flows and the presumption that the facility would operate at full generation capacity.

- Summer "Heat Season" 7Q10 - During the months of June-September, the hottest months of summer, air conditioners and other cooling devices drive a high demand for electricity, which in turn, equates to a higher heat discharge. In addition, river background temperatures can also be high during drought events. The EPA's modeling considered a range of background temperatures based on high-background temperatures that have been observed in recent years. Higher river temperatures have been observed in drought years, but the causal interaction of low flow and river heat are not fully understood. The EPA's modeling assumed that peak power demand, low flows and high river background temperature would occur concurrently.

- Summer "Heat Season" 7Q10 based on Master Manual Alternatives GP 1521 or GP 2021 - In these alternatives, the Corps propose reduced flows as low as 21,000 cfs from the Gavin's Point Dam during the "Heat Season" months. These releases would be somewhat lower than past summer releases in the historic record. The EPA's modeling considered these lowered flows and the expected range of elevated river temperatures.

MONITORING AND MODELING METHODS

Modeling of predicted temperatures in the Missouri River was conducted using the CORMIX Mixing Zone Expert System. Monitoring of heat was conducted by the USGS in September of 2001, and then the modeling runs were optimized in order to most accurately reflect and predict the actual mapping of heat in the river. New runs, using optimized inputs, were used to predict mixing of heated discharges under the three limiting conditions.

The in-stream monitoring of heat was conducted using state-of-the-art methodology. The USGS measured river currents and bottom configuration using a boat-mounted Doppler system which is used for calibration of flow gages on the Missouri River. The Doppler system measured currents in three dimensions, at several depths, in closely spaced data sets. The data was tagged with Geographical Information System (GIS) data to map transects with great precision. Heat was measured using thermistors feeding data into a laptop computer at several levels in the water column. The combination of data sets allowed very accurate mapping of heat at each transect.

Optimization of CORMIX models was done by Stanley Wu at Oregon Graduate Institute under the direction of Dr. Robert Doneker (one of the key developers of the CORMIX system) in conjunction with his Masters thesis. Optimized runs were used by John Dunn, EPA, to assess permit limits under various assumptions of river background temperature.

FINDINGS

Summer Season

The key variable limiting heat discharges from the Fort Calhoun Nuclear Power Plant is not river flow, but ambient river temperatures. As temperatures in the Missouri River rise above 85° F toward the 90° F temperature cap, the capacity of the river to accept additional heat becomes progressively limited.

The EPA assessed observed river temperatures based on measurements at the cooling water intake for the Fort Calhoun facility. Modeling was based on the highest observed river temperatures (early August 2001), calculated Heat Season 7Q10 (both historical 7Q10 and a modified 7Q10 based on Master Manual revision alternatives GP 1521 or GP 2021), and peak power generation. The EPA models showed that the Fort Calhoun Facility is able to meet the current State of Nebraska Water Quality Standard for heat under all the assumptions shown above.

If river background temperatures increase above those historically observed, toward 88°F, then violation of standards can be expected based on EPA modeling. Observations of hourly temperature data suggest that these violations would exist for several hours at a time (based on daily peaks of river temperature in the afternoon and evening), and are likely to be repeated over a period of several days during a heat wave.

The EPA will suggest that NPDES permit limits for Fort Calhoun be based on allowing current peak heat discharges as the permit limit. In addition, detailed temperature monitoring would be required at the cooling water inlet, along with the outlet monitoring location that has been monitored in the past. If river background temperatures rise above historically observed peaks, then more restrictive heat limits might be required in the NPDES permit when it is renewed 5 years from now.

Winter Season

Flows in the Missouri River can be greatly reduced from summer conditions. Releases from the Gavin's Point Dam are also lowered, and there can be ice jamming in the cold months. Though winter flows are very low, thus resulting in a decrease in mixing efficiency, EPA's modeling indicates that the NDEQ state standards (allowing a 5° F temperature increase at the end of the mixing zone) are met under winter low-flow conditions.

Attachment: CD with set of CORMIX Models and Excel Spreadsheets on River Flow and Temperature.