

WOLF CREEK

NUCLEAR OPERATING CORPORATION

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APR 28 2000

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U. S. Nuclear Regulatory Commission
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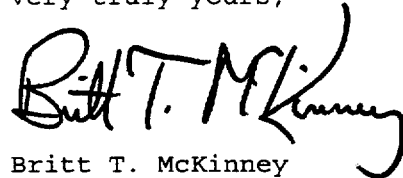
Subject: Docket No. 50-482: Annual Environmental Operating Report-
1999

Gentlemen:

Enclosed is the Annual Environmental Operating Report, which is being submitted pursuant to Wolf Creek Generating Station (WCGS) Facility Operating License NPF-42, Appendix B. This report covers the operation of WCGS for the period of January 1, 1999, to December 31, 1999.

If you should have any questions regarding this submittal, please contact me at (316) 364-4112, or Mr. Karl A. (Tony) Harris at (316) 364-4038.

Very truly yours,



Britt T. McKinney

BTM/rlr

Enclosure

cc: J. N. Donohew (NRC), w/e
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JE25

WOLF CREEK GENERATING STATION
ANNUAL ENVIRONMENTAL OPERATING REPORT
1999

ENVIRONMENTAL MANAGEMENT SECTION
WOLF CREEK NUCLEAR OPERATING CORPORATION
P.O. BOX 411
BURLINGTON, KANSAS 66839

April 2000

TABLE OF CONTENTS

1.0 INTRODUCTION..... 3

2.0 ENVIRONMENTAL MONITORING..... 3

2.1 AQUATIC [EPP Section 2.1] 3

 2.1.1 Impacts of Water Withdrawal on the Neosho River 3

 2.1.2 Oxidizing Biocide Discharges to Wolf Creek Lake..... 3

 2.1.3 Cold Shock..... 4

 2.1.4 Impingement and Entrainment..... 5

 2.1.5 Impacts of Wolf Creek Lake Discharges to the Neosho River 5

2.2 TERRESTRIAL [EPP Section 2.2] 5

 2.2.1 Control of Vegetation in the Exclusion Zone 5

 2.2.2 Vegetation Buffer Zone Surrounding Wolf Creek Lake..... 5

 2.2.3 Herbicide Use for Maintenance of WCGS Structures 6

 2.2.4 Waterfowl Disease Contingency Plan and Monitoring 6

 2.2.5 Fog Monitoring Program [EPP Subsection 4.2.1] 7

 2.2.6 Wildlife Monitoring Program [EPP Subsection 4.2.2] 7

 2.2.7 Land Management Program [EPP Subsection 4.2.3]..... 7

3.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS..... 8

3.1 PLANT DESIGN OR OPERATION CHANGES [EPP Section 3.1] 8

3.2 NONROUTINE ENVIRONMENTAL REPORTS 9

 3.2.1 Submitted Nonroutine Reports..... 9

 3.2.2 Unusual or Important Environmental Event Evaluations 9

3.3 Environmental Noncompliances [EPP Subsection 5.4.1] 9

ATTACHMENT

1.0 INTRODUCTION

Wolf Creek Nuclear Operating Corporation (WCNOC) has committed to minimizing the impact on the environment from operating Wolf Creek Generating Station (WCGS). The 1999 Annual Environmental Operating Report is being submitted in accordance with the objectives of the Environmental Protection Plan (EPP), Appendix B to the Facility Operating License NPF-42. The purpose of this report is to demonstrate that the plant operated during 1999 in an environmentally acceptable manner.

2.0 ENVIRONMENTAL MONITORING

2.1 AQUATIC [EPP Section 2.1]

2.1.1 Impacts of Water Withdrawal on the Neosho River

The owners of WCGS have contracted with the Kansas Water Resources Board to pump 9.672 billion gallons of water per calendar year to Wolf Creek Lake (WCL) from the tailwaters of the John Redmond Reservoir (JRR). A total of 3.434 billion gallons, or 36 percent of the contracted allotment, was pumped during 1999. Of that total, 0.388 billion gallons, 11 percent of the total pumped, were used for auxiliary raw water. The remainder was transferred via the make-up pumps operated from September 22 through December 3, 1999. Measurements at Burlington, Kansas, taken during 1999 by the United States Geological Survey, indicate that flows downstream of the WCGS withdrawal station in the Neosho River were not affected by makeup pumping activities. Consequently, there were no adverse impacts to the Neosho River attributable to 1999 WCGS pumping activities.

The WCGS Final Environmental Statement/Operating License Stage (FES/OLS, Section 5.6), NUREG-0878, postulated that make-up water withdrawal of 41 cubic feet per second (cfs) during drought conditions would extend the duration and severity of low-flow conditions below JRR. This, in turn, was expected to reduce riffle habitat which would adversely affect the Neosho madtom, a federally listed threatened species. No make-up water withdrawal during very low river flows occurred during 1999. Therefore, there was no impact to this habitat from WCGS water withdrawal during 1999.

2.1.2 Oxidizing Biocide Discharges to Wolf Creek Lake

Circulating Water System (CWS) Discharge:

Biocide use at WCGS was predicted to cause periodic, appreciable mortality in a conservatively estimated 40 acres of the discharge area to WCL. However, these impacts were not expected to meaningfully affect the overall biological productivity of the lake (FES/OLS, Section 5.5.2.2). The postulated biocide levels expected to cause the impacts were from 0.68 to 1.08 mg/l of total residual chlorine at the Circulating Water System (CWS) discharge (FES/OLS, Section

4.2.6.1). Three 30-minute doses per day of 411 pounds of chlorine per dose were projected to produce these concentrations.

Gaseous chlorine was used to control biological fouling in WCGS cooling water systems until 1995, when replaced by Betz Bio-Trol 88P Microbiocide. Use of the Bio-trol 88P was discontinued on December 21, 1998, when WCNOB began using a sodium hypochlorite and sodium bromide formulation (Betz Spectrus OX-1201). Evaluations completed by WCNOB demonstrated that the sodium hypochlorite and sodium bromide formulation, as with the Bio-Trol 88P, would not have greater impacts to the cooling lake environment than those expected from the level of chlorine use identified in the FES/OLS. All changes were reviewed and approved by the Kansas Department of Health and Environment (KDHE) prior to implementation.

The WCGS National Pollutant Discharge Elimination System (NPDES, Number I-NE07-PO02) permit limits biocide discharges to levels lower than postulated in the FES/OLS. This permit was administered by the KDHE. The biocide level for the Circulating Water System was limited to a maximum of 0.2 mg/l, total residual oxidant (TRO), for a maximum of two hours per day. Due to equipment malfunction, these limits were exceeded on March 17 and June 4, 1999; however, compliance for the year was still 99.9 percent. No adverse impacts to the lake were observed. Including these two events, the oxidizing biocide dosages averaged approximately 49.6 pounds per day and the daily average TRO was 0.1 mg/l. Because the average values were below evaluated levels, and no fish mortality attributable to oxidizing biocides was observed, permitted biocide discharges during 1999 did not have appreciable effects on the cooling lake environment.

Essential Service Water System Discharge:

The WCGS Service Water System (SWS) was discharged with the CWS, and treated with identical biocides as the CWS. During 1999, a continuous diversion of approximately 17,000 gpm of SWS flow to the Essential Service Water System (ESWS) was completed to provide microbiologically induced corrosion protection and sedimentation control. The KDHE established a 1.0 mg/l TRO limit for the SWS flow diversion through the ESWS. Measurements of TRO averaged <0.13 mg/l, and compliance with the NPDES limit in 1999 was 100 percent. No fish mortality or water quality changes attributable to ESWS biocide discharges were observed. Based on this information, permitted biocide discharge during 1999 did not have appreciable effects on the cooling lake environment.

2.1.3 Cold Shock

In the event of a rapid decline in plant power level during winter, fishes attracted to the WCGS heated discharge could experience mortality due to a quick reduction in body temperature (cold shock). In reference to licensing document evaluations, the WCGS EPP Section 2.1 (c) states, "Cold shock effects on fish

due to reactor shutdowns could cause significant mortality to aquatic species in the cooling lake.” There were no rapid shutdowns due to a reactor trip during 1999. A gradual reactor shutdown for refueling purposes occurred on April 3, 1999. Gradual power level reductions during winter conditions also occurred on January 15, February 8 and 20, November 30, and December 31, 1999. No cold shock mortality was observed during the shutdown or the power reductions. Therefore, there were no impacts from cold shock fish kill events during 1999.

2.1.4 Impingement and Entrainment

Impacts of entrainment and impingement due to the operation of WCGS, were projected to be significant, as indicated in the WCGS EPP, Section 2.1 (d). In the EPP (Section 2.1), the State of Kansas was relied upon for determination of the need for monitoring entrainment and/or impingement impacts. No such monitoring has been required; thus none has been completed. Periodic observations during 1999 indicated that fish impingement at the WCGS circulating water intake was considered minimal.

2.1.5 Impacts of Wolf Creek Lake Discharges to the Neosho River

The NPDES permit requires that WCL discharges be sampled on the first day of each discharge and weekly thereafter until the end of each respective discharge. Lake discharges in 1999 were from stormwater runoff at the service spillway. Discharge from the lake’s blowdown spillway did not occur during 1999. Discharge limits were set for sulfates, chlorides, and pH (NPDES Outfall 004). In 1999, no NPDES violations at the lake’s discharge occurred, and no detrimental effects have been identified to the Neosho River water quality due to lake discharges. Therefore, there were no adverse impacts to the Neosho River from WCL discharges identified during 1999.

2.2 TERRESTRIAL [EPP Section 2.2]

2.2.1 Control of Vegetation in the Exclusion Zone

The composition and structure of vegetation in the 453 hectare (1120 acre) exclusion zone were selectively controlled to be compatible with the function and security of station facilities. Most areas in the immediate vicinity of the power block have been planted and maintained in a lawn-type condition. Other areas within the exclusion area have been mowed for security and aesthetic purposes. There were no changes in the management of the exclusion zone during 1999.

2.2.2 Vegetation Buffer Zone Surrounding Wolf Creek Lake

To create a 500 acre minimum buffer zone around WCL, agricultural production activities were curtailed in 1980 below an approximate elevation of 1095' Median Sea Level (MSL), eight feet above WCL normal operating surface water elevation (1087' MSL). Actual area of this buffer has been approximately 1500 acres. This

border ranges from approximately 200 to 400 feet adjacent to the lake shoreline. Previously grazed or hayed native tallgrass areas were left undisturbed. Previously cultivated lands were allowed to advance through natural successional stages, or native grasses were reestablished in these areas. Land management activities included controlled burning to enhance and/or maintain the designated buffer zone with a naturally occurring biotic community. There were no changes in the area of this zone in 1999.

2.2.3 Herbicide Use for Maintenance of WCGS Structures

There were no herbicides used on transmission line corridors associated with WCGS during 1999. Herbicides were used at WCGS on gravel areas, railroad easements, and various land areas. Application rates followed label instructions. All herbicides used were registered by the Kansas Department of Agriculture when purchased. No environmental impacts from herbicide treatment of WCGS facilities were identified. A summary of application is provided below.

In areas where bareground control was desired, a herbicide mix of Karmex DF (EPA Reg. No 352-508) and Oust (EPA Reg. No. 352-401) was used. Roundup Ultra (EPA Reg. No 524-475) was also used for problem weed areas. These herbicides were used on various gravel areas, including the switchyard, protected area boundary, meteorological tower, storage tank berms, railroad beds, and storage yards.

Nuisance tree and brush growth was controlled with Tordon 22 K (EPA Reg. No. 62719-6), Tordon RTU (EPA Reg. No. 62719-31), Remedy (EPA Reg. No. 62719-70), Weed Pro 2,4-D (EPA Reg. No. 10107-31), and Roundup Ultra. Areas treated included the dam, spillways, railroad easements, and selected grassland areas around the cooling lake.

Four plants listed as noxious weeds by the Kansas Department of Agriculture were controlled on WCGS lands. These were serecia lespedeza, musk thistle, Johnson grass, and field bindweed. Serecia lespedeza was treated with Remedy and Weed Pro 2, 4-D. Musk thistle was controlled using Tordon 22K. Johnson grass was controlled with Roundup Ultra while field bindweed was controlled through normal farming practices by the tenants of the agricultural leases.

2.2.4 Waterfowl Disease Contingency Plan and Monitoring

A waterfowl disease contingency plan was maintained to provide guidance for station biologists in the event of suspected or actual disease outbreaks. The contingency plan lists appropriate federal and state wildlife agency contacts to be made by WCNOG in the event of such problems. During routine environmental monitoring and surveillance activities taking place over this reporting period, no waterfowl mortality attributable to disease pathogens was identified.

2.2.5 Fog Monitoring Program [EPP Subsection 4.2.1]

Visibility monitoring was initiated in December, 1983, and continued through 1987. The purpose of this study was to evaluate the impact of waste heat dissipation from WCL on fog occurrence along U. S. 75 near New Strawn, Kansas. The program was required through one year of commercial operation that started in September, 1985. Upon conclusion of 1987 data collection, sufficient information was available to evaluate cooling lake fogging, and all commitments relevant to fog monitoring had been satisfied. The fog monitoring study concluded that operation of WCGS did not appreciably increase fogging incidents from that measured before operation. In 1999, there were no reports of such incidents from individuals or local agencies responsible for traffic safety. Implementation of mitigative actions or further monitoring was not warranted.

2.2.6 Wildlife Monitoring Program [EPP Subsection 4.2.2]

A wildlife monitoring program was initiated in 1982 to monitor and assess waterfowl, waterbird, and bald eagle usage of WCL. This program included transmission-line collision surveys to assess collision mortality and determine potential mitigation needs. This wildlife monitoring program was to continue for at least two years following WCGS start-up (FES-OLS Section 5.5.1.2), which occurred during September, 1985. Upon completion of 1996 monitoring, sufficient data had been collected to determine waterfowl, waterbird, and bald eagle usage of WCL. Consequently, the wildlife monitoring program scope was reduced. The current program consists of reviewing WCL waterfowl and bald eagle survey data collected by the Kansas Department of Wildlife and Parks (KDWP). If review of the KDWP data indicates usage has changed from that previously documented, then additional monitoring will be initiated, if warranted. This additional monitoring may include collision mortality monitoring.

Review of waterfowl and bald eagle monitoring data from the KDWP indicate that no usage changes occurred during 1999. Survey data indicate usage in 1999 was similar to that typically observed during mild winter conditions when the larger concentrations of waterfowl and bald eagles use JRR, rather than WCL. No disease outbreaks or substantial crop depredation attributable to waterfowl use of WCL occurred in 1999. No changes to the wildlife monitoring program were warranted.

2.2.7 Land Management Program [EPP Subsection 4.2.3]

Land management activities on all company-owned lands except within the 453 hectare (1120 acre) WCGS exclusion area were designed to achieve balances between agricultural production and conservation values. An annual management plan addressed needs and accepted techniques for land maintenance, soil conservation, and wildlife management. These included the construction or establishment of fences, wetland areas, and permanent vegetative covers. An

environmental education area was improved and maintained as part of the land management program. A summary of the 1999 land management activities appears in the attachment to this report. The land management program continued in 1999 to balance agriculture production and conservation values.

3.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS

3.1 PLANT DESIGN OR OPERATION CHANGES [EPP Section 3.1]

Proposed plant design and operational changes which have the potential to affect the environment must receive an environmental evaluation prior to implementation. A summary of each modification or operating change which required an environmental evaluation in 1999 is presented below. There were no changes in station design or operation nor were there tests or experiments that involved an unreviewed environmental question during 1999. There were no events identified that required changes to the EPP.

Evaluation: Impacts from Elevated Lake Temperatures

This evaluation demonstrated that higher lake temperatures, primarily in the Ultimate Heat Sink (UHS), were not significantly greater than the environmental impacts previously evaluated. Natural conditions existed during 1998 that were more severe, in regard to forcing higher surface water temperatures, than existed during the historical years used to predict the maximum temperatures used by the NRC to assess environmental impacts. The evaluation that was completed in 1999 addressed potential impacts from the actual temperatures that were experienced in 1998, and also addressed potential impacts due to operation during higher temperatures in the future.

The 1998 maximum lake temperature in the UHS area peaked at 89.1°F, which was 0.8°F greater than the 88.3°F maximum previously evaluated (FES-OLS, Section 5.5.2.2). Due to the lack of thermal stratification, and tolerance levels greater than 95°F for benthic invertebrates, phytoplankton, zooplankton, and fish, no adverse impacts were expected.

Environmental impacts associated with potential plant operation with UHS temperatures peaking between 90 and 94°F will not increase thermal impacts over those previously evaluated. Most aquatic organisms common to the lake were expected in the FES-OLS to survive temperatures greater than 95°F. Factors decreasing the potential for impacts to be greater than previously evaluated in the FES-OLS included expected short duration of the temperature peaks, increased acclimation times for fish, and the presence of cooler refuge areas in the lake. Consequently, impacts greater than previously evaluated were not expected to occur.

Evaluation: Diesel Generator Installation at Switchyard

This evaluation demonstrated that no adverse impacts would result due to permanent installation of a 150 kw diesel generator. The generator was to be installed in the WCGS switchyard, which was previously disturbed during plant construction. The KDHE

incorporated this generator within the WCGS air operating permit prior to installation. No adverse impacts would result.

Evaluation: Temporary Diesel Generator Installation

This evaluation addressed the installation of a temporary diesel generator to supply power during installation of the generator in the switchyard. The KDHE approval of the installation of temporary air emission sources had been incorporated into the WCGS air operating permit. All criteria were complied with, thus no adverse environmental impacts resulted. The temporary diesel was subsequently removed.

Evaluation: Contingency Installation of a Temporary Diesel Generator

This evaluation demonstrates that no adverse impacts would result due to the installation of a temporary diesel generator. This generator was installed as a Y2K contingency to provide replacement power for the Technical Support Center. KDHE approval of temporary air emission sources had been incorporated in the WCGS air operating permit. All criteria were met and no adverse impact resulted. The temporary diesel was subsequently removed.

3.2 NONROUTINE ENVIRONMENTAL REPORTS

3.2.1 Submitted Nonroutine Reports

There were no environmental reports involving significant nonroutine impacts submitted to the NRC during 1999.

3.2.2 Unusual or Important Environmental Event Evaluations

No unusual or important environmental events reportable according to specifications in the EPP were identified during 1999.

3.3 Environmental Noncompliances [EPP SUBSECTION 5.4.1]

At WCGS in 1999, nonradiological environmental noncompliances or noteworthy events were documented and evaluated in accordance with WCNOG's Corrective Action Program, using Performance Improvement Requests (PIRs). A PIR was WCNOG's administrative vehicle for corrective action. Events evaluated included NPDES issues, wildlife caused electrical outages, hazardous/oily waste issues, commitment tracking issues, an air operating permit issue, equipment calibration discrepancy, and boating safety assurances during lake monitoring. All the documented events were determined not to be reportable pursuant to EPP criteria.

ATTACHMENT

**SUMMARY OF
ENVIRONMENTAL INVESTIGATIONS
AT WOLF CREEK GENERATING STATION, 1999**

Wolf Creek Nuclear Operating Corporation

Environmental Management

P. O. Box 411

Burlington, Kansas 66839

Contents

1. 1999 Land Management Activities
2. 1999 Zebra Mussel Monitoring Activities
3. 1999 Fishery Monitoring Activities

1. 1999 LAND MANAGEMENT ACTIVITIES

This document presents the 1999 activities for the WCGS land management program. The EPP requires a land management program that will implement conservation and wildlife management techniques to attempt to balance production and conservation values (EPP Section 4.2.3). Values beyond meeting EPP requirements were also realized. The program objectives were to:

- a. maximize rent income from agricultural lands when practical,
- b. conserve or improve both agricultural and natural resources,
- c. foster good relations with local agricultural and natural resource communities,
- d. satisfy licensing requirements,
- e. improve the appearance of the company's lands, and
- f. enhance for educational purposes the natural resources on the Environmental Education Area (EEA).

Grasslands at WCGS consisted of areas leased for grazing and hay production and other areas maintained for regulatory compliance, soil conservation, and wildlife. Areas adjacent to WCL, approximately 1519 acres, exceeded the 500 acre buffer zone of "naturally occurring biotic communities" referenced in the EPP. Approximately 1,238 acres of native rangeland were leased for grazing in 1999 with 12 separate lease agreements. Leases specified rotation programs, season lengths, and maximum grazing rates. By controlling these variables, range quality was maintained at levels which provided optimum wildlife value and long term rent generation.

Approximately 398 acres were leased to 10 local farmers for hay production in 1999. Hay meadows were managed for high quality production by requiring hay to be cut by July 31 and bales removed by August 31. No late cutting was observed.

Fire has always been an integral part of the prairie and was used to control woody brush invasion, control less desirable cool-season grasses or weeds, increase wildlife value, and to increase prairie vigor and production. It was a relatively inexpensive and environmentally compatible method of meeting these objectives.

Management of cropland reduced soil erosion, maintained rent income, and increased wildlife benefits. Conservation farming, terracing, and wildlife strip management continued to help achieve the objectives. A total of 1280 acres of cropland was leased to 12 local farmers in 1999. Consistent with past years, the cropland lease contracts specified that common conservation practices be followed. On fields with appropriate terraces to follow, contour farming was required. Double-cropping, i.e., producing two crops on the same acreage during the same season, was generally prohibited because this practice usually increases soil loss. Fall tillage of crop residues was prohibited except for certain instances, such as tillage necessary for fall planting of wheat, plowing of terraces and deep tillage practices to improve productivity.

Activities at the EEA were designed to improve wildlife habitat and increase the public's chances to view a greater variety of wildlife. Tree and shrub planting, wildlife food plots, controlled burning, and trail improvements were a few of the techniques employed. The EEA has drawn a large amount of attention and was well suited for educational purposes.

2. 1999 ZEBRA MUSSEL MONITORING ACTIVITIES

Because zebra mussels can be dispersed by overland transport of recreational boats, WCGS personnel have been monitoring for the presence of zebra mussels near WCGS. No zebra mussels were detected in 1999 during three searches on WCL and one on the Neosho River between Hartford and John Redmond Reservoir. Searches were conducted in WCL on September 14, September 29 and October 27, 1999. Lake shorelines and river banks were searched for zebra mussel shells, and natural substrates were searched for the presence of adult zebra mussels. The finding of one adult zebra mussel at a Mid-America Energy Company power plant on the Missouri River near Sioux City, Iowa, was reported by the U. S. Fish and Wildlife Service in April, 1999 (L. Drees, USFWS, personal communication). This is the first reported finding of a zebra mussel in the Missouri River upstream of St. Louis, and it likely dislodged from one of the river barges which pass close to the power plant intake structure.

3. 1999 FISHERY MONITORING ACTIVITIES

The results obtained from fishery monitoring of WCL during 1999 indicated that the potential for gizzard shad impingement at the cooling water intake screens remained low. The primary objective of the monitoring was to measure fish population dynamics to determine gizzard shad impingement potential. The fishery assessments targeted shad, the predator species that feed on them, and the predator-prey interactions.

Gizzard shad density was again low enough during 1999, especially for young-of-year, that impingement problems did not develop. This was evidenced by low catch rates during fall sampling. Increased impingement potential from greater production of shad in 1994 and 1995 did not develop. The proportion of large shad continued to be high, indicating low survival and recruitment of young shad.

The 1999 monitoring revealed that, although pressured, the predator populations showed signs favorable for continued shad control. Predator populations, as a whole, were prey limited. Growth rates and body conditions tended to be low. Catch rates remained similar to past years, and recruitment was evident for many predator species. Predator populations assessed were white bass, wiper hybrids, largemouth bass, smallmouth bass, white crappie, and walleye.

Angling impacts to the predators' shad control benefits were also assessed. The catch-and-release philosophy being stressed at WCL has allowed limited harvest to be compatible with continued shad control. Angler use and/or harvest has had no observable impact to the fishery, with the possible exception of walleye. Fewer walleye over 18 inches were sampled in 1999 after the walleye size limit for angler harvest was reduced from 21 to 18 inches. No changes to existing creel or size limits, except for catfish, were recommended.