UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
http://www.epa.gov/region08

April 17, 2001

Ref: 8P-AR

Gary D. Helbling, Environmental Engineer
ND Health Department
Environmental Health Section
P.O. Box 5520
Bismark, ND 58506-5520

Re: EPA Region VIII's Opinion on Otter Tail Power Company's Coyote Station Low Pressure Rotor Upgrade Proposal

Dear Gary,

This is in response to your letter dated February 20, 2001, in which you requested EPA Region VIII's opinion on Otter Tail Power Company's (Otter Tail) Coyote Station prevention of significant deterioration (PSD) applicability determination.

It is my understanding that Otter Tail provided information on a proposed low pressure rotor upgrade at its Coyote Station Power Plant to you on November 20, 2000. In addition to the proposal, Otter Tail asked that the North Dakota Department of Health make a determination that the rotor upgrade not require review under the major new source review (NSR) permitting program on the ground that the "routine maintenance, repair, and replacement" exclusion applies to this project.

I also understand that you have already notified the company, in a letter dated March 29, 2001, that you consider the replacement to be routine. I believe that the North Dakota Department of Health may not have considered the appropriate criteria that should be applied to this analysis, specifically the criteria outlined in the May 23, 2000 letter to the Detroit Edison Company (Detroit Edison Letter). Given the Detroit Edison Letter, I disagree with your assertion in the letter to Otter Tail that EPA guidance is vague and unclear with respect to deciding what is "routine maintenance, repair, and replacement." See the discussion on pages 6 through 8, and the analysis discussed on pages 16 through 17 in the Detroit Edison Letter. I have attached this letter, which we shared with you previously, as Attachment B. Finally, I am concerned that Otter Tail could be liable for violations of the PSD requirements of the Clean Air Act should they commence construction without the appropriate permit.

Please also find enclosed, as Attachment A, EPA Region VIII's opinion on Otter Tail's submittal regarding the proposed upgrades at Coyote Station. Please note that this is a preliminary interpretation of our requirements based on the information available to us at this time. I believe that Otter Tail will need to provide more information to substantiate its claim that their proposal qualifies for exemption from major modification as "routine maintenance, repair, and replacement."

The North Dakota Health Department is responsible for interpretation of its regulations and for making the appropriate decision of PSD applicability with regard to this source. If you have any further questions or concerns regarding this matter, please contact Kathleen Paser at 303-312-6526.

Sincerely,

Richard R. Long, Director
Air and Radiation Program

RRL/KSP

cc: Tom Bachman, ND Department of Health
Karen Blanchard, OAQPS
Dan DeRoek, OAQPS
Carol Holmes, OECA
Anna Wood, OGC
Scott Whitmore, EPA Region 8, 8ENF-T
Ron Rutherford, EPA Region 8, 8ENF-T

Attachment A

Otter Tail Power/Coyote Station Rotor Upgrade Review

Issue Statement:

North Dakota has sent a letter to EPA Region VIII asking for an opinion on a submittal from the Otter Tail Power Company to the State regarding an upgrade to the Coyote Station facility. The company intends to replace the low pressure rotor in the steam electric generator at the Coyote Station with a new rotor. Westinghouse Electric Corp. designed and manufactured the steam turbine, which consists of three distinct components (high, intermediate, and low pressure sections) that are mechanically connected to form one unit. The Coyote Station's low-pressure turbine is a Westinghouse Building Block 73 (BB73) design.

According to the company, the rotor replacement will result in an increase of turbine efficiency of approximately 2%. The company has stated that it does not intend to increase power production at this time and that the rotor replacement will actually decrease future actual emissions, as it will require less fuel to produce the same amount of energy.

The company's letter stated that the rotor replacement should be considered routine. The company argues that the original steam generating unit (installed in 1977) has a design flaw in the low pressure rotor and that, over the years, numerous failures have occurred due to this flaw (approximately every 3-5 years). The Company maintains that this design flaw is common industry-wide for this particular type of generator and that up to 47% of those in the industry have done this kind of upgrade to address the flaw (no other specific information was given). Therefore, the company insists that since it is a common solution within the industry for addressing the design flaw, the upgrade to the low pressure rotor should be considered routine.

Source Information :

The Otter Tail Power Company's Coyote Station is a 440 MW lignite-fired steam electric generating plant located in Mercer County, North Dakota (SIC 4911).

The plant consists of one Babcock and Wilcox Model RBC 48/CY cyclone-fired lignite boiler with a maximum rated heat input capacity of 5,800 MMBTU/hr. The boiler is equipped with an FGD system (70.2% design efficiency) in series with a fabric filter (98.8% design efficiency). The flue gas from the main boiler is emitted through a 498-foot stack, and the stack is equipped with a CEM and COM to monitor NOx, SOx, and opacity. Steam from the boiler is routed to a Westinghouse steam driven turbine. Also located at the site are the coal handling systems, auxiliary and space heating boilers, emergency generators, and fuel oil tanks.

Permitting History:

A Prevention of Significant Deterioration (PSD) Conditional Permit to Commence Construction and Operate was issued by the EPA on August 30, 1977. The North Dakota Department of Health also issued a PSD permit to Coyote Station on August 1, 1977. This permit is similar to the EPA's permit.

Construction on the Coyote Station began on October 10, 1977, and it is therefore, also subject to the New Source Performance Standards (NSPS) for fossil-fuel-fired steam generators as found in 40 CFR Part 60, Subpart D (particulate matter, sulfur dioxide, and nitrogen oxides).

In addition to the construction permits, the company received a state operating permit on June 6, 1984 (now expired), a Title V Permit to Operate on July 15, 1998, and a Phase II Acid Rain Permit on December 18, 1997. The Title V Permit to Operate was revised on August 24, 1998 to correct the type of fuel listed for use by an emergency fire pump engine, and on October 11, 1999 approving the company's request to burn subbituminous coal and petroleum coke in addition to lignite coal.

There have been no construction permits for modifications issued to this source since the original PSD permits were issued in 1977.

The Title V Permit to Operate lists the following emission limits on the main boiler stack:

Particulate:	0.10 lb/MMBTU 1 hour average which does not apply during start-up, shutdown, and malfunction, and 445 lb/hr 1 hour average
SO2:	1.2 lb/MMBTU 3 hour rolling average which does not apply during start-up, shutdown, and malfunction, and 5,335 lb/hr 3 hour rolling average
NOx:	3,910 lb/hr 12 month rolling average (note: the NSPS limit for NOx of 0.8 lb/MMBTU limit was not incorporated into any of these permits?)
Opacity:	20% (6 minute average), except for a maximum of 27% (6 minute average) is permissible for not more than one 6 minute period per hour. This does not apply during startup, shutdown and malfunction.

PSD Evaluation of Proposed Modification:

Two questions need to be answered when analyzing the Otter Tail's proposed modification. The first is whether modification is indeed considered routine replacement. If it is routine, then PSD would not apply as this is one of several exemptions in the program. If it is not routine, then the second question is whether the modification will trigger PSD modification thresholds and thereby subject the Coyote Station to PSD requirements. Since this is a utility, revisions to the PSD rules as a result of the WEPCO rule will apply.

Question #1: Is this a routine replacement?

To start, it has been stated in a September 9, 1988, Memorandum from Don R. Clay, Acting Assistant Administrator for Air and Radiation to David A. Kee, Director of the Air and Radiation Division in Region V that "EPA makes a case-by-case determination by weighing the nature, extent, purpose, frequency and cost of the work, as well as other relevant factors, to arrive at a common-sense finding." (Also quoted in *Wisconsin Electric Power Company v. Reilly* (893 F.2d 901, 910) (7th Circuit 1990)).

Given the information supplied by the Otter Tail Power Company, the initial opinion of this office is that this may not be routine. The argument that the utility industry, in general, has established a practice of replacing the flawed rotor design with a new, more efficient rotor no matter how infrequent, costly, sizeable, or capable of expanding the source's operations or extending its useful life is routine has not been supported with factual data but a mere statement

that it has occurred. Further, when asked for information on the cost of the replacement of the more efficient rotor (via an email to the state), the company replied with how costly it has been to continue to replace a failed rotor with a faulty design.

Therefore, without more telling evidence regarding the:

1. nature, extent, purpose of the of rotor replacement,
2. frequency of this type of rotor upgrade at this site and throughout industry, and
3. the cost of an upgrade versus the cost to replace the faulty rotor with a rotor of the same design,

and given that the planned rotor replacement will change or alter the capacity of the facility rather than merely allow the facility to operate again as it had before the rotor upgrade, it is the opinion of this office that this may not be routine maintenance, repair, and replacement and therefore may not be exempt from the PSD requirements for determining whether the modification would result in a significant net emissions increase.

Question #2: Will the modification trigger PSD modification thresholds?

If it is determined that the proposed rotor upgrade is not routine, the company would then need to determine whether the modification would trigger PSD significant modification thresholds. This analysis was not provided by the company in the material we received from North Dakota.

For the utility industry, EPA has adopted a "current actual to future actual" methodology for determining whether non-routine physical or operational changes at utilities are subject to PSD review ("WEPCO Rule"). See 40 CFR Section 51.166(b)(21)(v). This methodology only applies to the steam generating unit. Further, the actual-to-actual test may only be used in this case if North Dakota has adopted the WEPCO Rule as a part of its State Implementation Plan. Any changes in emissions that occur at the facility beyond the steam generating unit must be determined by using the traditional "current actual to future potential" methodology when determining if PSD applies.

Under the WEPCO Rule, current actual emissions are determined by calculating the average rate of emissions, in tpy, from any 2 consecutive years within the 5 years prior to the proposed change. The pre-change 2-year period used in determining the current actual baseline emission must be representative of "normal"operations. Sources desiring to use other than a 2-year period or a baseline period prior to the last 5 years may seek the Permitting Authority's specific determination that such period is more representative of normal operations.

Projected future actual emissions or representative actual annual emissions are determined by calculating only those emissions increases that are caused by the modification. In other words, post-modification increases in the utilization of the boiler operation that are a result of independent factors, such as system-wide demand growth which would have occurred and affected the boiler's operations even in the absence of the modification need not be considered. However, any increase in operations (and resultant increases in actual emissions) that could not physically and legally be accommodated during the representative baseline period but for the proposed physical or operational change should be considered to result from the change. These increases should be taken into account for PSD applicability purposes.

Otter Tail has stated in its letter to North Dakota that the proposed replacement of the

current rotor with a more efficient rotor will not affect the present dispatch procedures for Coyote Station. This office assumes that to mean that there is currently no electricity demand growth that would require the utility to increase the projected capacity utilization. The question that needs to be asked at this point is, if there were a requirement for the utility to increase the capacity utilization, could they accommodate it with the current rotor design? If they cannot accommodate an increase in demand with the current design, then they must take into account any increase in operations (and resultant increases in actual emissions) as a result of the rotor upgrade for PSD applicability.

If Otter Tail utilizes the "representative actual annual emissions" methodology to determine that the facility is not subject to PSD, appropriate records must be submitted to the North Dakota Department of Health on an annual basis for 5 years from the date the unit begins operations after an initial shakedown period. The North Dakota Department of Health may decide that a longer period of up to10 years may be required. The purpose of the submittals is to provide a means for determining if significant post-change increases above baseline levels are a result of the rotor upgrade. If it is determined that significant increases have occurred as a result of the rotor replacement, Otter Tail Power Company's Coyote station would become subject to PSD requirements at the time of the determination.

Attachment B

May 23, 2000 Letter to the Detroit Edison Company