

FINDING OF NO SIGNIFICANT IMPACT
TENNESSEE VALLEY AUTHORITY
NOxOUT SELECTIVE NONCATALYTIC REDUCTION DEMONSTRATION
JOHNSONVILLE FOSSIL PLANT - UNIT 1

Proposed Action and Need

Tennessee Valley Authority (TVA) is proposing to install and evaluate equipment for removal of nitrogen oxides (NOx) from coal combustion flue gas, utilizing selective noncatalytic reduction (SNCR) on Unit 1 at Johnsonville Fossil Plant (JOF). This action would help TVA meet its systemwide goal of reducing NOx emissions by over 78 percent. NOx emissions are a major factor in causing air pollution, including acid rain and high ground-level ozone concentrations. Reductions of NOx emissions are necessary to meet air regulatory requirements under Section 110 of the Clean Air Act.

Alternatives

This Environmental Assessment (EA) evaluated two alternatives: Alternative A, the No Action Alternative, and Alternative B (the Action Alternative), Installation and Demonstration of NOxOUT SNCR System on JOF Unit 1. Under Alternative A, the plant would not install and demonstrate the NOxOUT SNCR system on Unit 1 at JOF. Under Alternative A, there would be no physical or operational changes to JOF. Under Alternative B, the plant would install and demonstrate the NOxOUT SNCR system. There would also be minor physical additions outside and inside the powerhouse. This demonstration of the NOxOUT SNCR system would be conducted on JOF Unit 1 during 2005 and 2006. If the demonstration proved successful, another environmental review would be conducted to determine if SNCR could be placed on additional units at JOF. Alternative B would add a temporary 21,000-gallon frac tank to store the 40 to 50 percent urea solution, a circulating module inside an enclosed modular building, and associated piping outside the powerhouse at the north end by the insulator trailer. The metering module (east of Unit 1) at elevation 428 feet; the distribution modules (1 [east of Unit 1] at elevation 430 feet and 2 [east of Unit 1] at elevation 413 feet); and the 19 injectors (12 [4 in front, 4 in back, and 2 on each side] at elevation 414 feet 2 inches, 2 [1 one each side] at elevation 424 feet, and 5 [4 in front and 1 on left side] at elevation 434 feet 6 inches) would be located inside the powerhouse.

TVA's preferred alternative is Alternative B, Installation and Demonstration of the NOxOUT SNCR System on JOF Unit 1.

Impacts Assessment

JOF staff conducted a preliminary examination of the scope of this project and discussed issues of environmental concern. Several media and resource areas were determined to have no impacts, i.e., archaeology, terrestrial ecology, visual, and noise impacts. However, a few media and resource areas had uncertainties regarding the potential for impacts. The JOF staff determined that these areas needed a greater degree of evaluation. Subsequently, an EA was initiated. A TVA interdisciplinary team reviewed the proposed project for potential direct, indirect, and cumulative effects of Alternative A, the No Action Alternative, and Alternative B, Installation and Demonstration of the NOxOUT SNCR System on JOF Unit 1.

As previously stated, there would be no physical or operational changes to JOF under Alternative A. Therefore, there would be no additional impacts to JOF under this alternative. Under Alternative B, TVA would install the NOxOUT SNCR system in the spring and summer of 2005 on JOF Unit 1 and demonstrate the NOxOUT SNCR system during 2005 and 2006. TVA evaluated these activities for potential environmental effects. For the media areas that had potential effects, mitigation commitments were put into place to ensure the environmental effects would be insignificant.

Under Alternative B, there would be the potential for impacts to industrial wastewater, surface water, groundwater, air quality, aquatic ecology, and solid waste from the installation and demonstration of the NOxOUT SNCR system on JOF Unit 1. However, with the commitments identified below, impacts to these resources would be insignificant. With mitigation safeguards to minimize the presence of ammonia in the discharge, there would be no impacts to listed species.

Mitigation

The proposed action contains routine compliance measures including the use of Best Management Practices listed in Section 3.9 of the EA to minimize environmental impacts. In addition, to minimize and mitigate adverse effects, the following special mitigation measures will be followed:

Special Mitigation Measures

- (1) To ensure that the ammonia concentration at the Outfall 001 discharge remains at or below the criterion maximum concentration (CMC) and chronic criterion concentration (CCC) limitations (see Tables 3-3 and 3-4 in the EA) that will safeguard water quality, protect aquatic life, and ensure no impacts to listed species, the Unit 1 air preheater (APH) cleaning waste will be retained in a pond (such as the chemical treatment pond), basin, frac tanks, or other containment; the ammonia concentration will be determined; and then the water will be slowly released to the ash pond to ensure adequate mixing. The number of days required for the staged release will depend on the ammonia concentration of the Unit 1 APH wash wastewater.
- (2) In order to (1) obtain more precise information on SNCR impacts during the demonstration of the technology on Unit 1, (2) to ensure the ash pond discharge meets the National Pollutant Discharge Elimination System permit limits for both pH and acute toxicity, and (3) to safeguard water quality, protect aquatic life, and ensure no impacts to listed species, TVA will monitor the ammonia concentration and pH in the ash pond inflow, midpoint, and discharge on a weekly basis during operation of the SNCR. If needed, the existing carbon dioxide system will be utilized to control the pH and to ensure the ammonia concentration will be below the CMC and CCC limitations (see Tables 3-3 and 3-4 in the EA). The frequency of sample collection and analysis could be reduced if plant operations remain the same and the results indicate that there is no change in the ammonia concentrations and/or no threat of a significant impact.

Conclusion and Findings

Environmental Policy and Planning's National Environmental Policy Act (NEPA) Administration staff reviewed the EA for the NOxOUT SNCR demonstration on JOF Unit 1. The staff determined that the potential environmental consequences of

Alternative B, Installation and Demonstration of NOxOUT SNCR System on JOF Unit 1, have been adequately addressed. Further, Alternative B would have “no effect” on federally-listed threatened or endangered species. Therefore, Alternative B is not a major Federal action significantly affecting the quality of the environment, and an Environmental Impact Statement is not required.

Original signed by

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Date Signed