FINDING OF NO SIGNIFICANT IMPACT

COKE OVEN GAS CLEANING DEMONSTRATION PROJECT AT THE BETHLEHEM STEEL CORPORATION SPARROWS POINT PLANT

AGENCY: Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The Department of Energy (DOE) has prepared an environmental assessment (EA), DOE/EA-0404, for a coke oven gas cleaning project at Bethlehem Steel Corporation's Sparrows Point Plant located in Baltimore County, Maryland. Based on the analyses in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an Environmental Impact Statement is not required and the Department is issuing this Finding of No Significant Impact (FONSI).

COPIES OF THE EA ARE AVAILABLE FROM:

Dr. Earl Evans
Office of Clean Coal Technology
Pittsburgh Energy Technology Center
P.O. Box 10940
Pittsburgh, Pennsylvania 15236-0940
412-892-5709

FOR FURTHER INFORMATION CONTACT:

Carol Borgstrom, Director
Office of NEPA Project Assistance
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
202-586-4600

BACKGROUND: In December 1987, Congress enacted Public Law No. 100-202 (the "Act"), as amended by Public Law No. 100-446, which provided funds for the purpose of supporting cost-shared projects with industry to demonstrate emerging coal utilization technologies capable of reducing atmospheric emissions of sulfur dioxide and oxides of nitrogen. The Act also authorized DOE to conduct this Innovative Clean Coal Technology (ICCT) Program. On February 22, 1988, DOE issued a Program Opportunity Notice (PON) to solicit proposals for the conduct of cost-shared ICCT demonstration projects. The Bethlehem Steel Corporation (BSC) proposal for a retrofitted coke oven gas cleaning system was selected - along with 15 other technology proposals - from among 55 proposals received in response to that PON. DOE's objective in funding the BSC demonstration project is to demonstrate the economic and environmental benefits of an innovative technology for the removal of ammonia and hydrogen sulfide from coke oven gases. In addition, the project will allow BSC to achieve compliance with part of an Administrative Consent Order from the State of Maryland regarding particulate and visible emissions from combustion of coke oven gas at the Sparrows Point Plant.

An overall strategy for compliance with NEPA was developed for the ICCT Program, consistent with the Council on Environmental Quality regulations (40 CFR Prts. 1500 - 1508) and the DOE guidelines for compliance with NEPA (52 FR 47662, December 15, 1987). The strategy, which includes consideration of both programmatic and project-specific environmental impacts during and subsequent to the selection process, has three major elements, as outlined below.

The first element involves the preparation of a comparative programmatic environmental impact analysis (DOE/PEIA-0002), based on information supplied by the offerors and supplemented by DOE, as necessary. This environmental document analyzes the environmental consequences of the ICCT Program and the technologies supported by the program compared with the "No Action" alternative.

The second element of DOE's strategy for NEPA compliance involves the preparation of a pre-selection environmental review based on project-specific environmental data and analyses that offerors supplied to DOE as part of each proposal. This analysis contains a discussion of the site-specific environmental, health, safety, and socioeconomic issues associated with the demonstration project. It includes a discussion of the advantages and disadvantages of the proposed and alternative sites and/or processes reasonably available to the offeror, a discussion of the environmental impacts of the proposed project and a list of all permits that must be obtained to implement the proposal. The document describes options for controlling discharges and for management of solid and liquid wastes and assesses the risks and impacts of implementing the proposed project. Because this pre-selection, project-specific environmental review contains proprietary and/or business confidential information provided to DOE in the proposal, this document is not publicly available.

The third element of DOE's NEPA strategy provides for the preparation of site-specific NEPA documents for each of the projects selected for financial assistance under the PON. This FONSI and the EA upon which this FONSI is based constitute the third element of the NEPA strategy for one of the 16 projects,

the BSC Coke Oven Gas Cleaning Demonstration Project.

DESCRIPTION OF THE PROPOSED ACTION: The proposed demonstration project would be located at the BSC, Sparrows Point Plant, in Baltimore County, Maryland. The plant is located on 3000 acres of the Sparrows Point Peninsula, about 10 miles southeast of downtown Baltimore. The coke oven gas cleaning demonstration project would be located at the existing "B" Coal Chemicals Plant at the Sparrows Point Plant Coke Works, which is on the southernmost portion of the plant site.

The Coke Works at the plant consists of three operational coke batteries - "A," "11," and "12" - and two coal chemicals plants - "A" and "B." The batteries supply metallurgical coke for chemical reduction of iron ore in the blast furnaces. Metallurgical coke is formed in coke ovens by heating bituminous coal in the absence of air to remove volatile components. About 70% of the coal feed is converted to coke; the remaining 30% consists of by-product gases and vapors. These by-product gases are processed in the coal chemicals plants to recover usable and marketable products, such as fuel gas, sulfur, coal tar, and ammonium sulfate.

The proposed action would not affect the operation of the existing coke oven batteries but would change the operation of the coal chemicals plants. The demonstration project would be constructed on the site of the "B" Coal Chemicals Plant and the demonstration equipment would replace the existing ammonia removal system, final coolers, hydrogen sulfide removal system, and sulfur recovery system in both the "A" and "B" Coal Chemicals Plants. The existing primary cooling and tar recovery system and one of the light oil

recovery systems would continue in operation with the demonstration plant equipment.

The proposed demonstration technology consists of four steps: secondary cooling of the coke oven gas, hydrogen sulfide and ammonia removal, hydrogen sulfide and ammonia recovery, and ammonia destruction and sulfur recovery. The gas currently processed by both the "A" and "B" Coal Chemicals Plants would be treated.

Construction of the demonstration project is expected to begin in the spring of 1990 and continue for about 23 months. Operation of the demonstration project would follow with a 12-month period for shakedown, testing, and optimization. The demonstration would be complete at the end of this 12-month period. However, the demonstration plant is expected to continue in commercial operation for the life of the coal chemicals plant.

ENVIRONMENTAL IMPACTS: Potential environmental impacts of the proposed action were analyzed for both construction activities and plant operations. The air emissions, water effluents, and solid waste discharges associated with the demonstration plant operation were compared with those from the existing plant operation to establish the net change in impacts to the environment.

Construction: The proposed project would occupy a total area of about 8.6 acres at the site of the existing "B" Coal Chemicals Plant, but the area actually disturbed would be less than 2 acres. Downtime of the existing coke oven gas cleaning system would be minimized, since the new equipment would be installed while the existing plant is operational. Tie-ins to the existing

equipment would be performed using "hot-tapping" procedures which enable drilling and hookup to be conducted without interrupting gas flow.

Air quality impacts during construction would be temporary and would be primarily associated with exhaust emissions from construction equipment, fugitive emissions from equipment removal and installation, and fugitive emissions from road traffic within the plant boundaries. Construction of the demonstration project would not involve substantial earth moving and all plant roads are paved so that airborne road dust would be minimized.

There would be minimal impacts associated with disposal of construction wastes. Construction wastes include excavated fill material which would be stockpiled for future use and abandoned equipment which would be salvaged for scrap value. Minor amounts of construction rubble may also be disposed off-site in a permitted landfill.

Construction is not expected to cause impacts to surface water because of the distance of the project site from the harbor (about 1,000 feet), the small area to be disturbed, the level terrain of the site, and the use of standard erosion and sedimentation control practices. Construction would not affect terrestrial or aquatic ecology because there are no terrestrial or freshwater habitats on the site. The substantial distance of the proposed site to the harbor and the Patapsco River would prevent construction impacts to aquatic biota in either of those two water bodies. The proposed site is outside the 100-year floodplain and there are no wetlands in the area that would be destroyed or modified in any way.

Land use is consistent with current use (i.e., heavy industry) and the increased labor requirements during construction (202,000 work-hours or 70 full-time construction workers) is insignificant in comparison with existing employment at the BSC Sparrows Point Plant and in the Baltimore metropolitan area. The slight, temporary increase in traffic during construction would represent only a small fluctuation within the normal range for the Sparrows Point Plant.

The entire BSC Sparrows Point Plant may be eligible for the National Register of Historic Places. However, the alterations due to construction of the demonstration plant would not alter the historical, architectural, archaeological, or cultural characteristics that could qualify the complex for the National Register. The Maryland Historical Trust has been consulted in accordance with Section 106 of the National Historic Preservation Act and has concluded that there would be no adverse effect.

Increased noise from the equipment, machinery, and vehicle operations during construction would not adversely affect any sensitive areas off-site. The project site is about 2 miles from the nearest residential area.

Operation: During operation of the demonstration plant, the entire coke oven gas stream from coke oven batteries "A," "11," and "12" would be desulfurized. Currently, only two-thirds of the coke oven gas is desulfurized. In addition, the demonstration project will have a higher removal efficiency than the existing processes. As a result, sulfur dioxide emissions from coke oven operations at Sparrows Point Plant will decrease from approximately 8,900 to 2,600 tons per year. Particulate emissions associated with the formation of

sulfates from the sulfur in the coke oven gas will likewise be reduced. The reductions in emissions are expected to meet or exceed the requirements established in part of a recent legal action (an Administrative Consent Order) by the State of Maryland with regard to the BSC Sparrows Point Plant. Specifically, the two coke oven battery stacks should no longer be in violation of opacity and particulate matter standards. The existing violations are believed to be a result of condensing sulfate emissions from the stack.

Beyond these benefits, the proposed project would also reduce fugitive emissions of volatile organic compounds. This reduction would result from the elimination of many existing valves and other pipefittings, pumps, and compressors that are sources of these emissions. The project may result in a slight improvement in odor-causing emissions, but because these emissions are largely associated with the coke ovens rather than the coke oven gas stream, this improvement is expected to be minimal. Emissions of nitrogen oxides are expected to be unchanged.

Operation of the demonstration project would decrease pollutant loadings to the existing Coke Works wastewater treatment system and, therefore, would probably result in a very slight, unquantifiable improvement in the water quality of the receiving system, the Baltimore Harbor. The primary wastewater stream from the new coke oven gas cleaning system would be stripped effluent from the ammonia stills which would be similar in flow rate but lower in pollutant loading than the existing effluent from the ammonia stills. The demonstration project would produce one additional flow of boiler and cooling water blowdown containing dissolved solids, but the current discharge from the cyanide stripper would be eliminated. The process waste stream from the existing light oil recovery unit

would be unchanged by the demonstration project. Finally, the existing Spill Prevention, Control, and Countermeasures Plan would be modified to include new operations that are part of the demonstration project; the new process area would be paved and runoff or spilled liquids would be collected and treated.

No impacts to groundwater resources would result from the proposed action, because potable groundwater from the deeper, confined Patuxent aquifer is isolated from industrial activities at Sparrows Point by the Arundel Clay unit. The unconfined, near-surface Patapsco aquifer is not a potable aquifer at Sparrows Point nor is it used as a source of industrial water. Operation of the demonstration plant would not affect the unconfined aquifer because the industrial activities are unchanged. There should actually be a decrease in the potential for spills to reach the aquifer, since the project area would be paved and runoff or spilled liquids would be collected and treated.

Negative impacts on aquatic biota from operation of the BSC Sparrows Point Plant would be ameliorated. The proposed project would reduce cooling water requirements by approximately 24%, with a corresponding reduction in impacts from thermal discharge, impingement, and entrainment. There would also be a reduction in effects to aquatic biota corresponding to the improvement in wastewater effluent quality.

ALTERNATIVES CONSIDERED: Alternatives to the proposed action were considered throughout all three elements of the NEPA strategy outlined earlier. The "No Action" alternative was considered in the programmatic analysis, as well as in preparation of the EA. Delayed action was considered primarily in the preparation of the EA and in the pre-selection review. Alternative sites and

alternative technologies for the Innovative Clean Coal Technology Program were considered in the pre-selection review. Alternative sites and technologies for this proposed action in particular were considered in the preparation of the EA.

The "No Action" alternative would force BSC to seek an alternative means of controlling the plant's atmospheric emissions to comply with the Administrative Consent Order issued by the State of Maryland. Further, this alternative would not contribute to achieving the goal of the ICCT Program to enable industry to demonstrate the economic feasibility and environmental capability of technologies developed to reduce atmospheric emissions of sulfur dioxide and oxides of nitrogen. Delayed action would delay the availability of data to be derived from demonstration of this innovative coke oven gas cleaning process, and also could force BSC to seek an alternative approach to compliance with the consent order. With regard to alternative sites, because the BSC proposal was designed to retrofit the Sparrows Point Plant, off-site alternatives were not viable. An on-site alternative to the proposed location was rejected because the "B" Coal Chemicals Plant was preferable in general layout and in the condition of equipment to be retained. Alternative technologies that are capable of achieving compliance with the Administrative Consent Order do not have the expected level of environmental performance of the proposed coke oven gas cleaning process.

DETERMINATION: The proposed action, a demonstration project involving the retrofit of an existing coal chemical plant at the BSC Sparrows Point Plant with an innovative coke oven gas cleaning process, does not constitute a major Federal action significantly affecting the quality of the human environment

within the meaning of the National Environmental Policy Act. This finding is based on the analyses in the EA. Therefore, an Environmental Impact Statement for the proposed action is not required.

Issued at Washington, D.C., this 22nd day of December, 1989.

Peter N. Brush
Acting Assistant Secretary
Environment, Safety, and Health