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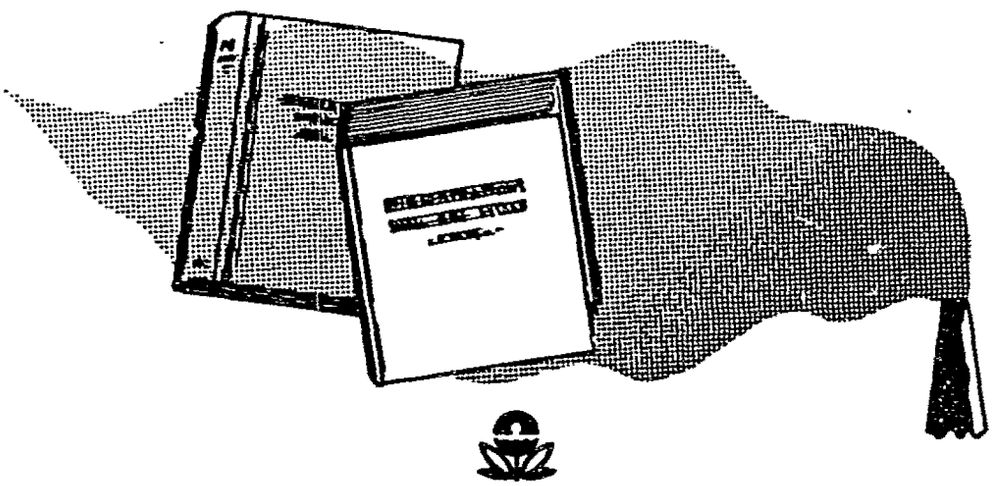
BACKGROUND INFORMATION FOR STANDARDS OF PERFORMANCE: COAL PREPARATION PLANTS VOLUME 3: SUPPLEMENTAL INFORMATION



U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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BACKGROUND INFORMATION FOR STANDARDS OF PERFORMANCE: COAL PREPARATION PLANTS VOLUME 3: SUPPLEMENTAL INFORMATION

Emission Standards and Engineering Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
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I. Introduction

On October 24, 1974 (39 FR 37922), the Environmental Protection Agency proposed standards of performance for new and modified coal preparation plants. At that time, EPA made available for public distribution a background document (in two volumes) entitled "Background Information for Standards of Performance: Coal Preparation Plants, " EPA -450/2-74-021a and b (October 1974). The background document explained the background and bases of the proposed regulations. Copies may be obtained by writing to Emission Standards and Engineering Division, Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention: Mr. Don R. Goodwin. This supplement to the background document is being issued in connection with final promulgation of the regulations.

Twenty-seven parties commented on the proposed standards. A summary of the public comments and EPA's responses to them is presented in Section VI of this document. In addition, this document supplements the information presented in the background document as indicated below.

As a result of several comments, the standard for thermal dryers was reevaluated by EPA. This document contains the results of the reevaluation including a discussion of tests conducted in response to one of the comments (Section II), a summary of updated control costs (Section IV), a discussion of the inflationary impact of these control costs (Section V), and a projection of the annual power consumption increases required by the standard (Section V).

On November 12, 1974 (39 FR 39872), after the proposal of standards for coal preparation plants, Reference Method 9 (the opacity test method)

was revised in order to base determinations of compliance with opacity standards on the average of 24 consecutive observations, each taken at 15-second intervals (six-minute average). Accordingly, EPA reevaluated the opacity standards for coal preparation plants and revised them to be consistent with the changes in Method 9. This document contains a discussion of the changes in the opacity standards that resulted from the reevaluation (Section III).

II. Mass Emission Standard for Thermal Dryers

The mass emission standard for particulate matter from thermal dryers is based on test data and predictions using impaction theory.[1] The test data include data developed by EPA test programs (described in Volumes 1 and 2 of the background document), data submitted in one of the public comments (discussed below), data obtained from tests of a plant processing Sewell Seam coal (discussed below), and data developed by a major scrubber manufacturer from extensive control equipment acceptance tests.[2]

The impaction theory for venturi scrubbers is a useful tool that predicts the impact of parameters that affect venturi scrubber control efficiency. For example, it is known that both the energy of impaction of water droplets with the particles and the size of the particles are of primary importance. It is also known that increasing the pressure loss through the control device increases the energy of impaction. With all other factors being equal, this will lower the emissions. At pressure drops required for control of particulate emissions to the limits of the mass emission standard, it is also known that very fine (<1.5 micron) particles are less efficiently collected than larger particles.

In order to predict the actual effect of these parameters mentioned above upon control equipment performance, it is necessary to consider the extreme effects that have been observed. This has been accomplished by bracketing in Figure 1 the coal preparation plant emission data currently available.[7,8] These tests, some of which are described in Volumes 1 and 2 of the background document, show the range of emissions that can be expected depending upon the plant operating

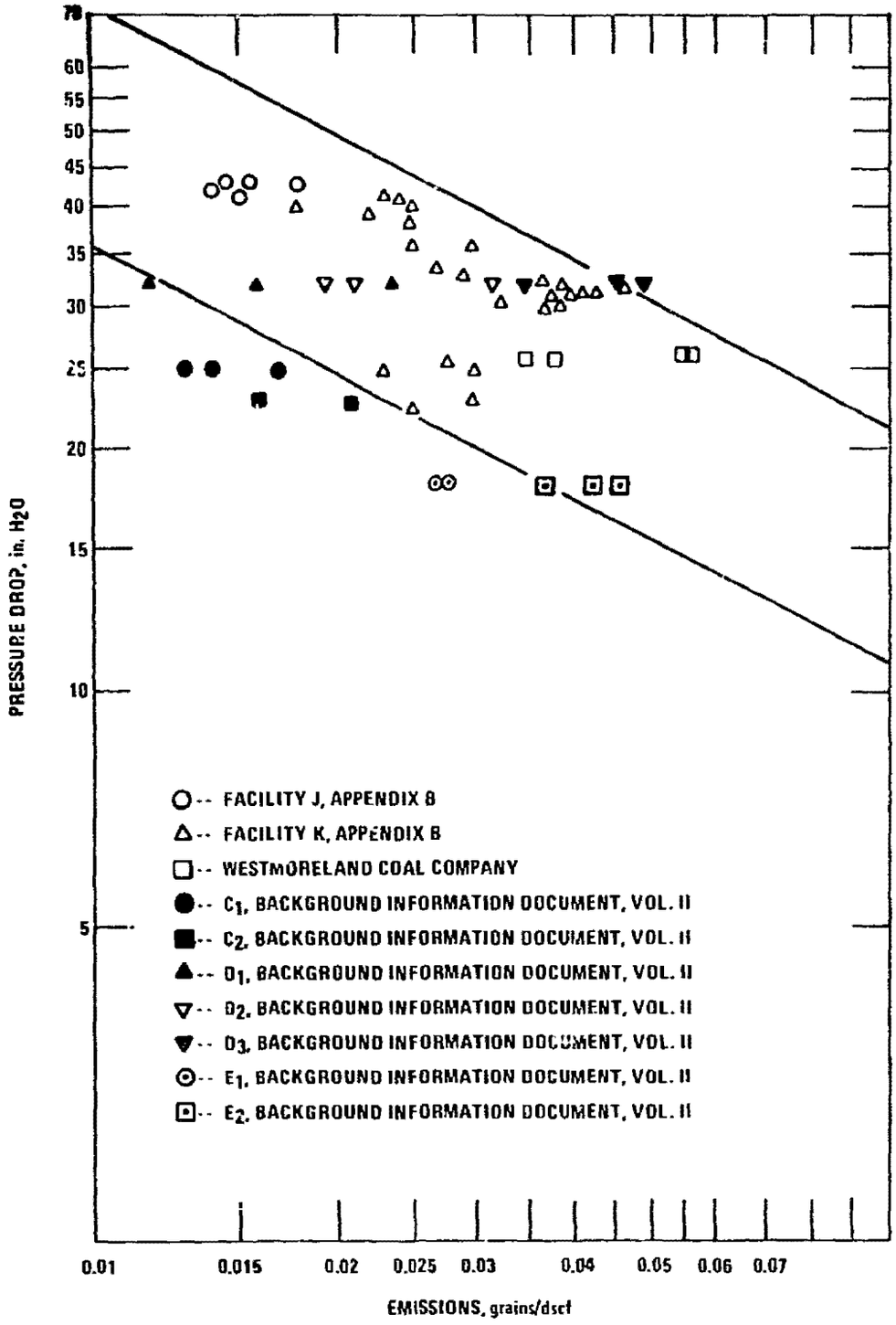

Figure 1. Particulate matter emissions from thermal dryers.

conditions or processing parameters. The high ranges of the data predict the maximum expected effect of these parameters upon currently constructed and operated commercial size thermal dryer emission control equipment. The slopes of these lines show the effect of venturi scrubber pressure loss upon emission control performance. The upper line shows the maximum effect of all other known parameters upon control equipment performance. Based upon the control of liquid to gas (2/6) ratios that are part of any venturi scrubber design, the primary parameter remaining (predicted by impaction theory) that may vary from plant-to-plant or within a plant that may affect control efficiency is particle size. The upper line is the maximum expected effect of larger proportions of very fine particles in the dryer effluent particulate matter and the lower line is representative of considerably smaller proportions. An owner or operator proposing to construct a new thermal dryer must consider in advance the size of material being dried when selecting the pressure drop needed to control emissions within the standards promulgated herein.

One commentator presented data and calculations which proposed to show that the coal processed by his company contained an unusually large proportion of very fine particles that would preclude attainment of the emission standards at reasonable pressure drops. These projections suggested that pressure drops of 50-52 inches of water gauge would be required to control thermal dryer particulate emissions processing this type of coal. Since this projection is considerably greater than the 25-35 inches projected in Volume 1 of the background information document, EPA decided to perform emission tests at the plant which processed the coal (Sewell seam) in question. The results of the EPA

tests are shown in Table I. The average of all five tests of particulate emission from the thermal drying of Sewell deep mined coal was 0.047 gr/dscf, and the pressure loss through the venturi scrubber during these tests was 29 inches water gauge. As shown by Figure 1, these results fall near the upper line projected for facilities that have high proportions of very fine particulate. It is recognized among many coal producing companies and control equipment manufacturers that certain coals or mining techniques may produce higher proportions of fine particles.

Figure 1 encompasses all known extremes of particulate size and other variables that could significantly affect control equipment performance. Examination of Figure 1 shows that the mass emission standard is achievable with a pressure drop of 20 to 40 inches for a wide spectrum of coal types and processing techniques. The proportion of coal containing these very fine particles that is processed by a thermal dryer is within the control of the plant operator. These fine particles are separated from the remainder of the coal processed in the coal preparation plant and are concentrated in the froth flotation cells. The product coal from froth flotation-vacuum filtration circuits is commonly referred to as "filter cake." Depending upon the amount of moisture removal desired, to produce the final clean coal product, common practice within the industry is to dry none, part, or all of the "filter cake" material. EPA test data indicate that emissions from plants drying a fraction of the "filter cake" (Plant C) are near the lower (Figure 1), while emissions from plants drying all of the "filter cake" (Plant D) are nearer the higher line. The same type coal (Pocahontas) was being processed at each plant. These results (C_1, C_2 and D_3) are contained in volume 2 of the background information document. In addition to

Table I

Date of Test	Test or Run Number	gr/dscf	gm/dscm	Type Coal	Predominant Mining Method
6-18-75	1	0.038	0.086	Sewell	strip
6-19-75	2	0.055*	0.125*	Sewell	deep
6-20-75	3	0.038	0.085	Sewell	deep
6-23-75	4	0.059**	0.132**	Sewell	deep
6-25-75	5	0.035	0.079	Sewell	deep

*Filter was discovered to be broken after test was completed.

**Probe was discovered to be broken after test was completed; however, microscopic examination of the filter showed no deposition of glass particles.

the test results shown in volume 2 at Plant D where all "filter cake" is typically dryed (test D_2), an additional run was performed at the plant after EPA requested that the amount of filter cake charged to the dryer be reduced by 50 percent. The emission test result of this run was 0.013 gr/dscf.[3] At 32 inches pressure drop, this run is near the lower line shown in Figure 1, whereas the emission results for test D_2 when all filter cake was being dryed was nearer the upper line (0.024 average). Thus, reducing proportion of "filter cake" dried by 50% may have made the venturi scrubber's control of emissions substantially more efficient.

The question of drying none, part or all of the filter cake material is a matter of balancing economic considerations, product specifications, and desired emission control. Even if all filter cake and emissions are nearer the upper line, Figure 1 indicates that the pressure loss needed to attain the promulgated standard of 0.031 gr/dscf will be 40-45 inches for the most extreme circumstances. This projection has been confirmed by data developed by a major scrubber manufacturer from extensive control equipment tests.[4] Pressure drops of this magnitude and greater are technically feasible. The economic aspects of this reevaluation are discussed in Sections IV and V.

III. Opacity Standards

The proposed standards included opacity levels for emissions from thermal dryers, pneumatic coal cleaning equipment, and coal handling and storage equipment. The proposed standards were based on data obtained in accordance with the original Reference Method 9 (the opacity test method). The original Reference Method 9, which was promulgated in 1971, required that compliance with opacity standards be determined on the basis of peak observations. In response to complaints that the errors associated with any single observation of visible emissions were great, studies were conducted to determine the magnitude of errors which can be made by qualified observers while reading plumes according to the prescribed procedures. It was shown that opacity can be determined with a positive error less than 7.5 percent by averaging 24 consecutive readings (six-minute average). Reference Method 9 was revised accordingly and published in the FEDERAL REGISTER on November 12, 1974 (39 FR 39872). The new procedure requires that opacity observations be recorded to the nearest five percent at 15-second intervals. A minimum of 24 observations must be recorded, each recorded observation representing the opacity of emissions for the 15-second interval, to obtain a six-minute average. The use of sets of opacity data precludes a single high reading from being cited as a violation.

These revisions to Method 9, however, made it necessary to reevaluate previously promulgated and proposed opacity standards, since they were based upon data obtained with the old Reference Method 9. Thus, the data base for the opacity standards for coal preparation plants was recomputed into 6-minute averages. The results are shown in Table II.

Table II*

Type of Facility	Range of Single Observations (%)	Proposed Standards (%)	Range of 6-Minute Averages (%)	Promulgated Standards (%)
Pneumatic Coal Cleaning Equipment	0-10	20	0-6	10
Thermal Dryers	0-10	30	0-5	20
Fugitive Emissions	0-50	20	0-19	20

*The appendix contains the six-minute opacity averages from which this table was produced.

The ranges of the average observed data are significantly lower and much more constant than single observations of plume opacity. Since the opacity standards must be consistent with the method used to enforce the standards, the proposed standards for thermal dryers and pneumatic coal-cleaning equipment were revised to lower levels consistent with the averaging technique. Consistent with EPA's policy on use of opacity standards in conjunction with mass or concentration standards (see 39 FR 9308, March 8, 1974), the revised opacity standards for these affected facilities are less stringent than the applicable mass standards.

Upon comparison of observed thermal dryer opacities and the thermal dryer opacity standard, a larger difference is found than for similar comparisons with the remaining standards. Due to the nature of thermal dryer emissions, observations are not usually made at the stack exit. Emissions from thermal dryers are typically controlled by venturi scrubbers which produce a combination of condensed water vapor and particulate matter in the stack effluent.

This water vapor or steam plume is often at least 100 feet in length and in some instances it reaches 300 feet (or more) in length. Since EPA procedures under Method 9 indicate that opacity cannot be read until the steam plume has evaporated, opacity is read at the end of the steam plume where the particulate matter is considerably dispersed. Under conditions of cool ambient temperature and high humidity, opacity readings are lower at the point of observation (after dissipation of the steam) than they would be if they could be observed at the point of emission. When weather conditions are conducive to shorter plumes (warm temperatures and/or low humidity), there is less dilution and the observed opacity of emissions is higher. The data which support the opacity standard for thermal dryers were obtained under conditions conducive to the formation of relatively long steam plumes. Under drier and warmer conditions the observed range of 0-5% opacity for thermal dryers would have been higher due to the ability to observe the plume nearer the point of emission. Thus, the standard for thermal dryers is established at a level higher than would otherwise be the case in order to account for this phenomenon. Since emissions from pneumatic coal cleaning equipment contain no condensed moisture, the level of the standard is lower than for thermal dryers, even though the observed opacity was about the same for both processes.

For fugitive emission sources, the opacity standard was established near the maximum six-minute average observed since no mass standards apply to those facilities. In such cases the opacity standard is the

only means of requiring control of the emission sources and is established at a level consistent with application of best control technology to those sources.

As illustrated by Table II, two of the promulgated opacity standards are numerically lower than those proposed. In relationship to the respective data bases (peak observations versus six-minute averages), however, the promulgated opacity standards represent no increase in the stringency of the opacity standards. For particulate emissions, the promulgated opacity standards and the new Method 9 six-minute averaging concept more accurately represent the level of control achievable than did the proposed opacity standards and the former Method 9.

IV. Economic Impact

As explained in Section II of this report, the mass emission standard for thermal dryers was reevaluated in view of data and calculations submitted by one commentator. The reevaluation indicated that the proposed standard can be achieved at a venturi pressure drop of approximately 40 to 45 inches water gauge even under the most extreme circumstances expected to occur.

Because the original cost analysis of the standard was based on a venturi scrubber operating at 25 to 35 inches venturi pressure drop, the cost of operating at higher pressure losses was evaluated. Also, the cost analysis was updated to March 1975 with inflation indices. The analysis indicated that the added cost of controlling pollutants even at a pressure drop of 50 inches would be less than 14 cents per ton of plant product (see Table III). This would be only five cents per ton in excess of the cost resulting from the average control level required by State regulations in the major coal producing States. While this is more than the two cents per ton excess cited in Volume I of the background document, it constitutes a small percentage of the total delivered cost of coal estimated by the Bureau of Mines for 1974 ($18.95 average delivered cost per ton). Even the total impact of 14 cents per ton for controlling particulate matter emissions can easily be passed along to the customer since the demand for thermal drying due to freight rate savings, the elimination of handling problems due to freezing, and the needs of the customer's process (coke ovens must control bulk density and power plants must control plugging of pulverizers) will remain unaffected by these regulations. Thus, the economic impact of the standard upon the growth

Table III - Control Costs for Coal Cleaning
Wet Scrubbing for a 465 TPH Thermal Dryer
(March 1975 Dollars)

Plant Size, Run of Mine, TPY	3,500,000		
Dryer Capacity, TPH*	465		
Dryer Feed, TPH	349		
Dryer Investment (965)(1.338), $	1,291,000		
Operating Hours/Year	3840		
Design Pressure Drop[2]	50" H_2O	35" H_2O	30" H_2O
Control Investment[5]	$435,000	$400,000	$381,000
Annualized Cost			
Labor 140 Hr/Yr @ $7.50[6]	1,050	1,050	1,050
Maintenance @ 3%[5]	13,050	12,000	11,430
Electrical Power[6]			
3000 HP @ 3¢/KWH (0.75)	175,240		
2000 HP @ 3¢/KWH (0.75)		137,270	
1700 HP @ 3¢/KWH (0.75)			99,300
Water[6]	8,240	8,240	8,240
Property Tax and Insurance @ 2% Inv	8,700	8,000	7,620
Capital Recovery Factor 10 yrs @ 8% (0.14903) (Inv)	64,830	59,610	56,780
	$271,100	$226,170	$184,420
Tons/Year Clean Coal, (ROM)(0.75)(0.75)**	1,968,750	1,968,750	1,968,750
Cost/Ton Clean Coal, ¢/Ton	13.77	11.49	9.37

*Based on 3480 Operating Hours Per Year and 46.5% Feed to Dryers

**Represents 75% Recovery and 75% Operating Efficiency

of thermal drying operations is not expected to be large, and the inflationary impact of the standard on the price of coal will be insignificant (one percent or less).

V. Inflationary and Energy Impacts

In accordance with the Agency's interim guidelines concerning inflationary impact statements, the five-year annualized costs have been computed for coal preparation plants. The five-year costs and the fifth year annualized cost of implementation of the standards have been estimated as $18 million and $11 million, respectively. Both of these costs are well below the screening criteria ($100 million and $50 million) for preparation of inflationary impact statements, indicating a minor impact.

The increased power consumption resulting from the standards was assessed and is summarized in Table IV. Although there is a 24% increase in power requirement by the control system, relative to the energy consumption of the facility for producing product coal, the standards of performance will result in a negligible increase in power consumption for pollution control by coal preparation plant facilities.

Table IV
Annual Power Consumption
Increases Required by Standards of Performance
for Coal Cleaning Plants[5]

Expected Average Annual Growth in New and Modified Facilities (Capacity Per Facility	Total Increase in Demand Due to Standard of Performance Compared to No Air Pollution Control, KWH/YR	Incremental Increase in Power Demand Due to Standards of Performance Beyond Requirements of Typical State Implementation Plan, KWH/YR
9 Dryers	53×10^6	32×10^6

References

1. Scrubber Handbook, Volume 1, Contract CPA-70-95, A.P.T., Inc, Riverside, California.

2. Letter, D. W. Fritz, Flex-Kleen to C. B. Sedman, EPA, May 20, 1974.

3. Coal Preparation Plant Emission Tests, Test No. 73-CCL-2 Island Creek Coal Company, Scott Research Laboratories, Plumsteadville, Pennsylvania.

4. Letter, D. K. Werle, Flex-Kleen to L. G. Jones, EPA, July 8, 1975.

5. Letter, J. A. Notary, Heyl & Patterson to L. G. Jones, EPA, April 25, 1972.

6. IGCI, "Air Pollution Control Technology and Costs in Nine Selected Areas," September 30, 1972.

7. Oneida Heat Dryer Stack Test, Oneida Mining Company, Contract 614-299-9229, Tra Det Laboratories, Inc., June 20, 1975.

8. Letter, Carl E. Dillion, Barnes & Tucker Company to L. G. Jones, EPA, November 25, 1975.

VI. Summary of Public Comments and EPA Responses

Twenty-seven comment letters were received on the proposed standards, six from coal companies, four from Federal agencies, four from steel companies, four from electric utility companies, three from State and local agencies, three from coal industry associations and three from other interested parties. The comments were carefully considered and, where determined by the Administrator to be appropriate, changes were made to the proposed regulations.

A summary of these comments and EPA's responses is presented in this section.

Key to Industry Code

Code	Industry or Organization
A	State or Local Air Pollution Control Agency
B	U. S. Environmental Protection Agency
C	Federal Governmental Agencies other than EPA
D	Coal Companies
E	Coal Company Equipment Vendors
F	Coal Industry Associations
G	Steel Companies
H	Electric Utility Companies
I	Chemical Companies

LIST OF COMMENTATORS

Commentator Number	Commentator	Affiliation
IA-1	Eric Zausner	Federal Energy Administration
IA-2	Stanley Doremus	United States Department of the Interior
IA-3	William C. Rountree	General Counsel of the Department of Commerce
Y-1	J. N. Shupe	Westmoreland Coal Company
Y-2	Philip C. Reeves	Roberts & Schaefer Company
Y-3	George Palmer	Olin Chemicals
Y-4	George P. Ferreri	Environmental Health Administration
Y-5	J. C. Anderson	United States Steel Corporation
Y-6	J. R. Thorpe	GPU Service Corporation
Y-7	Don Willis	National Mines Corporation
Y-8	David M. Anderson	Bethlehem Steel Corporation
Y-9	J. N. Shupe	Westmoreland Coal Company
Y-10	Richard W. Bliss	American Mining Congress
Y-11	D. R. Sheets	Kerr-McGee Coal Corporation
Y-12	Joseph W. Mullan	National Coal Association
Y-13	William R. Meyer	Virginia Air Pollution Control Board
Y-14	J. R. Brough	Inland Steel Company
Y-15	G. L. Barthauer	Consolidation Coal Company
Y-16	J. P. McCluskey	Commonwealth Edison
Y-17	Howard R. Palmer	The Dayton Power and Light Company
Y-18	J. LeRoy Balzer	Utah International, Inc.
Y-19	Richard H. Silverman	Salt River Project
Y-20	Robert L. Duprey	EPA-Division of Stationary Source Enforcement

Public Comment Summary: Coal Preparation Plants

Comment Number	Commentator Number	Category	Comment	Response
1	IA-1	C	Conventional coal cleaning processes used in conjunction with flue-gas desulfurization units should be included within the standards. The standards for coal preparation plants should also be revised to include cleaning of coal by solvent refining processes.	The specific coal processing operations regulated by these standards are affected regardless of whether they are located in coal liquefaction plants, power plants, coke ovens, etc. Such operations have been in use for many years and may be regarded as conventional. They have been identified by the Administrator as being a source of emissions that may contribute significantly to air pollution that causes or contributes to the endangerment of public health or welfare. Newer operations for producing clean fuels from coal (e.g. coal liquefaction, coal gasification, etc.) have not currently been so identified by the Administrator and are not affected by these standards.
2	Y-22	C	If environmental impacts are not considered with regulations they should be cross referenced to other applicable regulations.	The environmental effects of the proposed regulations were considered in volume 1 of the background document. Other applicable regulations are a matter of public record.
3	IA-2, Y-22	C,C	The title for subpart Y should be revised to include the designation "new or modified" and these terms should be defined within the subpart to avoid misunderstanding.	The requirements in Subpart Y affect all new coal preparation plants, but may or may not affect facilities which undergo physical changes. The question of what constitutes a modification is being addressed in proposed amendements to the general provisions (Subpart A) of 40 CFR Part 60. See 39 FR 36946 (October 15, 1974)

Comment Number	Commentator Number	Category	Comment	Response
4	IA-2	C	The economic justification for standards is unrealistic due to the abnormally large model plants used in the analyses.	The largest economic impacts are incurred when control of emissions from thermal dryers is required. Since thermal dryers are used only in the larger, more sophisticated operations, smaller plants will typically not be subjected to this economic impact. The economic impact on a small plant will be attributable to the necessity for controlling fugitive emissions.
5	IA-2	C	The data in Figure 10 of the Background Information document show that the West Virginia State standard applicable to thermal dryers is 0.10 gr/dscf rather than the 0.07 gr/dscf used in the economic analyses. Therefore, the incremental costs of control are inaccurate.	The0.07 gr/dscf used in the economic analyses is not intended to directly represent the standard for any single state. Although the background document did reference the West Virginia standard, the 0.07 gr/dscf emission level selected represents a weighted average of the standards for the major coal producing states where the emission standards may be higher or lower (e.g. 0.02 gr/dscf in Pennsylvania).
6	IA-3, Y-10, Y-2, Y-5, Y-12	C, F, E, G	Opacity is unsuitable as a standard and should only be used as a triggering device for performance testing. Opacity standards are unreliable for use as an objective means of evaluating emissions.	The use of opacity standards has previously been considered in the EPA response to the remand ordered by the U.S. Court of Appeals for the District of Columbia Circuit in Portland Cement Association v Ruckelshaus, 486F.2d 375 (D. C. Cir. 1973). Copies of the remand may be obtained by writing to Emission Standards and Engineering Division, Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attn: Mr. Don R. Goodwin. On November 12, 1974, EPA revised its reference method for determining opacity (Method 9 in Appendix A of 40 CFR Part 60) in several respects (39 FR 398 72). Among other things, the revision made clear that the accuracy of the method must be taken

Comment Number	Commentator Number	Category	Comment	Response
				into account for purposes of enforcement. On May 22, 1975 the U.S. Court of Appeals for the District of Columbia Circuit affirmed EPA's position with respect to opacity and held that plume opacity may be used "either as a measure of pollution or as an aid in controlling emissions". Portland Cement Association v Train, 513 F.2d 506,508-09 (D.C. Cir. 1975).
7	IA-3	C	In the absence of continuous monitors, violations of the particulate standard cannot be proved without performance tests therefore the particulate standard should apply only during performance testing.	Section 60.11(a) of the general provisions (applicable to all subparts of 40 CFR Part 60) provides that compliance with mass or concentration standards specified in Part 60 shall be determined only by performance tests. In practical effect, this means that the particulate standards for coal preparation plants apply only during initial and subsequent performance testing. Section 60.11(e), however, requires proper maintenance and operation of affected facilities and associated control equipment at all times, and continuous monitoring requirements and opacity standards have been included in Subpart Y as a means of assuring proper maintenance and operation. It should be noted that the proper maintenance and operation requirement and the opacity standards are independently enforceable, and that they apply at all times except as provided in §60.11(c).
8	Y-1	D	Scrubber manufacturers will not guarantee meeting a 0.03 gr/dscf (0.07 g/dscm) particulate standard for Sewell Seam and other	As discussed in Section II of this supplement to the background document, EPA conducted emission tests at a plant processing Sewell Seam coal as a result of

Comment Number	Commentator Number	Category	Comment	Response
			similar coals. One manufacturer contacted will not in one case guarantee below 0.04 gr/dscf (0.09 g/dscm).	this commentator's assertions. In view of the data obtained in these tests, the scrubber manufacturer in question has indicated it will guarantee 0.07 g/dscm (0.03 gr/dscf) for Sewell and other similar coals (Reference #3).
9	Y-1	D	Power companies do not have the capability of supplying the large power requirements needed to achieve the 0.03 gr/dscf standard in areas where the coal fields are located.	Public utility companies are typically obligated by law to provide adequate service in return for a franchise to operate a monopoly in assigned service areas. This obligation extends to new as well as existing customers. There may be some practical reasons (e.g. financing, time needed for new construction, etc.) why service cannot be extended immediately upon request, but these factors must be weighed by the owner or operator of a coal preparation plant along with the multitude of other considerations in planning the location and design of a new facility.
10	Y-1	D	Some companies may not be able to procure capital investment for new facilities badly needed to meet current energy needs due to the uncertainty of achieving a 0.03 gr/scf standard.	The scrubber manufacturer's guarantee and technical support should provide the assurance needed to attract capital investment.
11	Y-1, Y-9, Y-14	D,D,G	The marginal improvement in emission controls of a 0.03 gr/scf standard versus a 0.05 gr/scf standard is not justified due to the increased costs, energy consumption, and re-	As discussed in Section IV of this supplement to the background document, EPA's analysis indicates that the economic impact of an 0.03 gr/dscf (0.07 g/dscm) standard would be only 5 cents per ton of coal in excess of the average control required by

Comment Number	Commentator Number	Category	Comment	Response
			sulting pollutants generated by the power company.	state standards, even if a 50 inch pressure drop were necessary to meet the standard. This is less than the cost savings attributable to coal drying and is almost inconsequential when compared to the sale price of coal (10 to 20 dollars per ton). Although the energy requirement will increase by about 24 percent, the net reduction in emissions to the atmosphere will be about 23 percent even with consideration given to the increase in emissions at a new coal-fired power plant (Reference #3).
12	Y-1, Y-9	D,D	The technical data used to justify the 0.03 gr/scf standard is in error. Pocahontas Seam coal is not the most difficult to control. There is no consistent connection between friability and control difficulty. Sewell Seam and other coals not tested by EPA are much more difficult to control. The error of this premise regarding Pocahontas coal has been verified by vendors of thermal dryers and venturi scrubber equipment. Pocahontas coal was found to be among the easiest coals to control. EPA has no data to show that the 0.03 gr/dscf standard is achievable when coal other than Pocahontas Seam coal is dried.	As discussed in Volume 1 of the background document, Pocahontas coal has historically been considered to present the most difficult situation with respect to emission controls. Recent test data developed by EPA by tests at the commentator's facility have demonstrated that Sewell coal is equally, but no more, difficult to control than Pocahontas, (See Section II of this supplement to the background document). By no means is Pocahontas coal considered among the easiest to control. No data have been developed to date that would indicate that there are more difficult control problems than are posed by Pocahontas or Sewell coals. As discussed in Sections II and IV of this supplement to the background document, EPA's test data (including that obtained at the commentator's plant) indicate that the 0.03 gr/dscf standard is achievable at reasonable cost with Sewell Seam or Pocahontas coals.

Comment Number	Commentator Number	Category	Comment	Response
13	Y-1	D	No sieve analysis results of the feed to thermal dryers tested by EPA are available. Consequently, there are no data to show the achievability of an 0.03 gr/scf limit for coal feeds with high fines content.	The EPA test measurements were conducted in a manner that would detect significant differences in emissions due to high fines content in the dryer feed. Tests at dryers D_3 and at the commentator's facility were conducted with maximum input of fines to the dryer. Tests at dryer C were conducted with only partial input of fines. The emission standard is principally based upon the former tests and other recently developed data (see Section II of this supplement to the background document) rather than the lower results obtained at dryer C. The standard therefore reflects any effect upon control equipment efficiency due to high fines content in the dryer feed.
14	Y-1	D	We have installed and operated a venturi scrubber of the type identified by EPA's tests as examples of best control technology at a location where Sewell Seam coal is mined and thermally dried. Test results have averaged 0.04 gr/scf, above the 0.03 gr/scf limit proposed by EPA.	For the 29 inch scrubber pressure drop used at this facility, these results (0.04 gr/dscf) are consistent with EPA data which show that the standard will be achieved by operating the scrubber in the 40 to 45 inch water gage pressure drop range. See Section II of this supplement to the background document.
15	Y-1, Y-9	D, D	Without relief from the 0.03 gr/scf limit proposed, coal companies will not be able to recover the finer sizes of coal due to the inability to thermally dry. Discarding this coal (as	EPA's tests included facilities where all fines produced are dried. EPA projects that facilities drying certain difficult to control coals can achieve the 0.031 gr/dscf limit by using venturi scrubber con-

Comment Number	Commentator Number	Category	Comment	Response
			much as 15 tons per hour in a typical plant) is an unjustified waste of national resources.	trol equipment that is operated at a pressure loss of 40-45 inches water gage. (See Section II of this supplement to the background document). Lower pressure losses will give satisfactory results with many other type coals. In either case, thermal drying and recovery of fines will not be precluded.
16	Y-1, Y-10, Y-12, Y-15	D,F,F,D	No data are available to evaluate the degree of control achievable with western coals. Extension of the termal dryer standard to these coals is without foundation.	Because the drying characteristics and the emission control levels achievable with subbituminous and lignite coals typically found in the west are not currently known, the thermal dryer standard has been revised to apply only to drying of bituminous fuels
17	Y-2	E	The use of diluent gases to achieve the emission standards should not be permitted. Revision of §60.12 is needed to be consistent with the exclusion of this requirement provided in the subpart. The purpose of this exclusion needs explanation.	Section 60.254 (c) as proposed was based on the need for thermal dryers to add diluent gases for temperature control. The possibility that addition of diluent gases will be used to evade the standard is unlikely in view of the high operating and capital cost that would be incurred in doing so. However, this paragraph has been deleted from the regulations because it is redundant. Section 60.12 prohibits use of dilution air only when its purpose is to defeat emission standards. Dilution air for legitimate process needs is not prohibited.

Comment Number	Commentator Number	Category	Comment	Response
18	Y-2, Y-1	E,D	Coal preparation plants are not a significant water pollution hazard. New plants use closed circuit systems.	New coal preparation plants are expected to use closed fluid systems and thereby present no significant water hazard. This is true, however, only if plant is well designed to handle waste water and overflows.
19	Y-3	I	Plants with capacities of 1000 tons/day or smaller should be exempted from the regulations.	The intent of the proposed standards was to control coal preparation of significance with respect to emissions. Therefore, EPA has exempted coal preparation plants processing 200 tons/day or less coal from compliance with these standards.
20	Y-22	C	Proposed standards appear to be attainable.	The standards have been fully evaluated by EPA and are attainable.
21	Y-4	A	More explanation is needed with regard to procedures acceptable for satisfying the requirements of §60.254(d) when baghouses are used.	Baghouses must have a ducting arrangement in order that Reference Method 5 may be applied.
22	Y-4	A	The revisions to Method 9 were not proposed, therefore, providing no opportunity for input from State agencies.	Certain revisions to Method 9 were proposed on September 11, 1974 (39 FR 32852). After consideration of comments, these revisions were promulgated on November 12, 1974 (39 FR 39872), together with certain other revisions determined to be appropriate on the basis of EPA's response to the remand in Portland Cement Association v. Ruckelshaus, 486F.2d 375 (D.C. Cir. 1973). Comments were invited on the

Comment Number	Commentator Number	Category	Comment	Response
				latter revisions on April 22, 1975 (40 FR 17778), and after consideration of the comments received EPA concluded that no further revision of Method 9 was appropriate (40 FR 41834, September 9, 1975).
23	Y-5, Y-10, Y-5a	G, F, G	The definition for "surface moisture" is inconsistent with that recognized by the industry or ASTM. The definition should be revised in terms of an air drying procedure for determinations.	Since determining surface moisture, using air drying or other techniques, is cumbersome and does not seem justified with regard to the monitoring benefit in addition to application of the opacity standard, this provision has been deleted from the regulations.
24	Y-5, Y-10	G, F	Product moisture content does not relate to dryer emissions in any consistent manner.	See response to comment 23.
25	Y-5, Y-7, Y-8, Y-5a, Y-23	G, D, G, G, F	Product moisture content is usually sampled after recombining with other product from the preparation plant. Sampling of product directly from the dryer is not a usual practice.	See response to comment 23.
26	Y-5, Y-10	G, F	Exhaust temperature of the flue gases is the best source of information regarding the performance of the dryer.	Flue gas exhaust temperature is a good indication of normal operating conditions The temperature usually does not fluctuat except during start-up, shutdown, and malfunction conditions.
27	Y-6	H	An allowance for water vapor is necessary in the procedures	EPA believes a cross reference is unnecessary since the general provisions

Comment Number	Commentator Number	Category	Comment	Response
			for determining opacity of emissions. Section 60.11(b) should be referenced by Section 60.252.	specified in Subpart A apply to all other subparts of Part 60.
28	Y-7	D	Monitoring of a source's operactions is not needed since they are required to comply with applicable standards.	Monitoring is needed to assure proper maintenance and operation of the facility and associated control equipment after the initial performance tests. Without some means of monitoring, degradation in emission control performance between performance tests could easi y go undetected.
29	Y-8, Y-23	G, F	Sampling of coal from open storage piles will not produce accurate moisture analyses. The moisture of coal at the surface of the pile will be different than the coal moisture at the interior of the pile.	Control of open storage piles is not required by these regulations. See response to comment 31.
30	Y-8	G	We interpret Method 9 to apply only to stack emissions. Application of opacity to fugitive emissions is subjective and impractical.	Method 9 applies to fugitive emissions as well as stack emissions. The applicability of Method 9 to fugitive emissions is discussed further in the "Reevaluation of Standards of Performance for Asphalt Concrete Plants", published on April 22, 1975 (40 FR 17778). See also responses to comments 6 and 47.
31	Y-8, Y-16, Y-19, Y-23	G, H, H, F	Fugitive emissions from coal open storage piles are dependent	Section 60.251(h) has been revised to make clear that open storage piles are not

Comment Number	Commentator Number	Category	Comment	Response
			upon so many variables; the effects of which are not reflected in the 20 percent opacity limitation proposed. Other than water sprays, control methods are not available to prevent dusting on windy days. Opacity standards should not be applied to controlling emissions from open storage piles. We suggest equipment standards to require sprays and enclosures for fugitive emission control.	considered "coal storage systems" for purposes of these regulations and are therefore not subject to the fugitive emission standard. It may be necessary to control fugitive emissions from open storage piles to meet State standards, however.
32	Y-11, Y-18	D,D	These standards should be confined to operations within a coal preparation plant and not extended to similar facilities at other locations.	The intent of the coal preparation plant regulations is not only to control emissions from coal preparation plants but also to control any coal processing and conveying equipment, coal storage system, or coal transfer and loading system which discharges particulate emissions into the atmosphere, regardless of its location.
33	Y-11	D	Hi-Vol samplers and meteorological stations should be used in lieu of monitoring requirements.	Hi-Vol samplers and meteorological stations measure ambient air quality and, therefore, are inadequate for the monitoring of control practices at particular sources.
34	Y-11	D	Daily sampling of dryer product is too frequent.	This requirement has been deleted from these regulations.
35	Y-12, Y-14, Y-15	F, G, D	Applying opacity standards to sources where emissions contain large volumes of water is unrealistic and unenforceable.	Through observations it has been determined that steam plumes can be distinguished from particle emissions. Special attention is given to steam plumes, attached and

Comment Number	Commentator Number	Category	Comment	Response
				detached, in Method 9 as revised on November 12, 1974 (39 FR 39872), to insure valid results for opacity readings.
36	Y-12, Y-15	F, D	Opacity standards should not be applied to coal handling equipment because such emissions are beyond the control capabilities of the owner or operator.	As discussed in Volume 1 of the background document, many types of particulate emission control are available to the owner or operator, thus no problem should be encountered in complying with opacity standards.
37	Y-12, Y-14, Y-15	F, G, D	Section 60.253 regarding monitoring requirements is poorly conceived. Other variables not considered are important.	In addition to continuous monitoring of pressure loss across the scrubber and dryer gas stream temperature at the exit, section 60.253 has been revised to include the continuous monitoring of water flow into the scrubber.
38	Y-13	A	The 0.03 gr/dscf standard is achievable. The 30 percent opacity limit for dryers seems too high and inconsistent with the proposed particulate standard.	As discussed in Section III of this supplement to the background document, the opacity standard for thermal dryers has been revised to take into account recent amendments to Method 9. EPA believes the revised standard (20%) is appropriate in terms of the observed data base and the purpose of the standard.
39	Y-14, Y-18	G, D	The regulations should provide exemptions for periods of startups, shutdowns, and malfunctions.	Sections 60.8(e) and 60.11(c) of the general provisions applicable to all subparts of 40 CFR Part 60, as amended on October 15, 1973 (38 FR 28564), in effect provide

Comment Number	Commentator Number	Category	Comment	Response
				exemptions where emissions unavoidably exceed applicable standards during periods of start-up, shutdown, or malfunction. It should be noted, however, that §60.11(d) requires proper maintenance and operation of affected facilities and associated control equipment during such periods.
40	Y-14	G	The requirement that cyclonic flow be eliminated during performance testing should be required unless it can be demonstrated that the particles in the gas stream are large enough to be stratified due to cyclonic flow. Provisions should be included within the regulations for approval of alternate test methods.	Although only small particles are not removed by a venturi scrubber, EPA tests have shown that the particles in typical stack effluent gases are relatively large; probably due to agglomeration in the saturated effluent environment. If other types of control equipment are used that do not produce these unfavorable test conditions, application for approval of alternative methods can be made. See 40 CFR 60.8 (b), as revised on March 8, 1974 (39 FR 9314).
41	Y-16, Y-17, Y-18	H, H D	The applicability of the regulation needs clarification. Power plants have coal handling, screening, crushing and thermal drying operations. The thermal drying operation has no emissions to the atmosphere and should therefore be excluded from the proposed standards.	When the standard was proposed it was thought that no thermal dryers existed other than "mine-mouth". Through several comments it is now known that thermal dryers do exist other than at mines and that many are closed systems. Although the standards do apply to all facilities regardless of location, they are not applicable to systems that are entirely closed so that there is no direct emission to the atmosphere.

Comment Number	Commentator Number	Category	Comment	Response
42	Y-16	H	State standards for control of fugitive emissions from open storage piles contain provisions that exempt the source during periods of adverse weather conditions. Similar provisions are needed for these regulations.	See response to comment 31.
43	Y-17	H	The monitoring requirements appear to be excessively costly in view of their minimal bene - fit.	Under section 60.253 continuous monitoring systems are required only on thermal dryers. EPA believes the monitoring requirements are necessary in view of the potential for large amounts of particulate emissions should the dryer and the air pollution control equipment not be properly operated. As discussed in the preamble to the final regulations, the cost of the monitoring instruments is minor when compared to the total costs of thermal dryers.
44	Y-17	H	Continuous monitors are too expensive and are not adaptable to monitoring of fugitive emissions from coal handling equipment.	Continuous monitoring of fugitive emissions from coal handling equipment is not required.
45	Y-18	D	Reference Method 9 should be cited as the procedure for determining opacity of emissions.	Section 60.11(b) of the general provisions applicable to all subparts of 40 CFR Part 60 specifies Method 9 as the procedure for determining opacity of visible emissions.
46	Y-18	D	An exemption of three minutes per hour should be added to	In view of the revision of visible emission observation procedures on November 12, 1974

Comment Number	Commentator Number	Category	Comment	Response
			opacity standards.	(see 39 FR 39872), and the provisions for start-ups, shutdowns and malfunctions promulgated on October 15, 1973 (see 38 FR 28564), an exemption of three minutes per hour for opacity standards is unnecessary.
47	Y-18	D	The opacity standards should not apply when the opacity is due to other sources.	According to Method 9 the observer's line of sight should not include more than one plume (or source) at a time. This applies not only to sources from other processes besides coal preparation, but to sources from other parts of the coal preparation process.
48	Y-21	A	Baghouse controls used on small 6 ton/hour thermal dryers can achieve compliance with a 0.02 gr/dscf standard.	Emission controls used on small pilot scale and sand dryers have not been demonstrated to be applicable to commercial size coal dryers. Although 0.02 gr/dscf is achievable at 35-40 inches water gage pressure drop for several coals, it is not universally achievable for all coals, especially Pocahontas and Sewell types.
49	Y-21	A	Under some conditions, emissions as low as 0.005 gr/dscf are achievable using venturi scrubber controls.	Considering all technical and economic factors, 0.03 gr/dscf is achievable at reasonable costs with commercially sized drying equipment. Although lower emission levels can always be achieved by exaggerated application of control techniques, the extreme conditions needed are not practical for commercial operations.

Appendix A

Visible Emissions: Six minute opacity averages

Plant: Coal Dumping and Ship Loading Operations

Plant Address: Lambert's Point (Norfolk), Virginia

Date: March 26, 1975

Time: 8:30 a.m. - 11:30 a.m.: Dumping Operations

1:00 p.m. - 4:30 p.m.: Ship Loading Operations

Observers: John Brown and John Davis

Type of Discharge: Fugitive Emissions

Type of Control: Water Sprays

Background: Blue Sky

Dumping Operations:

J. Davis - north dumper

J. Brown - south dumper

Coal Dumping

March 26, 1975

Period (six minute averages)	Brown (percent opacity)	Davis (percent opacity)	Comments
1	0	0.2	
2	0	0.0	
3	0	4.2	
4	2.3	2.5	
5	6.7	1.7	
6	5.4	1.7	
7	1.0	3.1	
8	1.9		process problems, north dumper shut down
9	0.6		
10	1.7		
11	2.1		
12	1.0		
13	2.9		
14	0.8		
15	0.6		
16	1.5		
17	0.0		
18	0.8		
19	4.6		
20	0.2		
21	1.5		
22	2.5		
23	0.6		

Coal Dumping

March 26, 1975

Period (six minute averages)	Brown (percent opacity)	Davis (percent opacity)	Comments
24	0.4		
25	2.1		
26	0.4		
27	2.5		
28	1.9		
29	1.0		
30	1.9		

Ship Loading
March 26, 1975

Period (six minute averages)	Brown (percent opacity)	Davis (percent opacity)
1	0.0	0.4
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.2	0.0
11	0.0	0.0
12	0.0	0.0
13	0.0	0.0
14	0.0	0.0
15	0.0	0.0
16	0.0	0.0
17	0.0	0.0
18	0.0	0.0
19	0.0	0.0
20	0.0	0.0
21	0.0	0.0
22	0.0	0.0
23	0.0	2.7

Ship Loading
March 26, 1975

Period (six minute averages)	Brown (percent opacity)	Davis (percent opacity)
24	0.0	0.0
25	0.0	0.0
26	3.5	
27	1.9	
28	0.6	
29	0.0	
30	0.0	

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Visible Emissions: Six minute opacity averages

Plant: Coal Preparation (air tables)

Company: Florence Mining Company

Plant Address: Seward, Pennsylvania

Date: January 31, 1975

Time: 10:53 a.m. to 11:55 a.m.
[illegible] p.m. to 1:00 p.m.

Observers: John Yates and W. C. McCord

Type of Discharge: Stack with balanced lid

Type of Control: Cyclone separator and baghouse

Stack Diameter: 3.9 feet

Background: McCord - gray plant wall with 100 percent cloud cover
Yates - black stack lid with 100 percent cloud cover

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Period (six minute averages)	McCord (percent opacity)	Yates (percent opacity)	Comments
1	0.0	5.8	
2	0.0	5.0	1 minute shutdown, relay switch check
3	0.0	4.0	
4	0.0	5.2	
5	0.0	6.0	
7	0.0	2.2	
8	0.0	0.8	
9	0.0	0.2	
10	0.0	0.2	
1	0.0	0.6	
2	0.0	0.0	
3	0.0	0.3	
4	0.0	1.0	
5	0.0	0.0	
5	0.0	0.0	
6	0.0	0.3	
7	0.0	0.0	
8	0.0	0.0	
9	0.0	0.0	
10	0.0	0.3	3 minute shut[illegible] [illegible] cl[illegible]

VPE3

Visible Emissions: Six Minute Opacity Average

Type of Plant: Coal Preparation

Plant Address: Vansant, Virginia

Date: 2/5/74 and 2/7/74

Observers: Sedman and Meyer

Type of Discharge: Stack and Baghouse

Type of Control: Scrubber Dryer, Baghouse, Rotoclone

Background:

Dryer Scrubber

9:37 - sky, blue with 0 percent cloud cover

11:00 - sky, blue with 60 percent cloud cover

11:10 - sky, blue with 20 percent cloud cover

11:30 - sky, blue with 30 percent cloud cover

12:09 - sky, blue with 0 percent cloud cover

1:10 - sky, blue with 40 percent cloud cover

1:35 - sky, blue with 60 percent cloud cover

2:54 - sky, blue with 0 percent cloud cover

Coal Transfer Baghouse

12:10 - hillside, brown with 40 percent cloud cover

12:48 - hillside, brown with 0 percent cloud cover

1:10 - hillside, brown with 50 percent cloud cover

Loadout Rotoclone Stack

12:10 - hillside with 40 percent to 60 percent cloud cover

12:48 - hillside with 0 percent cloud cover

1:14 - hillside with 40 percent to 60 percent cloud cover

Rotary Breaker Baghouse

side of building, gray metal with 100 percent cloud cover

Dryer Scrubber
Stack Diameter - 7 ft.
2/5/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	Comments
1	2.5	2.5	
2	0.8	1.2	
3	0.0	0.8	
4	2.1	1.2	
5	4.6	3.3	
6	5.4	3.5	
7	3.8	2.9	
8	0.4	0.5	
9	1.3	1.3	
10	0.0	0.4	
11	0.0	0.0	
12	0.0	0.0	
13	0.0	0.0	
14	0.0	0.0	
15	0.0	0.0	
16	0.0	0.0	
17	0.0	0.0	
18	0.0	0.0	
19	0.0	0.0	
20	0.0	0.0	
21	0.0	0.0	
22	0.0	0.0	
23	0.0	0.0	

Dryer Scrubber
Stack Diameter - 7 ft.
2/5/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	Comments
24	0.0	0.0	
25	0.0	0.0	
26	0.0	0.0	
27	0.0	0.0	
28	0.0	0.0	
29	0.0	0.0	
30	0.0	0.0	
31	0.0	0.0	
32	0.0	0.0	
33	0.0	0.0	
34	0.0	0.0	
35	0.0	0.0	
36	0.0	0.0	
37	0.0	0.0	
38	0.0	0.0	
39	0.0	0.0	
40	0.0	0.0	
41	0.0	0.0	
42	2.1	2.5	production cutback
43	0.4	0.4	
44	10.0	10.0	shutdown - 4 min.
45	-	-	break - 2 hours
46	20.9	21.9	start-up - [illegible]

Coal Transfer Baghouse
Stack Diameter - 2.5 ft.
2/5/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	Comments
1	0.0	0.0	
2	3.6	0.0	
3	0.0	0.0	
4	0.0	0.0	
5	4.6	4.4	
6	0.0	0.0	
7	0.0	0.0	
8	0.0	0.0	
9	0.0	0.0	
10	0.0	0.0	
11	0.0	0.0	
12	0.0	0.0	
13	0.0	0.0	
14	0.0	0.0	
15	0.0	0.0	
16	0.0	0.0	
17	0.0	0.0	
18	0.0	0.0	
19	0.0	0.0	
20	0.0		

Load Out Rotoclone Stack
Stack Diameter - 2.5 ft.
2/5/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	Comments
1	0.0	0.0	
2	0.0	0.0	
3	0.0	0.0	
4	0.0	0.0	
5	0.0	0.0	
6	0.0	0.0	
7	0.0	0.0	
8	0.0	0.0	
9	0.0	0.0	
10	0.0	0.0	
11	0.0	0.0	
12	0.0	0.0	
13	0.0	0.0	
14	0.0	0.0	
15	0.0	0.0	
16	0.0	0.0	
17	0.0	0.0	
18	0.0	0.0	
19	0.0	0.0	
20	0.0	0.0	

Rotary Breaker Baghouse
Duct Diameter - 1.8 ft.
2/7/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	Comments
1	0.0	0.0	
2	0.0	0.0	
3	0.0	0.0	
4	0.0	0.0	
5	0.0	0.0	
6	0.0	0.0	
7	0.0	0.0	
8	0.0	0.0	
9	0.0	0.0	
10	0.0	0.0	
11	0.0	0.0	
12	0.0	0.0	
13	0.0	0.0	
14	0.0	0.0	
15	0.0	0.0	
16	0.0	0.0	
17	0.0	0.0	
18	0.0	0.0	
19	0.0	0.0	
20	0.0	0.0	

VP#4

Visible Emissions: Six Minute Opacity Average

Type of Plant: Coal Preparation

Company Name: Island Creek

Plant Address: Jewell Valley, Virginia

Date: 2/6/74

Observers: Sedman and Meyer

Type of Discharge: Stack

Type of Control: Scrubber Dryer, Baghouse, Rotoclone Stack

Background: Scrubber Dryer - Sky, gray with 100 percent cloud cover

Coal Transfer Baghouse - Hillside, brown with 100 percent cloud cover

Coal Transfer Rotoclone Stack - Sky, gray with 100 percent cloud cover

Scrubber Dryer
Stack Diameter - 7 ft.
2/6/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	Comments
1	35.00	35.00	start-up - 18 min.
2	35.00	35.00	
3	35.00	35.00	
4	0.2	0.4	
5	8.3	6.9	upset - 6 min.
6	0.0	0.4	
7	0.0	0.0	
8	0.0	1.7	
9	4.6	4.6	
10	0.0	0.0	
11	0.0	0.0	
12	0.0	0.0	
13	17.1	15.8	upset - 3 min.
14	6.4	6.4	shutdown - 2 min.*
15	27.7	27.0	start-up - 8 min.
16	0.0	0.0	
17	0.0	0.0	
18	0.0	0.0	
19	8.4	9.2	shutdown - 4 min.

* 15 minute break between shutdown and start-up

Coal Transfer Baghouse
Stack Diameter
2/6/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	
1	0.0	0.0	
2	0.0	0.0	
3	0.0	0.0	
4	0.0	0.0	
5	0.0	0.0	
6	20.0	19.8	
7	19.4	20.8	
8	11.5	12.1	
9	0.0	0.0	
10	12.3	12.3	start-up - 6 min.*
11	0.0	0.0	
12	0.0	0.0	
13	1.3	1.9	shutdown - 2 min.

* 20 minute shutdown and break before start-up

Coal Transfer Rotoclone Stack
Stack Diameter - 2.5 ft.
2/6/74

Period (6 min. average)	Sedman (percent opacity)	Meyer (percent opacity)	
1	0.0	0.0	
2	0.0	0.0	
3	0.0	0.0	
4	0.0	0.0	
5	0.0	0.0	
6	18.1	15.8	
7	17.9	19.2	
8	4.8	8.5	
9	0.0	0.0	
10	13.3	15.2	start-up - 6 min.*
11	0.0	0.0	
12	0.0	0.0	
13	12.5	18.3	shutdown - 2 min.
14			

* 15 minute shutdown and break before start-up

Appendix B

Facilities

J. Fluid-bed thermal dryer. The plant operation is approximately 200 tons per hour of cleaned coal. All of the filter cake is fed to the dryer. A venturi-type scrubber is used to control particulate emission (ΔP of 43 inches w.g.). The coal processed is lower kittanning.

K. Fluid-bed thermal dryer. The dryer was designed to process 340 tons per hour of 1/4-inch x 0 cleaned bituminous coal (wet basis) and to discharge it at a rate of 312 tons per hour dried to a surface moisture of 4 percent (wet basis). The plant operation averages 400 tons per hour. All of the filter cake was fed to the dryer. The dryer is controlled by a multiclone bank followed by a flooded disk venturi scrubber (ΔP of 33 inches w.g.).

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-450/2-74-021-c	2.	3. RECIPIENT'S ACCESSION NO.
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16. ABSTRACT

This report is issued in connection with final promulgation of regulations for standards of performance for new and modified coal preparation plants. This document supplements information presented in two earlier background documents (EPA-450/2-74-021 a and b). This report contains a reevaluation of the standard for thermal dryers, a summary of undated control costs, a discussion of the inflationary effects of these control costs, and a projection of the annual power consumption increases required by the standards. It also contains a discussion of changes in the opacity standards for coal preparation plants.

17. KEY WORDS AND DOCUMENT ANALYSIS

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Standards of performance Coal preparation plants Control costs		

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