COMMONWEALTH of VIRGINIA

Department of Air Pollution Control

200-202 NORTH NINTH STREET
NINTH STREET OFFICE BUILDING, EIGHTH FLOOR
P. O. BOX 10089
RICHMOND, VIRGINIA 23240
(804) 786-2378
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WALLACE N. DAVIS
EXECUTIVE DIRECTOR

Mr. Charles E. Brinley
President and Chief Operating Officer
Dominion Terminal Associates
P. O. Box 967 A
Newport News, VA 23607

Location: Newport News
Registration No: 60997
County-Plant No: 2120-0074

Dear Mr. Brinley:

Attached is a permit to modify and operate a coal storage and export facility at Pier 11, Harbor Road, Newport News, Virginia in accordance with the provisions of the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution. This permit supersedes your permits dated November 24, 1987 and January 5, 1990.

In the course of evaluating the application and arriving at a final decision, the Department of Air Pollution Control (DAPC) deemed the application complete on September 9, 1992.

This approval to modify and operate shall not relieve Dominion Terminal Associates of the responsibility to comply with all other local, State, and Federal permit regulations.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision (the date you actually received this decision or the date in which it was mailed to you, whichever occurred first) within which to initiate an appeal of this decision by filing a Notice of Appeal with:

Wallace N. Davis, Director
Department of Air Pollution Control
200-202 North Ninth Street
Ninth Street Office Building, 8th Floor
Richmond, Virginia 23219

In the event that this decision is served on you by mail, three days are added to that period. Please refer to Part 2A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

The permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and civil penalty. Please read all permit conditions carefully.

If you have any questions concerning this permit, please contact the Director, Region VI at (804) 424-6707.

Sincerely,

Wallace N. Davis
Executive Director

WND/FLD/GTS/dta092.maj

Attachment: Permit

cc: Director, Division of Technical Evaluation
Director, Division of Data Analysis & Special Studies
Director, Region VI
Manager, Air Toxics Enforcement and Compliance

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WALLACE N. DAVIS
EXECUTIVE DIRECTOR

STATIONARY SOURCE PERMIT TO MODIFY AND OPERATE

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution,

Dominion Terminal Associates
P. O. Box 967 A
Newport News, Virginia

Registration No: 60997
County-Plant No: 2120-0074

is authorized to modify and operate

a coal storage and export facility

located at

Pier 11, Harbor Road
Newport News, Virginia

in accordance with Part I - Specific Conditions (emission limitations, monitoring and testing requirements), Part II - General Conditions, Part III - Document List and Appendix A of this permit.

Approved on .

Wallace N. Davis
Executive Director

Permit consists of 25 pages.
Part I - Specific Conditions 1 to 20.
Part II - General Conditions 1 to 11.
Part III - Document List, 9 items.
Appendix A.

PART I - SPECIFIC CONDITIONS - the regulatory reference and authority for each condition is listed in parentheses ( ) after each condition.

1. Dominion Terminal Associates is located at Pier 11, Harbor Road, Newport News, Virginia.

2. Modification and operation shall be as proposed in the permit application dated August 17, 1981, including amendment sheets dated August 25, 1981, October 19, 1989 and April 22, 1992. (Section 120-02-11 of State Regulations)

3. Existing permitted equipment consists of:

   - rotary rail car dumper and other coal handling and storage equipment

   - a permanent wet suppression system which can completely wet all coal storage piles

4. Coal dust emissions from the enclosed rotary rail car dumper shall be controlled by wet suppression which shall include the use of a surfactant. The surfactant to water ratio shall be in accordance with the manufacturer's recommendations. The minimum amount of water applied shall be 130 gallons per tandem dump. Compliance shall be achieved if there are no visible emissions. (Section 120-08-01 F of State Regulations)

5. Coal dust emissions from the transfer points and stacker/ reclaimers shall be controlled by wet suppression as necessary and by wet suppression with surfactant as necessary. Continuous wetting is not mandatory. (Section 120-08-01 F of State Regulations)

6. Coal dust emissions from the conveyor belts shall be controlled by conveyor hoods and wind guards. Ground level reclaim conveyor belts shall be controlled by wet suppression as necessary. (Section 120-08-01 F of State Regulations)

7. Coal dust emissions from each surge silo shall be controlled by a baghouse of at least 99% collection efficiency. The baghouses shall be provided with adequate access for inspection. Each baghouse shall be equipped with a device to continuously measure the differential pressure drop through the baghouse. The devices shall be installed in a readily accessible location and shall be maintained by the permittee such that they are in proper working order at all times. Compliance shall be achieved if there are no visible emissions. (Section 120-08-01 F of State Regulations)

8. Fugitive coal dust emissions from the storage piles shall be controlled by a wet suppression system capable of wetting the entire coal storage area. Wet suppression cycles shall be implemented in accordance with Appendix A. Each cycle shall consist of no less than 35,500 gallons of water and attain 100 percent coverage of the coal storage area.
(Section 120-08-01 F of State Regulations)

9. The yearly throughput of coal shall not exceed 24 x 10^6 tons, calculated as the sum of each 12 consecutive month period.
(Section 120-02-11 of State Regulations)

10. The maximum quantity of coal in storage at any one time shall not exceed 1.4 x 10^6 tons.
(Section 120-02-11 of State Regulations)

11. Emissions from the operation of the following activities shall not exceed the limitations specified below:

	Total Suspended Particulate	
Dumpers	0.2 lb/hr	0.5 tons/yr
Transfer Points	1.3 lb/hr	2.6 tons/yr
Stacker/Reclaimers	0.8 lb/hr	1.5 tons/yr
Auxiliary Vehicles	5.4 lb/hr	4.4 tons/yr
Coal Piles		45.2 tons/yr

	PM10	
Dumpers	0.04 lb/hr	0.1 tons/yr
Transfer Points	0.2 lb/hr	0.5 tons/yr
Stacker/Reclaimers	0.1 lb/hr	0.3 tons/yr
Auxiliary Vehicles	1.0 lb/hr	0.8 tons/yr
Coal Piles		8.1 tons/yr

These emissions are derived from the estimated overall emission contribution and are included for emission inventory purposes. Compliance shall be determined as stated in Specific Condition Nos. 4, 5, 6, 8, 13 and 16.
(Sections 120-05-0403 and 120-05-0303 of State Regulations)

12. The permittee shall apply wet suppression as necessary to all incoming loaded coal trains located within facility boundaries if they are not to be dumped within twenty-four (24) hours after arrival.
(Section 120-08-01 F of State Regulations)

13. When Dominion is using a piece of auxiliary coal handling equipment (e.g., front-end loader, bulldozer), the area to be worked shall be monitored and wet suppression shall be applied as necessary to control emissions.
(Section 120-08-01 F of State Regulations)

14. Whenever Dominion is using a particular piece of coal handling equipment (e.g., a dumper, a conveyor, etc.), it shall utilize the wet suppression controls for that piece of equipment unless the use of such equipment would cause a safety hazard or damage to the equipment from freezing.
(Section 120-02-11 of State Regulations)

15. All coal storage piles shall be truncated and the top compacted so as to minimize fugitive coal dust emissions.
(Section 120-05-0403 of State Regulations)

16. It is the intent of the control techniques and work practices contained in this permit to optimize particulate control from all emission points and to prevent visible particulate emissions throughout the facility. Dominion shall operate the facility, at all times, in accordance with the best known control strategies and work practices as prescribed in this permit to achieve the objective of no visible emissions. Where it is specified that water and/or surfactant is to be applied "as necessary", Dominion will apply water at any indication of visible emissions. The following measures shall be implemented:

    a. If emissions persist, surfactant will be added; and
    b. if emissions continue, the handling operations causing emissions will be stopped.
    c. At the first sign of dust emissions from the coal storage piles, additional wet suppression will be applied; and
    d. if emissions continue, sealant will be applied.

    A visible emission evaluation and inspection of the methodology to control dust shall be conducted on all emission points. The details of the test shall be arranged with the Department (Director, Region VI).
    (Sections 120-02-11 and 120-05-02 of State Regulations)

17. Dominion Terminal Associates shall install and operate a PM10 monitor at the Newport News Housing Authority Maintenance Building (180-J) to ascertain the ambient air quality in the area surrounding the coal terminal. Operation shall be in accordance with Appendix J of 40 CFR Part 50.
(Section 120-02-11 of State Regulations)

18. During each shift, one designated person shall be responsible for compliance with the procedures of Appendix A. Actions required in support of these procedures shall take precedence over routine coal handling procedures. The permittee shall have available written operating procedures for the affected facility and related air pollution control equipment. All operators shall be trained in the proper operation of the air pollution control equipment and shall be familiar with the written operating procedures. The permittee shall maintain records of training provided (names of trainees, date of training, and nature of training).
(Section 120-02-11 of State Regulations)

19. The following actions are considered detrimental to the control of coal emissions:

    a. Failure to stop any coal movement operation when it becomes known that installed air pollution control systems are inoperative and would cause excess emissions.

    b. Failure to stop a coal movement operation when it becomes known that the coal handling equipment needed for that operation is malfunctioning or operating significantly below designated specifications.

    c. Failure of equipment operators to take immediate precautions to preclude fugitive dust emissions from the operation of bulldozers, front-end loaders, automobiles or trucks (e.g., the use of water suppressant or limiting the speed of movement to below 10 miles per hour).

    d. Failure of operational personnel to give precedence to designated personnel with the responsibility for controlling dust emissions.
    (Section 120-02-11 of State Regulations)

20. The wet suppression system for the coal storage piles shall be implemented as specified in Appendix A or by any other procedure as may be approved by the Department of Air Pollution Control prior to use. Such approval shall be contingent on adequate documentation that any alternative procedure shall achieve at least as high an efficiency as Appendix A. This applies to all other dust control measures required by this permit. Requests for changes in procedure shall be accompanied by an explanation of the proposed changes and the anticipated effect they shall have. These requests, if approved by the Department of Air Pollution Control, shall be subject to a test and evaluation procedure prior to being accepted as permanent changes to the control procedures.
(Section 120-02-11 of State Regulations)

PART II - GENERAL CONDITIONS

1. The permittee shall retain records of all emission data and operating parameters required, to include daily storage and monthly throughput of coal, by the terms of this permit, including Appendix A. These records shall be maintained by the source for the most current five year period.
(Sections 120-05-05 and 120-06-05 of State Regulations)

2. The permittee shall develop, maintain, and have available to all operators good written operating procedures for all air pollution control equipment. A maintenance schedule for all such equipment shall be established and made available to the Department (Director, Region VI) for review. Records of service and maintenance shall be maintained on file by the source for the most current five year period.
(Section 120-02-11 of State Regulations)

3. If, for any reason, the permitted facility or related air pollution control equipment fails or malfunctions and may cause excess emissions for more than one hour, the owner shall notify the Department (Director, Region VI) within four (4) business hours of the occurrence. In addition, the owner shall provide a written statement, within seven (7) days, explaining the problem, corrective action taken, and the estimated duration of the breakdown/shut down.
(Section 120-02-34 of State Regulations)

4. This permit may be modified or revoked in whole or in part for cause, including, but not limited to, the following:

   a. Violation of any terms or conditions of this permit;

   b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

   c. A change in any condition that requires either a temporary or permanent reduction or elimination of a permitted discharge; or

   d. Information that the permitted discharge of any pollutant poses a threat to human health, welfare, or the environment.

   (Sections 120-02-11 and 120-08-01 of State Regulations)

5. The permitted facility is to be modified and operated as represented in the permit application referenced in Condition 2 of Part I. Any changes in the permit application specifications or any existing facilities which alter the emissions into ambient air

or alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(Sections 120-02-11 and 120-08-01 of State Regulations)

6. In the event of any change in control of ownership of the permitted source, the permittee shall notify the succeeding owner of the existence of this permit by letter and send a copy of that letter to the Department (Director, Region VI).
(Section 120-02-11 of State Regulations)

7. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the remainder of this permit shall not be affected thereby.
(Section 120-02-11 of State Regulations)

8. This permit approval is only applicable to the permit requirements of the State Air Pollution Control Board and does not alter permit requirements by any other local, state, or federal government agency. The permittee is cautioned that approval of this permit should not be construed to mean its operation is automatically in compliance with all aspects of the Regulations for the Control and Abatement of Air Pollution. Initial compliance shall be verified by visible emission evaluations and by other means (process rate, operating practice, etc.) as applicable. Continuing compliance shall be verified by Department personnel by constant surveillance in accordance with the State Air Pollution Control Board Regulations. Compliance with all air pollution regulations must be a continuing, full time effort.
(Section 120-02-11 of State Regulations)

9. Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate your prompt response to requests for information to include, as appropriate: fuel consumption by type, heat value, sulfur and ash content; process and production data; refuse disposal by incineration including auxiliary fuels burned; storage, handling and use of liquid organic compounds; and changes in stack data, control equipment, and operating schedules. Such requests for information from the Department will either be in writing or by personal contact. The availability of information submitted to the Department or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.1-340 through 2.1-348 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board), and § 120-02-30 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.
(Section 120-02-31 of State Regulations)

10. A copy of this permit shall be maintained on the premises of the facility to which it applies.
(Section 120-02-11 of State Regulations)

11. The permittee shall allow authorized state and federal representatives, upon the presentation of credentials:

    a. to enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;

    b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

    c. to inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and

    d. to sample or test at reasonable times. For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(Section 120-02-11 of State Regulations)

PART III - DOCUMENT LIST

1. Permit application, dated July 29, 1981 and signed by Mr. F. J. Manusco.

2. State Air Pollution Control Board, Region VI engineering analysis, dated September 10, 1981.

3. Mathematical Supplement to: "Control of Fugitive Emissions from Open Coal Storage in Newport News, Virginia," page 67, "Control Methodology."

4. Dominion Terminal Associates letter, dated May 3, 1989 and signed by Mr. Howard B. Phillips.

5. Revised permit application, dated October 19, 1989 and signed by Mr. Thomas N. Houck, P.E.

6. Department of Air Pollution Control, Region VI engineering analysis, dated November 22, 1989.

7. Dominion Terminal Associates letter, dated April 22, 1992 and signed by Mr. Charles E. Brinley.

8. Local approval letter dated June 29, 1992.

9. Department of Air Pollution Control, Region VI engineering analysis, dated September 16, 1992.

APPENDIX A

This appendix is to be considered a part of the State Air Pollution Control Board permit to operate the Dominion Terminal Associates (Dominion) coal terminal. All procedures outlined in this appendix are enforceable as a condition of operating.

Dominion shall record the following parameters on an hourly basis:

Average hourly temperature (T) in degrees Fahrenheit

Average hourly relative humidity (RH)

Average hourly wind speed in miles per hour (WS)

Average hourly wind direction (DIR)

Hourly rain in inches

Hourly occurrence of fog (visibility of 4 miles or less)

Density of air ρ from the equation ρ = -0.0001478(T) + 0.0853

Viscosity of air (1.68μ) from the following equations

$-24.88 < T \leq 32$	$1.68\mu = 0.0001207(T) + 0.0655479$
$32.00 < T \leq 64.40$	$1.68\mu = 0.0001493(T) + 0.0646353$
$64.40 < T \leq 104$	$1.68\mu = 0.0001344(T) + 0.0655899$

K as determined by the equation: $K = WS(T/RH)\ (\rho/\mu\ 1.68)$

Dominion shall use the data listed above for a computerized spreadsheet in a format as described below, maintaining the records to be submitted to the Board upon request.

The program outlined in Appendix A when properly programmed will provide for calling up on the hour a visual display (graph) which depicts the following:

a. $\underline{CE_{unc} \text{ for the KT predicted}}$: will change by the new hourly prediction of KT. At the end of the day will represent the potential uncontrolled coal emissions experienced in the past 24 hours.

b. <u>Slope of the uncontrolled intended movement with time for the PASS-1 system without controls</u>: will change by the new hourly prediction of KT.

c. <u>PASS-1 line, with hourly markings in proportion depicting the controlled to the hourly K, emission level attained when controls are applied</u>. This line's slope and value will vary as suppression cycles are applied. The extension of this line depicts the near <u>low end</u> of the day value in $\mu g/m^3$, if no further cycles are applied and is the primary control medium. It generates from the uncontrolled slope line (b.).

d. <u>PASS-0 line, depicting the controlled emissions level attained when controls are applied</u>. This line's slope as in (c) will vary as suppression cycles are applied. The extension of this line depicts the near <u>high end</u> of the day value in $\mu g/m^3$, if no further cycles are applied. When, due to cycles, the PASS-0 line and the PASS-1 line are one and the same, their extension <u>will be</u> the end of the day value attained for coal emissions in $\mu g/m^3$. It generates from the uncontrolled CE_{unc} line (a.).

e. <u>PASS-O (180) line, with hourly markings in proportions to the hourly K, depicting the controlled emission level when the wind direction is between 180° and 270°T</u>. This line is activated by wind direction inputs and holds the last highest value during periods when the wind is out of quadrant. Its extension represents the near end of day value in $\mu g/m^3$ at station 180-J if no further cycles are applied. This line also generates from the uncontrolled CE_{unc} line (a.).

COLUMN 1. TM — Records the hourly values for a 24 hour day, beginning with a 1 at 0100 hours and ending with a 24 at 2400 hours.

COLUMN 2. K — Computes and records the hourly value of K as follows:

$$K = ((WS * TEMP) / RH) * (\wp/1.68\mu)$$

COLUMN 3. KD — Computes and records the K factor adjusted for rain and freeze effects. KD is used to define the need for a cycle (C_i) administered by the computer controlled water suppression system. KD is computed as follows:

$$KD = K * F_{fr}$$

COLUMN 4. C_i — Records the total number of cycles credited on the hour. A 20-minute suppression cycle (35,500 gallons of water) sprayed from the computer controlled water suppression system counts as one cycle as well as a rain event greater than or equal to 0.0225 inches. Rain greater than or equal to 0.01 inches but less than 0.0225 inches is counted as one C_i if the adjusted rain amount for the hour is less than the actual rain amount.

COLUMN 5. SYM — Records the type of suppression cycle credited for the hour. Where:

A: represents an ASSURANCE CYCLE (one 20-minute spray cycle per hour from the computer controlled water suppression system).

F: represents a continuous cycle (three 20-minute spray cycles per hour) administered to recover from a freeze event.

R: represents a rain event credited as a cycle.

1: represents a DEMAND I cycle, where KD is greater than or equal to 10, but, less than 15.

2: represents a DEMAND II cycle, where KD is greater than or equal to 15, but, less than 30.

3: represents a DEMAND III cycle, where KD is greater than or equal to 30, but, less than 45.

4: represents a DEMAND IV cycle, where KD is greater than or equal to 45.

COLUMN 6. ΣC_i Records the total number of cycles credited since 0100 or the sum of COLUMN 4.

COLUMN 7. IR Records the amount of rain in inches for the hour as measured by the rain gauge.

NOTE: CIR, the total amount of rain credited for the hour is computed as follows: CIR = IR if it is raining, but adds 0.0225 to IR if a DEMAND 4 RBC is administered. IRadj, the adjusted rain amount for the hour is also computed to include the effects of non-consecutive rains, where:

$$IRadj = CIR_{n-1} / (HRS_{n-1} + 1)$$

when IR > 0 and HRS > 0

$IRadj = SUMIR_{n-1} / (HRS_{n-1} + 1)$
when IR > 0,
SUMIR ≥ 0.0225;
and HRS = 0

IRadj = 0 when IR = 0, and
SUMIR < 0.0225

COLUMN 8. HRS Records the number of hours following a rainfall. HRS increases by one each hour after the rain ends, and continues to do so until another rain begins or until the effects of the rain are over ($F_r \geq 0.9$ or HRS = 48)

NOTE: If a DEMAND 4 cycle is administered in order to recover from a freeze, HRS is initially set to 0.5 instead of 1.

HRS = 0 when C_i = 3 and
FIR_{n-1} = 0 or
F_{frn-1} < 1

HRS = 0 when IR > 0 and
SUMIR > 0.0225

HRS = 0.5 when C_i = 3; FIR_{n-1} > 0;
and $F_{frn-1} \geq 1$

$HRS = HRS_{n-1} + 1$ when IR > 0 and
SUMIR ≤ 0.0225
or
when IR = 0;
SUMIR > 0.0225

NOTE: If TM = 24 and HRS < 48 and F_r < 0.9 then HRS and SUMIR are carried forward to the next day. If HRS = 48 or $F_r \geq 0.9$ the post rain effect has reached its limits. On the next hour, F_r = 1, HRS = 0, and SUMIR = 0.

COLUMN 9. SUMIR Computes and records the effective sum of the hourly rainfall as follows:

SUMIR = 0	when	CIR = 0 and $SUMIR_{n-1} < 0.0225$
$SUMIR = SUMIR_{n-1}$	when	CIR = 0 and $SUMIR_{n-1} \geq 0.0225$
SUMIR = CIR	when	CIR > 0; $(IR + IR_{n-1}) < 0.0225$;
	and	$F_{frn-1} = 1$
SUMIR = CIR	when	CIR > 0; $(IR + IR_{n-1}) < 0.0225$ $F_{frn-1} < 1$; $CIR_{n-1} > 0$; and $C_i = 3$
$SUMIR = IR + SUMIR_{n-1}$	when	CIR > 0' $(IR + IR_{n-1}) < 0.0225$; $F_{frn-1} < 1$; $CIR_{n-1} > 0$; and $C_i < 3$

$SUMIR = IRadj_{n-1} + CIR$ when $CIR > 0$;
$(IR + IR_{n-1}) < 0.0225$
$F_{frn-1} < 1$;
$CIR_{n-1} = 0$;

$SUMIR = IRadj_{n-1} + CIR$ when $CIR > 0$; and
$(IR + IR_{n-1}) \geq 0.0225$

NOTE: If $F_r = 1$ or HRS = 48 then SUMIR is set to zero the next hour.

COLUMN 10. F_r Computes and records the post rain recovery factor. F_r ranges from zero to one, with F_r set to zero during a rain. When $F_r \geq 0.9$, the effects of the rain are considered over, and F_r is set to one on the next hour. F_r is computed as follows:

$F_r = 0$ when CIR < 0.0225 and SUMIR $\geq$ 0.0225

$F_r = 1$ when CIR < 0.0225 and SUMIR < 0.0225

$F_r = 10^{(-215.66*24*SUMIR/(HRS*KT))}$ when CIR < 0.0225 and SUMIR < 0.0225

COLUMN 11. F_{fr} Computes and records the combined effects of rain and freeze, where $F_{fr} = F_r * F_f$.

F_f (the post freeze effect) is calculated as follows:

$F_f = ((SUMKF * FHRS)/(FIR * 106)) * 4.02917 + 0.305$ when FIR > 0 and SUMKF > 0

$F_f = 1$ when FIR = 0 or SUMKF = 0

SUMKF (the sum of the freeze shear) is calculated by summing the K values beginning when the temperature reaches 29°F until $F_r \leq 0.1$ or until continuous cycles are administered.

FIR (the potential freeze water) is calculated as follows:

FIR = SUMKF/19200 when FIR_{n-1} = 0;
SUMIR = 0;
FHRS = 8; and
SUMKF > 0

FIR = FIR_{n-1} when FIR_{n-1} = 0;
SUMIR = 0
FHRS ≠ 8 and
SUMKF > 0

or

when FIR_{n-1} > 10;
F_r = 1; and
$SUMIR + SUMIR_{n-1} \leq FIR_{n-1}$;

FIR = SUMIR for all other conditions

FHRS (the potential freeze hours) is calculated as follows:

FHRS = 0 when SUMIR = 0 and
SUMKF = 0

FHRS = HRS when SUMIR > 0 and
SUMKF = 0

FHRS = HRS when SUMKF > 0;
TEMP > 34°F; and
F_r < 0.1

FHRS = FHRS + 1 when SUMKF > 0; and
TEMP ≤ 34°F or
$F_r \geq 0.1$

COLUMN 12. KT Computes and records the predicted sum of K at the end of the day as follows:

$$KT_n = K_1 + K_2 + K_3 + \ldots K_n + K_n(24\text{-}TM)$$

EXAMPLE:

TM	K
1	10
2	10
3	20

$$KT_3 = 10 + 10 + 20 + 20(24\text{-}3) = 460$$

COLUMN 13. H_{vi} Computes and records the estimated amount of dust entering the HVS during the hour as follows:

$$H_{vi} = Ksum * Sl * F_{fr}$$

where:

Ksum is the sum of the K values within the current cycle set.

Sl is the slope of the sumH_{vi} line for the current cycle set, and is computed as follows:

At TM = 1

$Sl = sb$ when $C_i = 0$

where sb(base slope) = CE_{unt}/KT

$Sl = sb * (1\text{-}eff)$ when $C_i > 0$

For all other times (n):

$Sl = Sl_{cin-1} * (1\text{-}eff)_n$

where Sl_{ci-1} is the last value of Sl in the previous C_i sequence Sl_{ci-1} = sb prior to any cycles.

(1-eff) term calculates the efficiency of the last cycle administered and is calculated as follows:

Equation A:

$(1\text{-}eff)_a = (1-(36.657299 * 10^{(-0.00189215 * Ksum)}/100))C_{seq}$

Equation B:

$(1\text{-}eff)_b = (1-((-0.0146913 * Ksum + 14.65059)/100))C_{seq}$

Equation A can be used to calculate the efficiencies when KT < 288 otherwise use Equation B until

$slope_{n-1} * (1\text{-}eff)_b \leq sp$(shift point)

where sp = 0.6256838 - 0.0008297 * KT

then switch to Equation A.

NOTE: At the beginning of the day, (1-eff) = 1 until a cycle occurs. If a cycle is credited at time 1 (cycle performed at TM 0000) then the equation for (1-eff) changes as follows: KT replaces Ksum, and the calculation is multiplied by C_{seq} instead of raised to its power. The slope then remains constant until another cycle/cycles are administered.

C_{seq} is the cycle sequence for the current cycle set.

where: $C_{seq} = 0$ when $C_i = 0$

$C_{seq} = C_{seqn-1}$ when $C_{in} = C_{in-1}$

$C_{seq} = 0.5$ when $C_{in} > C_{in-1}$;
$F_{fr} > 1$;
and $C_i = 1$

$C_{seq} = 1$ when $C_i = 1$ or 3

$C_{seq} = 2$ when $C_i = 2$

EXAMPLE: KT(at TM = 4) = 368.60 i.e. ≥ 288
sb = 0.40804
sp = 0.31986

TM	K	RBC	Ksum	(1-eff)	C_{seq}	Sl	F_{fr}	H_{vi}
1	20.10	0	20.10	1.0	0	0.408	1.0	8.2024
2	17.00	0	37.10	1.0	0	0.408	1.0	15.1398
3	16.50	1	16.50	0.85592	1	0.349	1.0	15.7631
4	15.00	1	31.50	0.85592	1	0.350	1.0	11.0307

COLUMN 14. ΣH_{vi} Computes and records the sum of the coal dust in the HVS (Hi Vol Sampler) to the hour as follows:

$$\Sigma H_{vi} = H_{vi} + \Sigma H_{vicin-1}$$

where $\Sigma H_{vicin-1}$ is the last value of ΣH_{vi} in the previous cycle sequence.

EXAMPLE: Using the values from the previous example:

TM	$\Sigma H_{vicin-1}$	ΣH_{vi}
1	0.0	8.2024
2	0.0	15.1398
3	15.1398	20.9029
4	15.1398	26.1705

COLUMN 15. HVT Computes and records the projected amount of dust on the HVS filter at the end of the day if no further cycles were administered.

$HVT = \Sigma H_{vi} + KL * Sl * (1\text{-}eff)$

where $KL = KT - sum(K_1 + K_2 + . . . K_n)$

(1-eff) is the same as COLUMN 14 except that KL is used in the expression instead of Ksum.

COLUMN 16. TEMP Records the temperature in degrees fahrenheit.

COLUMN 17. RH Records the relative humidity (percent)

COLUMN 18. WD Records the wind direction (degrees)

COLUMN 19. WS Records the wind speed (mi/hr)

COLUMN 20. $\#C_c$ Records the number of suppression cycles credited for hour. The suppression cycles are only credited when the wind is blowing within the 180 to 270 degree quadrant.

COLUMN 21. ΣHVIc Computes and records the sum of the dust in the HiVol accumulated when the wind is blowing within the 180 to 270 degree quadrant.

Until such time that the control program display (graph) is installed, programmed and functional the following minimum cycle requirements in accordance with the values of "K" will be implemented:

From 0001 to 1200 daily

When the value of "KD" is equal to or greater than 10, Dominion shall commence a full coverage "DEMAND I" water spray suppression cycle of at least 35,500 gallons of water on its respective metallurgical coal piles.

This "DEMAND I" cycling of the suppression water shall be repeated as long as the value of "KD" remains above 10, with one hour delays between cycles. Such times for commencement to be on the hour as dictated by the computed value of "KD."

When the value of "KD" equals or exceeds 15 as computed on the hour, a "DEMAND II" cycle shall commence on all coal piles with no less than 35,500 gallons of water administered on the hour and continue each hour on the hour until the value drops below the value of 15. The normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for "KD" is lower than 10.

When the value of "KD" equals or exceeds 30 as computed on the hour, a "DEMAND III" cycle shall commence on all coal piles with no less than 71,000 gallons of water. A "DEMAND III" cycle is defined as a double cycle or a back to back cycle. This endeavor will continue on the hour until the "KD" value drops back below the value of 30. The "DEMAND II" sequence will then commence until the value drops below 15 and subsequently the normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for "KD" is less than 10.

When the value of "KD" equals or exceeds 45 as computed on the hour, continuous cycling (DEMAND IV) will commence until the value of "KD" drops below 45, when DEMAND III, II or I shall commence as previously outlined.

From 1201 to 2400 daily

When the value of "KD" is equal to or greater than 11, Dominion shall commence a full coverage "DEMAND I" water spray suppression cycle of at least 35,500 gallons of water on its respective metallurgical coal piles.

This "DEMAND I" cycling of the suppression water shall be repeated as long as the value of "KD" remains above 11, with one hour delays between cycles. Such times for commencement to be on the hour as dictated by the computed value of "KD."

When the value of "KD" equals or exceeds 17 as computed on the hour, a "DEMAND II" cycle shall commence on all coal piles with no less than 35,500 gallons of water administered on the hour and continue each hour on the hour until the value drops below the value of 17. The normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for "KD" is lower than 11.

When the value of "KD" equals or exceeds 34 as computed on the hour, a "DEMAND III" cycle shall commence on all coal piles with no less than 71,000 gallons of water. A "DEMAND III" cycle is defined as a double cycle or a back to back cycle. This endeavor will continue until the "KD" value drops below the value of 34. The "DEMAND II" sequence will then commence until the value drops below 17 and subsequently the normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for "KD" is lower than 11.

When the value of "KD" equals or exceeds 51 as computed on the hour, continuous cycling (DEMAND IV) will commence until the value of "KD" drops below 51, when DEMAND III, II, or I shall commence as previously outlined.

Each day will have at least four "ASSURANCE" cycles on all metallurgical coal piles regardless of the values of "KD." On days when the hourly values of "KD" are all below 10 prior to 0300, an "ASSURANCE" cycle shall be conducted at that time. If the hourly values of "KD" continue below 10 until 0700, a second "ASSURANCE" cycle shall be conducted at that time. Similarly again at 1100 and 1300. "DEMAND I" cycle requirements or a trace or rain prior to or between 0300 and 1400 shall count as one or more of these four "ASSURANCE" cycles required per day.

OCR

The following pages contain the Optical Character Recognition text of the preceding scanned images.

Mr. Charles E. Brinley
President and Chief Operating Officer
Dominion Terminal Associates
P. 0. Box 967 A
Newport News, VA 23607
Location: Newport News
Registration No: 60997
County-Plant No: 2120-0074
Dear Mr. Brinley:

Attached is a permit to modify and operate a coal stdrage and export facility at Pier 11, Harbor Road, Newport News, Virginia in accordance with the provisions of the Commonwealth of Virginia Regulations for the Control and

Abatement of Air Pollution. This permit supersedes your permits dated November 24, 1987 and January 5, 1990.

In the course of evaluating the application and arriving at a final decision, the Department of Air Pollution Control (DAPC) deemed the application complete on September 9, 1992.

This approval to modify and operate shall not relieve Dominion Terminal Associates of the responsibility to comply with all other local, State, and Federal permit regulations.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision (the date you actually received

this decision or the date in which it was mailed to you, whichever occurred first) within which to initiate an appeal of this decision by filing a Notice of Appeal with:

Wallace N. Davis, Director
Department of Air Pollution Control
200-202 North Ninth Street
Ninth Street Office Building, 8th Floor
Richmond, Virginia 23219

In the event that this decision is served on you by mail, three days are added to that period. Please refer to Part 2A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

The permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and civil penalty.. Please read all permit

conditions carefully.

If you have any questions concerning this permit, please contact the Director, Region VI at (804) 424-6707.

Sincerely,

Wallace N. Davis
Executive Director

WND/FLD/GTS/dtaO92.mai

Attachment: Permit

cc: Director, Division of Technical Evaluation
Director, Division of Data Analysis & Special Studies
Director, Region VI
Manager, Air Toxics Enforcement and Compliance

STA TF AIR POLLUTION CONTROL BOARD
WALLACE E. REED, CHAIRMAN
CHARLOTTESVILLE
TIMOTHY E BARROW.
VICE CHAIRMAN
COMMONWEALTH of VI"'GINIA
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FRANCES C KIEFFER NINTH STREET OFFICE BUILDING, EIGHTH FLOOR
FAIRFAX
P. 0. BOX 10089
HORACE McCLERKLIN RICHMOND, VIRGINIA 23240
ALEXANDRIA
(804) 786- 2 3 78
FAX # (804) 225-3933
TDD # (804) 371-8471

STATIONARY SOURCE PERMIT TO MODIFY AND OPERATE

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution,

Dominion Terminal Associates
P. 0. Box 967 A
Newport News, Virginia

Registration No: 60997
County-Plant No: 2120-0074

is authorized to modify and operate

a coal storage and export facility

located at

Pier 11, Harbor Road
Newport News, Virginia

in accordance with Part I - Specific Conditions (emission limitations, monitoring and testing requirements), Part II - General Conditions, Part III Document List and Appendix A of this permit.

Approved on

Wallace N. Davis
Executive Director

Permit consists of 25 pages.
Part I - Specific Conditions 1 to 20.
Part II - General Conditions 1 to 11.
Part III - Document List, 9 items.
Appendix A.

PART I - SPECIFIC CONDITIONS - the regulatory reference and authority for each condition is listed in parentheses ( ) after each condition.

1. Dominion Terminal Associates is located at Pier 11, Harbor Road, Newport News, Virginia.

2. Modification and operation shall be as proposed in the permit application dated August 17, 1981, including amendment sheets dated August 25, 1981, October 19, 1989 and April 22, 1992. (Section 120-02-11 of State Regulations)

3. Existing permitted equipment consists of:

- rotary rail car dumper and other coal handling and storage equipment

- a permanent wet suppression system which can completely wet all coal storage piles

4. Coal dust emissions from the enclosed rotary rail car dumper shall be controlled by wet suppression which shall include the use of a surfactant. The surfactant to water ratio shall be in accordance with the manufacturer's recommendations. The minimum amount of water applied shall be 130 gallons per tandem dump. Compliance shall be achieved if there are no visible emissions. (Section 120-08-01 F of State Regulations)

5. Coal dust emissions from the transfer points and stacker/ reclaimers shall be controlled by wet suppression as necessary and by wet suppression with surfactant as necessary. Continuous wetting is not mandatory. (Section 120-08-01 F of State Regulations)

6. Coal dust emissions from the conveyor belts shall be controlled by conveyor hoods and wind guards. Ground level reclaim conveyor belts shall be controlled by wet suppression as necessary. (Section 120-08-01 F of State Regulations)

7. Coal dust emissions from each surge silo shall be controlled by a baghouse of at least 99% collection efficiency. The baghouses shall be provided with adequate access for inspection. Each baghouse shall be equipped with a device to continuously measure the differential pressure drop through the baghouse. The devices shall be installed in a readily accessible location and shall be maintained by the permittee such that they are in proper working order at all times. Compliance shall be achieved if there are no visible emissions. (Section 120-08-01 F of State Regulations)

8. Fugitive coal dust emissions from the storage piles shall be controlled by a wet suppression system capable of wetting the entire coal storage area. Wet suppression cycles shall be implemented in accordance with Appendix A. Each cycle shall consist of no less than 35,500 gallons of water and attain 100 percent coverage of the coal storage area.
(Section 120-08-01 F of State Regulations)

9. The yearly throughput of coal shall not exceed 24 x 106 tons, calculated as the sum of each 12 consecutive month period.
(Section 120-02-11 of State Regulations)

10. The maximum quantity of coal in storage at any one time shall not exceed 1.4 x 106 tons.
(Section 120-02-11 of State Regulations)

11. Emissions from the operation of the following activities shall not exceed the limitations specified below:

Total Suspended
Particulate

Dumpers 0.2 lb/hr 0.5 tons/yr
Transfer Points 1.3 lb/hr 2.6 tons/yr
Stacker/Reclaimers 0.8 lb/hr 1.5 tons/yr
Auxiliary Vehicles 5.4 lb/hr 4.4 tons/yr
Coal Piles 45.2 tons/yr

PMIO

Dumpers 0.04 lb/hr 0.1 tons/yr
Transfer Points 0.2 lb/hr 0.5 tons/yr
Stacker/Reclaimers 0.1 lb/hr 0.3 tons/yr
Auxiliary Vehicles 1.0 lb/hr 0.8 tons/yr
Coal Piles 8.1 tons/yr

These emissions are derived from the estimated overall emission contribution and are included for emission inventory purposes. Compliance shall be determined as stated in Specific Condition Nos. 4, 5, 6, 8, 13 and 16.
(Sections 120-05-0403 and 120-05-0303 of State Regulations)

12. The permittee shall apply wet suppression as necessary to all incoming loaded coal trains located within facility boundaries if they are not to be dumped within twenty-four (24) hours after arrival.
(Section 120-08-01 F of State Regulations)

13. When Dominion is using a piece of auxiliary coal handling equipment (e.g., front-end loader, bulldozer), the area to be worked shall be monitored and wet suppression shall be applied as necessary to control emissions.
(Section 120-08-01 F of State Regulations)

14. Whenever Dominion is using a particular piece of coal handling equipment (e.g., a dumper, a conveyor, etc.), it shall utilize the wet suppression controls for that piece of equipment unless the use of such equipment would cause a safety-hazard or damage to the equipment from freezing.
(Section 120-02-11 of State Regulations)

15. All coal storage piles shall be truncated and the top compacted so as to minimize fugitive coal dust emissions.
(Section 120-05-0403 of State Regulations)

16. It is the intent of the control techniques and work practices contained in this permit to optimize particulate control from all emission points and to prevent visible particulate emissions throughout the facility. Dominion shall operate the facility, at all times, in accordance with the best known control strategies and work practices as prescribed in this permit to achieve the objective of no visible emissions. Where it is specified that water and/or surfactant is to be applied "as necessary", Dominion will apply water at any indication of visible emissions. The following measures shall be implemented:

a. If emissions persist, surfactant will be added; and
b. if emissions continue, the handling operations causing emissions will be stopped.
C. At the first sign of dust emissions from the coal storage piles, additional wet suppression will be applied; and
d. if emissions continue, sealant will be applied.

A visible emission evaluation and inspection of the methodology to control dust shall be conducted on all emission points. The details of the test shall be arranged with the Department (Director, Region VI).
(Sections 120-02-11 and 120-05-02 of State Regulations)

17. Dominion Terminal Associates shall install and operate a PM10 monitor at the Newport News Housing Authority Maintenance Building (180-J) to ascertain the ambient air quality in the area surrounding the coal terminal. Operation shall be in accordance with Appendix J of 40 CFR Part 50.
(Section 120-02-11 of State Regulations)

18. During each shift, one designated person shall be responsible for compliance with the procedures of Appendix A. Actions required in support of these procedures shall take precedence over routine coal handling procedures. The permittee shall have available written operating procedures for the affected facility and related air pollution control equipment. All operators shall be trained in the proper operation of the air pollution control equipment and shall be familiar with the written operating procedures. The permittee shall maintain records of training provided (names of trainees, date of training, and nature of-training).
(Section 120-02-11 of State Regulations)

19. The following actions are considered detrimental to the control of coal emissions:

a. Failure to stop any coal movement operation when it becomes known that installed air pollution control systems are inoperative and would cause excess emissions.

b. Failure to stop a coal movement operation when it becomes known that the coal handling equipment needed for that operation is malfunctioning or operating.significantly below designated specifications.

C. Failure of equipment operators to take immediate precautions to preclude fugitive dust emissions from the operation of bulldozers, front-end loaders, automobiles or trucks (e.g., the use of water suppressant or limiting the speed of movement to below 10 miles per hour).

d. Failure of operational personnel to give precedence to designated personnel with the responsibility for controlling dust emissions.
(Section 120-02-11 of State Regulations)

20. The wet suppression system for the coal storage piles shall be implemented as specified in Appendix A or by any other procedure as may be approved by the Department of Air Pollution Control prior to use. Such approval shall be contingent on adequate documentation that any alternative procedure shall achieve at least as high an efficiency as Appendix A. This applies to all other dust control measures required by this permit. Requests for changes in procedure shall be accompanied by an explanation of the proposed changes and the anticipated effect they shall have. These requests, if approved by the Department of Air Pollution Control, shall be subject to a test and evaluation procedure prior to being accepted as permanent changes to the control procedures.
(Section 120-02-11 of State Regulations)

PART 11 GENERAL CONDITIONS

1. The permittee shall retain records of all emission data and operating parameters required, to include daily storage and monthly throughput of coal, by the terms of this permit, including Appendix A. These records shall be maintained by the source for the most current five year period.
(Sections 120-05-05 and 120-06-05 of State Regulations)

2. The permittee shall develop, maintain, and-have available to all operators good written operating procedures for all air pollution control equipment. A maintenance schedule for all such equipment shall be established and made available to the Department (Director, Region VI) for review. Records of service and maintenance shall be maintained on file by the source for the most current five year period.
(Section 120-02-11 of State Regulations)

3. If, for any reason, the permitted facility or related air pollution control equipment fails or malfunctions and may cause excess emissions for more than one hour, the owner shall notify the Department (Director, Region VI) within foyr (4) business hours of the occurrence. In addition, the owner shall provide a written statement, within seven (7) days, explaining the problem, corrective action taken, and the estimated duration of the breakdown/shut down.
(Section 120-02-34 of State Regulations)

4. This permit may be modified or revoked in whole or in part for cause, including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

C. A change in any condition that requires either a temporary or permanent reduction or elimination of a permitted discharge; or

d. Information that the permitted discharge of any pollutant poses a threat to human health, welfare, or the environment.

(Sections 120-02-11 and 120-08-01 of State Regulations)

5. The permitted facility is to be modified and operated as represented in the permit application referenced in Condition 2 of Part I. Any changes in the permit application specifications or any existing facilities which alter the emissions into ambient air

or alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(Sections 120-02-11 and 120-08-01 of State Regulations)

6. In the event of any change in control of ownership of the permitted source, the permittee shall notify the succeeding owner of the existence of this permit by letter and send a copy of that letter to the Department (Director, Region VI).
(Section 120-02-11 of State Regulations) -

7. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the remainder of this permit shall not be affected thereby.
(Section 120-02-11 of State Regulations)

8. This permit approval is only applicable to the permit requirements of the State Air Pollution Control Board and does not alter permit requirements by any other local, state, or federal government agency. The permittee is cautioned that approval of this permit should not be construed to mean its operation is automatically in compliance with all aspects of the Regulations for the Control and Abatement of Air Pollution. Initial compliance shall be verified by visible emission evaluations and by other means (process rate, operating practice, etc.) as applicable. Continuing compliance shall be verified by Department personnel by constant surveillance in accordance with the State Air Pollution Control Board Regulations. Compliance with all air pollution regulations must be a continuing, full time effort.
(Section 120-02-11 of State Regulations)

9. Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate your prompt response to requests for information to include, as appropriate: fuel consumption by type, heat value, sulfur and ash content; process and production data; refuse disposal by incineration including auxiliary fuels burned; storage, handling and use of liquid organic compounds; and changes in stack data, control equipment, and operating schedules. Such requests for information from the Department will either be in writing or by personal contact. The availability of information submitted to the Department or the Board will be governed by applicable provisions of the Freedom of Information Act, ss 2.1-340 through 2.1-348 of the Code of Virginia, s 10.1-1314 (addressing information provided to the Board), and s 120-02-30 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.
(Section 120-02-31 of State Regulations)

10. A copy of this permit shall be maintained on the premises of the facility to which it applies.
(Section 120-02-11 of State Regulations)

11. The permittee shall allow authorized state and federal representatives, upon the presentation of credentials:

a. to enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;

b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

C. to inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and

d. to sample or test at reasonable times. For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(Section 120-02-11 of State Regulations)

PART III - DOCUMENT LIST

1. Permit application, dated July 29, 1981 and signed by Mr. F. J. Manusco.

2. State Air Pollution Control Board, Region VI engineering analysis, dated September 10, 1981.

3. Mathematical Supplement to: "Control of Fugitive Emissions from Open Coal Storage in Newport News, Virginia," page 67, "Control Methodology."

4. Dominion Terminal Associates letter, dated May 3, 1989 and signed by Mr. Howard B. Phillips.

5. Revised permit application, dated October 19, 1989 and signed by Mr. Thomas N. Houck, P.E.

6. Department of Air Pollution Control, Region VI engineering analysis, dated November 22, 1989.

7. Dominion Terminal Associates letter, dated April 22, 1992 and signed by Mr. Charles E. Brinley.

8. Local approval letter dated June 29, 1992.

9. Department of Air Pollution Control, Region VI engineering analysis, dated September 16, 1992.

APPENDIX A

This appendix is to be considered a part of the State Air Pollution Control Board permit to operate the Dominion Terminal Associates (Dominion) coal terminal. All procedures outlined in this appendix are enforceable as a condition of operating.

Dominion shall record the following parameters on an hourly basis:

Average hourly temperature (T) in degrees-Fahrenheit

Average hourly relative humidity (RH)

Average hourly wind speed in miles per hour (WS)

Average hourly wind direction (DIR)

Hourly rain in inches

Hourly occurrence of fog (visibility of 4 miles or less)

Density of airp from the equationp = -0.0001478(T) + 0.0853

Viscosity of air (1.68,O) from the following equations

-24.88 < T 32 1.68A = 0.0001207(T) + 0.0655479
32.00 < T 64.40 1.68M = 0.0001493(T) + 0.0646353
64.40 < T 104 1.68,0 = 0.0001344(T) + 0.0655899

K as determined by the equation: K = WS(T/RH) (ply 1.68)

Dominion shall use the data listed above for a computerized spreadsheet

in a format as described below, maintaining the records to be submitted to the

Board upon request.

The program outlined in Appendix A when properly programmed will provide for calling up on the hour a visual display (graph) which depicts the following:

a. CEu.r, for the KT predicted: will change by the new hourly prediction of KT. At the end of the day will represent the potential uncontrolled coal emissions experienced in the past 24 hours..

b. Slope of the uncontrolled intended movement with time for the PASS-1 system without controls: will change by the new hourly prediction of KT.

C. PASS-1 line, with hourly markings in proportion depicting the controlled to the hourly K, emission level attained when controls are applied. This line's slope and value will vary as suppression.cycles are applied. The extension of this line depicts the near low end of the day value in /jg/M3, if no further cycles are applied and is the primary control medium. It generates from the uncontrolled slope line (b.).

d. PASS-0 line, depicting the controlled emissions level attained when controls are applied. This line's slope as in (c) will vary as suppression cycles are applied. The extension of this line depicts the nearbigh end of the day value in Yg/M3, if no further cycles are applied. When, due to cycles, the PASS-0 line and the PASS-1 line are one and the same, their extension will be the end of the day value attained for coal emissions in Ag/M3. It generates from the uncontrolled CE... line (a.).

e. PASS-0 (180) line, with hourly markings in grogortions to the hourly K. depicting the controlled emission level when the wind direction is between 1801 and 2701T. This line is activated by wind direction inputs and holds the last highest value during periods when the wind is out of quadrant. Its extension represents the near end of day value in /jg/M3 at station 180-J if no further cycles are applied. This line also generates from the uncontrolled CEu.. line (a.).

COLUMN 1. TM Records the hourly values for a 24 hour day, beginning with a 1 at 0100 hours and ending with a 24 at 2400 hours.

COLUMN 2. K Computes and records the hourly value of K as follows:
K = ((WS * TEMP) / RH) * (p/1.68y)

COLUMN 3. KD Computes and records the K factor adjusted for rain and freeze effects. KD is used to define the need for a cycle (Ci) administered by the computer controlled water suppression system. KD is computed as follows:
KD = K * Ft,

COLUMN 4. Ci Records the total number of cycles credited on the hour. A 20-minute suppression cycle (35,500 gallons of water) sprayed from the computer controlled water suppression system counts as one cycle as well as a rain event greater than or equal to 0.0225 inches. Rain greater than or equal to 0.01 inches but less than 0.0225 inches is counted as one Ci if the adjusted rain amount for the hour is less than the actual rain amount.

COLUMN 5. SYM Records the type of suppression cycle credited for the hour. Where:
A: represents an ASSURANCE CYCLE (one 20-minute spray cycle per hour from the computer controlled water suppression system).

F: represents a continuous cycle (three 20-minute spray cycles per hour) administered to recover from a freeze event.

R: represents a rain event credited as a cycle.

1: represents a DEMAND I cycle, where KD is greater than or equal to 10, but, less than 15.

2: represents a DEMAND II cycle, where KD is greater than or equal to 15, but, less than 30.

3: represents a DEMAND III cycle, where KD is greater than or equal to 30, but, less than 45.

4: represents a DEMAND IV cycle, where KD is greater than or equal to 45.

COLUMN 6. XCi Records the total number of cycles credited since 0100 or the sum of COLUMN 4.

COLUMN 7. IR Records the amount of rain in inches for the hour as measured by the rain gauge.

NOTE: CIR, the total amount of rain credited for the hour is computed as follows: CIR = IR if it is raining, but adds 0.0225 to IR if a DEMAND 4 RBC is administered.

IRadj, the adjusted rain amount for the hour is also computed to include the effects of non-consecutive rains, where:

IRadi = CIRn-1 / (HRSn-1 + 1

when IR > 0 and

HRS > 0

IRadj = SUMIR.-1 / (HRS,,-, + 1)

when IR > 0,

SUMIR @- 0.0225;

and HRS = 0

IRadj = 0 when IR = 0, and

SUMIR < 0.0225

COLUMN 8. HRS Records the number of hours following a rainfall. HRS

increases by one each hour after the rain ends, and

continues to do so until another rain begins or until the

effects of the rain are over (F, ::- 0.9 or HRS = 48)

NOTE: If a DEMAND 4 cycle is administered in order to

recover from a freeze, HRS is initially set to 0.5

instead of 1.

HRS = 0 when Ci and

FIRn-1 = 0 or

Ff,n-1 < I
HRS = 0 when IR > 0 and

SUMIR > 0.0225

HRS = 0.5 when Ci = 3; FIRn-1 > 0

and Ff,n- 1 ::- 1
HRS = HRSn-1 + 1 when IR > 0 and

SUMIR -.5 0.0225
or

when IR = 0;

SUMIR > 0.0225

NOTE: If TM = 24 and HRS < 48 and F, < 0.9 then HRS

and SUMIR are carried forward to the next day.

If HRS = 48 or F, >- 0.9 the post rain effect has

reached its limits. On the next hour, Fr= 1,

HRS = 0, and SUMIR = 0.

COLUMN 9. SUMIR Computes and records the effective sum of the hourly

rainfall as follows:

SUMIR = 0 when CIR = 0 and

SUMIRr,-, < 0.0225

SUMIR = SUMIR.-j when CIR = 0 and

SUMIR,,-, ::- 0.0225

SUMIR = CIR when CIR > 0;

(IR + IRn-1) < 0.0225;

and Ffr,,-l 1
SUMIR = CIR when CIR > 0;

(IR + IRn-1) < 0.0225

Ffrn-1 < 1 ;

CIRn-1 > 0; and

Ci = 3

SUMIR = IR + SUMIR,,., when CIR > 01

(IR + IRn-J < 0.0225;

Ffrn-1 < I ;

CIRn-1 > 0; and

Ci < 3

SUMIR = IRadj,-, + CIR when CIR > 0;

(IR + IRn-J < 0.0225

Ff,n-1 < 1 ;
CIRn-1 = 0

SUMIR = IRadin-1 + CIR when CIR > 0; and

(IR + IRn-1) >- 0.0225

NOTE: If F, = I or HRS = 48 then SUMIR is set to zero the

next hour.

COLUMN 10. F, Computes and records the post rain recovery factor. F,

ranges from zero to one, with F, set to zero during a rain.

When F, @- 0.9, the effects of the rain are considered over,

and F, i s set to one on the next hour. F, i s computed as

follows:

F, = 0 when CIR < 0.0225 and

SUMIR >- 0.0225

F, = 1 when CIR < 0.0225 and

SUMIR < 0.0225

Fr = lo(-215.66'24'SUM1RAHRS'KT))

when CIR < 0.0225 and

SUMIR < 0.0225

COLUMN 11. Ffr Computes and records the combined effects of rain and

freeze, where Ffr = F, * Ff.

Ff (the post freeze effect) is calculated as follows:

Ff = ((SUMKF * FHRS)/(FIR * 106)) * 4.02917 + 0.305

when FIR > 0 and SUMKF > 0

Ff = 1 when FIR = 0 or SUMKF = 0

SUMKF (the sum of the freeze shear) is calculated by summing the K values beginning when the temperature reaches 291F until Fr < 0.1 or until continuous cycles are administered.

FIR (the potential freeze water) is calculated as follows:

FIR = SUMKF/19200 when FIR,, 0;

SUMIR 0;

FHRS 8; and

SUMKF > 0

FIR = FIR,, when FIR,, = 0;

SUMIR = 0

FHRS'/ 8 and

SUMKF > 0

or

when FIR,, > 10;

F, = 1; and

SUMIR + SUM,, < FIR,,;

FIR = SUMIR for all other conditions

MRS (the potential freeze hours) is calculated as follows:

FHRS = 0 when SUMIR = 0 and

SUMKF = 0

MRS = HRS when SUMIR > 0 and

SUMKF = 0

FHRS = HRS when SUMKF > 0;

TEMP > 341F; and

F, < 0. I

FHRS = FHRS + 1 when SUMKF > 0; and

TEMP < 341F or

F, @- 0. 1

COLUMN 12. KT Computes and records the predicted sum of K at the end of the day as follows:

KTn = K, + K2+ K3 + Kn + Kn(24-TM)

EXAMPLE: TM K

1 10

2 10

3 20

KT3 = 10 + 10 + 20 + 20(24-3@ = 460

COLUMN 13. H,,i Computes and records the estimated amount of dust entering the HVS during the hour as follows:

Hvi = Ksum * SI * Ff,

where:

Ksum is the sum of the K values within the current cycle set.

SI is the slope of the sumHvi line for the current cycle set, and is computed as follows:

At TM = 1
SI = sb when Ci = 0

where sb(base slope) = CE..t/KT

SI = sb * (1-eff) when Ci > 0

For all other times (n):

SI = SIr (I-eff),,
@j,,_j

where SI,,j_j is the last value of SI in the previous Ci

sequence Sl,,i-l = sb prior to any cycles.

(1-eff) term calculates the efficiency of the last

cycle administered and is calculated as follows:

Equation A:

(I-eff). = (1-(36.657299 * 101-0.001119215 1 Ksum) / 1 00)) C..q
Equation B:

(I-eff)b = (1-((-0.0146913 * Ksum + 14.65059)/100))C..q

Equation A can be used to calculate the efficiencies

when KT < 288 otherwise use Equation B until

slope,,-, (1-eff) b _< sp(shift point)

where sp 0.6256838 - 0.0008297 * KT

then switch to Equation A.

NOTE: At the beginning of the day, (1-eff) = 1 until a

cycle occurs. If a cycle is credited at time 1 (cycle

performed at TM 0000) then the equation for (1-eff)

changes as follows: KT replaces Ksum, and the

calculation is multiplied by C.,,q instead of raised to

its power. The slope then remains constant until

another cycle/cycles are administered.

C,,q is the cycle sequence for the current cycle set.

where: C, 0 when Ci 0

C6eq Cseqn-1 when Cin Cin-1

CSeq 0. 5 when Cin > Cin-1
Ff, > 1

and Ci = 1

Cseq I when Ci = 1 or 3

CSeq 2 when Ci = 2

EXAMPLE: KT(at TM 4) = 368.60 i.e. >-288

sb = 0.40804

sp = 0.31986

TM	K	RBC	Ksum	(I-eff)	C, Si	Ff,	H,,i
1	20.10	0	20.10	1.0	0	0.408	1.0 8.2024
2	17.00	0	37.10	1.0	0	0.408	1.0 15.1398
3	16.50	1	16.50	0.85592	1	0.349	1.0 15.7631
4	15.00	1	31.50	0.85592	1	0.150	1.0 11.0307

COLUMN 14. YH,j Computes and records the sum of the coal dust in the HVS (Hi Vol Sampler) to the hour as follows:

2:Hvi = Hvi + IHvi.in-l

where YHvicin-l is the last value of IHvj in the previous cycle sequence.

EXAMPLE: Using the values from the previous

example:

TM YHvicin-l 2:Hvi

I 0.0 8.2024

2 0.0 15.1398

3 15.1398 20.9029

4 15.1398 26.1705

COLUMN 15. HVT Computes and records the projected amount of dust on the HVS filter at the end of the day if no further cycles were

administered.

HVT = 7-H,,i + KL Sl (1-eff)

where KL KT sum(K, + K2 + Kn)

(1-eff) is the same as COLUMN 14 except that KL is

used in the expression instead of Ksum.

COLUMN 16. TEMP Records the temperature in degrees fahrenheit.

COLUMN 17. RH Records the relative humidity (percent)

COLUMN 18. WD Records the wind direction (degrees)

COLUMN 19. WS Records the wind speed (mi/hr)

COLUMN 20. #C, Records the number of suppression cycles credited for hour. The suppression cycles are only credited when the wind is blowing within the 180 to 270 degree quadrant.

COLUMN 21. YHVIc Computes and records the sum of the dust in the HiVol accumulated when the wind is blowing within the 180 to 270 degree quadrant.

Until such time that the control program display (graph) is installed, programmed and functional the following minimum cycle requirements in accordance with the values of "K" will be implemented:

From 0001 to 1200 daily

When the value of "KY is equal to or greater than 10, Dominion shall commence a full coverage "DEMAND I" water spray suppression cycle of at least 35,500 gallons of water on its respective metallurgical coal piles.

This "DEMAND I" cycling of the suppression water shall be repeated as long as the value of "KD" remains above 10, with one hour delays between cycles. Such times for commencement to be on the hour as dictated by the computed value of "O."

When the value of "O" equals or exceeds 15 as computed on the hour, a "DEMAND II" cycle shall commence on all coal piles with no less than 35,500 gallons of water administered on the hour and continue each hour on the hour until the value drops below the value of 15. The normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for `KY is lower than 10.

When the value of "KY equals or exceeds 30 as computed on the hour, a "DEMAND III" cycle shall commence on all coal piles with no less than 71,000 gallons of water. A "DEMAND III" cycle is defined as a double cycle or a back

to back cycle. This endeavor will continue on the hour until the "KD" value drops back below the value of 30. The "DEMAND III' sequence will then commenc
e
until the value drops below 15 and subsequently the normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for "KD" is less than 10.

When the value of `KY equals or exceeds 45 as computed on the hour, continuous cycling (DEMAND IV) will commence until the value of "KY drops below 45, when DEMAND III, II or I shall commence as previously outlined.

From 1201 to 2400 daily

When the value of "KY is equal to or greater than 11, Dominion shall commence a full coverage "DEMAND I" water spray suppression cycle of at least 35,500 gallons of water on its respective metallurgical coal piles.

This "DEMAND I" cycling of the suppression water shall be repeated as long as the value of "KD" remains above 11, with one hour delays between cycles. Such times for commencement to be on the hour as dictated by the computed value of "O."

When the value of "KY equals or exceeds 17 as computed on the hour, a "DEMAND 11" cycle shall commence on all coal piles with no less than 35,500 gallons of water administered on the hour and continue each hour on the hour until the value drops below the value of 17. The normal one hour delay between cycles shall then be resumed as a "DEMAND I" cycle until a value for "KD" is lower than 11.

When the value of "KY equals or exceeds 34 as computed on the hour, a "DEMAND III" cycle shall commence on all coal piles with no less than 71,000 gallons of water. A "DEMAND III" cycle is defined as a double cycle or a back

to back cycle. This endeavor will continue until the "KY value drops below the value of 34. The "DEMAND II" sequence will then commence until the value drops below 17 and subsequently the normal one hour delay between cycles shall

then be resumed as a "DEMAND I" cycle until a value for "KY is lower than 11.

When the value of "KD" equals or exceeds 51 as computed on the hour, continuous cycling (DEMAND IV) will commence until the-value of "KD" drops below 51, when DEMAND III, II, or I shall commence as previously outlined.

Each day will have at least four "ASSURANCE" cycles on all metallurgical coal piles regardless of the values of "G." On days when the hourly values of "KY are all below 10 prior to 0300, an "ASSURANCE" cycle shall be conducted at that time. If the hourly values of "KD" continue below 10 until 0700, a second "ASSURANCE" cycle shall be conducted at that time. Similarly again at 1100 and 1300. "DEMAND I" cycle requirements or a trace or rain prior to or between 0300 and 1400 shall count as one or more of these four "ASSURANCE" cycles required per day.