Constellation Brandon Shore

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Suite 605 • Baltimore, Maryland 21230-1719
410-537-3375 • 800-633-6101 x3375 • www.mde.state.md.us
Waste Management Administration • Solid Waste Program

Coal Combustion Byproducts (CCB) Annual Generator Tonnage Report

Instructions for Calendar Year 2010

The following is general information relating to the requirement for reporting quantities of coal combustion byproducts that were managed in the State of Maryland during calendar year 2010. Please answer the questions on the form provided, attaching additional information and any requested supplemental information to the back of the form. Questions can be directed to the Solid Waste Program at (410) 537-3318 or via email at edexter@mde.state.md.us.

I. Background. This requirement that generators of coal combustion byproducts (CCBs) submit an annual report was instituted in the Code of Maryland Regulations COMAR 26.04.10.08, that was promulgated effective December 1, 2008. The regulation requires that any non-residential generator of CCBs submit a report to the Department by March 1 of each year describing the manner in which CCBs generated within the State were managed during the preceding calendar year. Additional information and specific instructions follow. For more detailed information, please refer to COMAR 26.04.10.08.

II. General Information and Applicability.

A. Definitions. Coal combustion byproducts are defined in COMAR 26.04.10.02B as:

> *"(3) Coal Combustion Byproducts. (a) "Coal combustion byproducts" means the residue generated by or resulting from the burning of coal.*
> *(b) "Coal combustion byproducts" includes fly ash, bottom ash, boiler slag, pozzolan, and other solid residuals removed by air pollution control devices from the flue gas and combustion chambers of coal burning furnaces and boilers, including flue gas desulfurization sludge and other solid residuals recovered from flue gas by wet or dry methods. "*

A generator of CCBs is defined in COMAR 26.04.10.02B as:

> *"(9) Generator.*
> *(a) "Generator" means a person whose operations, activities, processes, or actions create coal combustion byproducts.*
> *(b) "Generator" does not include a person who only generates coal combustion byproducts by burning coal at a private residence."*

B. Applicability. **If you or your company meet the definition of a generator of CCBs as defined above, you must provide the information as required below**. For the purposes of this report, "you" shall hereinafter refer to the generator defined above. Please note that COMAR 26.04.10.08 requires generators of CCBs to submit an annual report to the Department

concerning the disposition of the CCBs that they generated the previous year. **THIS INCLUDES CCBS THAT WERE NOT SEPERATELY COLLECTED BUT WERE PRODUCED BY THE BURNING OF COAL AND WERE DIRECTLY CONTRIBUTED TO A PRODUCT, such as cement.** Where the amount cannot be directly measured, estimates based on the amount of coal burned can be used. The method of determining the volume of CCBs produced must be described.

III. Required Information. The following information must be provided to the Department by March 1, 2010:

A. Contact information:

Facility Name: Brandon Shores Electric Generation Station

Name of Permit Holder: Constellation Power Source Generation

Facility Address: 2030 Brandon Shores Road
Street

Facility Address: Baltimore Maryland 21226
City State Zip

County: Anne Arundel

Contact Information (Person filing report or Environmental Manager)

Facility Telephone No.: 410.787.6928 Facility Fax No.: 410.787.5577

Contact Name: John E. Murosko, P.G.

Contact Title: Program Manager, Environmental Services

RECEIVED
FEB 28 2011
SOLID WASTE
OPERATIONS DIVISION

Contact Address: 1005 Brandon Shores Road
Street

Contact Address: Baltimore Maryland 21226
City State Zip

Contact Email: john.murosko@constellation.com

Contact Telephone No.: 410.787.5471 Contact Fax No.: 410.787.6637

For questions on how to complete this form, please call Edward Dexter, Solid Waste Program at 410-537-3318.

B. A description of the process that generates the coal combustion byproducts, including the type of coal or other raw material that generates the coal combustion byproducts. If the space provided is insufficient, please attach additional pages:

The Brandon Shores Generation Station consists of two coal-fired generating units with a combined nominal generating capacity of approximately 1,370 megawatts (MW). Brandon Shores is co-located on a 483-acre site with the H.A. Wagner Generating Station along Fort Smallwood Road in northern Anne Arundel County. Unit #1 was placed in commercial service in 1984, and Unit #2 was placed in commercial service in 1991. Both units are natural circulation radiant boilers manufactured by Babcock and Wilcox (B&W). Coal is delivered to the Brandon Shores site by barge and stored in areas adjacent to Units 1 and 2. The coal is transferred to the plant storage bunkers via conveyor belts, after which the coal is pulverized and blown into the furnace where combustion of the coal is accomplished utilizing low NOx burners. The flue gas for each unit is passed through hot-side electrostatic precipitators (ESPs) to collect the particulate matter (PM) emissions, followed by selective catalytic reduction (SCR) to reduce the NOx emissions. In 2010, Brandon Shores added Wet Flue Gas Desulfurization (FGD), SO3 control, and mercury reduction by activated carbon injection. The Pulse Jet Fabric Filters (PJFF) remove the ash that is treated with activated carbon and hydrated lime. Ash is collected from the ESP and PJFF hoppers, then conveyed pneumatically to storage silos from where it is loaded into trucks for final disposition. Treated municipal wastewater is used as Wet FGD supply water and the effluent treatment includes nitrogen removal.

In 2010, the Brandon Shores Plant burned bituminous coal from Central Appalachian and South American sources.

C. The volume of coal combustion byproducts generated during calendar year 2010, including an identification of the different types of coal combustion byproducts generated and the volume of each type generated. If the space provided is insufficient, please attach additional pages in a similar format:

Table I: Volume of CCBs Generated for Calendar 2010:

Reporting Year	Volume of CCB Type: Fly Ash (dry tons)	Volume of CCB Type: Bottom Ash (dry tons)	Volume of CCB Type: Synthetic Gypsum (tons)	Volume of CCB Type: FGD Sludge (tons)
2010	331,502	7,640	108,766	3,741

Additional notes:

D. Descriptions of any modeling or risk assessments, or both, conducted relating to the coal combustion byproducts or their use, that were performed by you or your company during the reporting year. Please attach this information to the report.

- Neither modeling nor risk assessments have been performed during the past year.

E. Copies of all laboratory reports of all chemical characterizations of the coal combustion byproducts. Please attach this information to the report.

- WWT Filter Cake, Brandon Shores, Phase Separation Science, Inc. February 16, 2010
- FGD Silo PAC, Brandon Shores, Phase Separation Science, Inc. March 9, 2010
- Various Samples, Baltimore Plants, Phase Separation Science, Inc., March 16, 2010
- FGD Silo #21, Brandon Shores, Phase Separation Science, Inc. March 18, 2010
- FGD Silo #11, PAC & Lime, Brandon Shores, Phase Separation Science, Inc. March 29, 2010
- FGD Silo #21, PAC & Lime, Brandon Shores, Phase Separation Science, Inc. March 29, 2010
- Gypsum Sample, Brandon Shores, Phase Separation Science, Inc., September 22, 2010
- Chem-Mod Testing, BS Unit #2, Phase Separation Science, Inc., October 8, 2010
- Brandon Shores Unit 2 South Cegrit Sampler, SGS, October 25-November 3, 2010
- Brandon Shores Synthetic Gypsum, USG Materials Analysis Laboratory, November 18, 2010

F. A description of how you disposed of or used your coal combustion byproducts in calendar 2010, identifying:

(a) The types and volume of coal combustion byproducts disposed of or used (if different than described in Paragraph C above), the location of disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts disposed of or used at each site:

CCB Receiver	Fly Ash (dry tons)	Bottom Ash (dry tons)	FGD Gypsum (dry tons)	FGD Sludge (dry tons)	CCBs Use
STI, MD	245,125	0	0	0	concrete
Lehigh, MD	33,983	2,340	0	0	concrete
MERG, MD	156	0	0	0	concrete, grout testing
Bulk Materials, Int'l, WV	0	3,012	0	0	cement kiln feed
USG, MD	0	0	39,695	0	wallboard products
MERG Essroc	0	0	20,018	0	cement kiln fluidized lime
BMI-Keystone	0	0	1,194	0	cement kiln fluidized lime
Waste Mgmt, VA	15,126	835	0	63	landfill, daily cover
Mountainview LF, MD	1,115	62	0	0	landfill, daily cover
Tri-Cities LF, VA	31,195	1,224	0	3,678	landfill, structural fill
The East End LF, VA	4,713	166	47,326	0	landfill, daily cover

and (b) The different uses by type and volume of coal combustion byproducts:

and (b) The different uses by type and volume of coal combustion byproducts:

- CCBs delivered to STI in Pasadena MD were processed for concrete production.
- CCBs delivered to Lehigh Cement in Union Bridge, MD were used in concrete production.
- CCBs were delivered to MERG in Hagerstown, MD for concrete production and product testing (thermal grout).
- CCBs were delivered to Bulk Materials, Inc. Martinsburg, WV for use as cement kiln feed.
- FGD gypsum delivered to USG in Baltimore MD was used to manufacture wallboard products.
- FGD gypsum delivered to MERG Essroc was sent to a Pennsylvania cement kiln for use as fluidized lime.
- FGD gypsum delivered to BMI Keystone was sent to a Pennsylvania cement kiln for use as fluidized lime.
- CCBs delivered to Waste Management were used for daily cover in municipal solid waste (MSW) landfills located in Charles City and King George, VA.
- CCBs delivered to Mountainview Landfill in Allegany County, MD were used for daily cover in that MSW landfill, as authorized by MDE.
- CCBs delivered to Tri-Cities Landfill in Petersburg, VA will be used as structural fill to build walls and barriers in that MSW landfill.
- CCBs delivered to The East End Landfill in Henrico, VA were used for daily cover in municipal solid waste (MSW) landfills.

If the space provided is insufficient, please attach additional pages in a similar format. . (Please note that in subsequent years you need only provide the information in Section F for the last calendar year).

G. A description of how you intend to dispose of or use coal combustion byproducts in the next 5 years, identifying:

(a) The types and volume of coal combustion byproducts intended to be disposed of or used, the location of intended disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts intended to be disposed of or used at each site:

- Fly Ash: CPSG projects that as much as 444,000 tons will be generated each year for the next five years. Approximately 384,000 tons will be beneficially used in cement and/or concrete. Approximately 60,000 tons per year will disposed of in landfills in Virginia and Maryland authorized to accept CCBs, used primarily for daily cover. Beginning in October 2011, CPSG plans to place fly ash not beneficially used in a permitted industrial waste landfill in Baltimore City.

- Bottom Ash: CPSG projects that approximately 23,000 tons will be generated each year for the next five years. Approximately 3,000 tons will be disposed of in landfills in Virginia and Maryland authorized to accept CCBs, used primarily for daily cover. Beginning in March 2011, CPSG plans to place bottom ash in a permitted industrial waste landfill in Baltimore City.

• FGD Materials: CPSG projects that approximately 199,000 tons will be generated each year for the next five years. Approximately 193,000 tons of FGD gypsum will be beneficially used in wallboard, cement and/or concrete. Approximately 6,000 tons of FGD sludge will be disposed of in landfills in Virginia and Maryland authorized to accept CCBs. Beginning in October 2011, CPSG plans to place gypsum not beneficially used in a permitted industrial waste landfill in Baltimore City.

and (b) The different intended uses by type and volume of coal combustion byproducts.

• Fly Ash: Approximately 384,000 tons each year will be beneficially used in cement and/or concrete.

• Bottom Ash: Approximately 20,000 tons each year will be beneficially used in cement and/or concrete.

• FGD Materials: Approximately 193,000 tons of FGD gypsum each year will be beneficially used in wallboard, cement and/or concrete. Agricultural use opportunities may be considered.

If the space provided is insufficient, please attach additional pages in a similar format.

IV. Signature and Certification. An authorized official of the generator must sign the annual report, and certify as to the accuracy and completeness of the information contained in the annual report:

This is to certify that, to the best of my knowledge, the information contained in this report and any attached documents are true, accurate, and complete.		
Signature	Daniel L. Haught, VP Baltimore Operations 410.787.6415 Name, Title, & Telephone No. Daniel.haught@constellation.com Your Email Address	2-25-2011 Date

RECEIVED
FEB 28 2011
SOLID WASTE
OPERATIONS DIVISION

From: "Murosko, John E" <John.Murosko@constellation.com>
To: 'Samuel Ogbogu' <SOgbogu@mde.state.md.us>
Date: 3/4/2011 1:12 PM
Subject: RE: 2010 Ash Reports corrected pages
Attachments: CCB Tonnage Report BS 2010 corrected tables.pdf

Samuel - will this work for you?

-Jack-

-----Original Message-----
From: Murosko, John E
Sent: Friday, March 04, 2011 12:38 PM
To: Samuel Ogbogu
Subject: RE: 2010 Ash Reports

Samuel,

Here are the corrected tables for the Brandon Shores 2010 ash report. Please let me know how you want me to formally make the corrections.

Jack Murosko, PG
Program Manager - EPG Environmental
Constellation Power Generation

Office: (410) 787-5471
Mobile: (410) 428-9677

 -----Original Message-----
From: Ed Dexter [mailto:edexter@mde.state.md.us]
Sent: Tuesday, March 01, 2011 8:58 AM
To: Murosko, John E
Cc: Quinn, John; Martha Hynson; Samuel Ogbogu
Subject: Re: 2010 Ash Reports

Acknowledged, got them.

Edward M. Dexter, P.G., Administrator
Solid Waste Program
Maryland Department of the Environment
1800 Washington Blvd., Suite 605
Baltimore MD 21230-1719
Phone (410) 537-3318
Facsimile (410) 537-3842
E-mail edexter@mde.state.md.us

>>> "Murosko, John E" <John.Murosko@constellation.com> 3/1/2011 8:56 AM
>>> >>>
Good Morning Ed,

This is just an FYI to let you know that Constellation's 2010 ash reports were dropped off yesterday at MDE's front desk.

Have a great day

Jack Murosko, PG
Program Manager - EPG Environmental
Constellation Power Generation

Office: (410) 787-5471
Mobile: (410) 428-9677

Please consider the environment before printing this email and any attachments

B. A description of the process that generates the coal combustion byproducts, including the type of coal or other raw material that generates the coal combustion byproducts. If the space provided is insufficient, please attach additional pages:

The Brandon Shores Generation Station consists of two coal-fired generating units with a combined nominal generating capacity of approximately 1,370 megawatts (MW). Brandon Shores is co-located on a 483-acre site with the H.A. Wagner Generating Station along Fort Smallwood Road in northern Anne Arundel County. Unit #1 was placed in commercial service in 1984, and Unit #2 was placed in commercial service in 1991. Both units are natural circulation radiant boilers manufactured by Babcock and Wilcox (B&W). Coal is delivered to the Brandon Shores site by barge and stored in areas adjacent to Units 1 and 2. The coal is transferred to the plant storage bunkers via conveyor belts, after which the coal is pulverized and blown into the furnace where combustion of the coal is accomplished utilizing low NOx burners. The flue gas for each unit is passed through hot-side electrostatic precipitators (ESPs) to collect the particulate matter (PM) emissions, followed by selective catalytic reduction (SCR) to reduce the NOx emissions. In 2010, Brandon Shores added Wet Flue Gas Desulfurization (FGD), SO3 control, and mercury reduction by activated carbon injection. The Pulse Jet Fabric Filters (PJFF) remove the ash that is treated with activated carbon and hydrated lime. Ash is collected from the ESP and PJFF hoppers, then conveyed pneumatically to storage silos from where it is loaded into trucks for final disposition. Treated municipal wastewater is used as Wet FGD supply water and the effluent treatment includes nitrogen removal.

In 2010, the Brandon Shores Plant burned bituminous coal from Central Appalachian and South American sources.

C. The volume of coal combustion byproducts generated during calendar year 2010, including an identification of the different types of coal combustion byproducts generated and the volume of each type generated. If the space provided is insufficient, please attach additional pages in a similar format:

Table I: Volume of CCBs Generated for Calendar 2010:

Reporting Year	Volume of CCB Type: Fly Ash (dry tons)	Volume of CCB Type: Bottom Ash (dry tons)	Volume of CCB Type: Synthetic Gypsum (tons)	Volume of CCB Type: FGD Sludge (tons)
2010	331,503	7,639	108,233	3,741

Additional notes:

[Note – Table I and the table in Section F(a) were resubmitted on March 4, 2011 to correct transcription errors]

D. Descriptions of any modeling or risk assessments, or both, conducted relating to the coal combustion byproducts or their use, that were performed by you or your company during the reporting year. Please attach this information to the report.

- Neither modeling nor risk assessments have been performed during the past year.

E. Copies of all laboratory reports of all chemical characterizations of the coal combustion byproducts. Please attach this information to the report.

- WWT Filter Cake, Brandon Shores, Phase Separation Science, Inc. February 16, 2010
- FGD Silo PAC, Brandon Shores, Phase Separation Science, Inc. March 9, 2010
- Various Samples, Baltimore Plants, Phase Separation Science, Inc., March 16, 2010
- FGD Silo #21, Brandon Shores, Phase Separation Science, Inc. March 18, 2010
- FGD Silo #11, PAC & Lime, Brandon Shores, Phase Separation Science, Inc. March 29, 2010
- FGD Silo #21, PAC & Lime, Brandon Shores, Phase Separation Science, Inc. March 29, 2010
- Gypsum Sample, Brandon Shores, Phase Separation Science, Inc., September 22, 2010
- Chem-Mod Testing, BS Unit #2, Phase Separation Science, Inc., October 8, 2010
- Brandon Shores Unit 2 South Cegrit Sampler, SGS, October 25-November 3, 2010
- Brandon Shores Synthetic Gypsum, USG Materials Analysis Laboratory, November 18, 2010

F. A description of how you disposed of or used your coal combustion byproducts in calendar 2010, identifying:

(a) The types and volume of coal combustion byproducts disposed of or used (if different than described in Paragraph C above), the location of disposal, mine reclamation and use sites, and the type and volume of coal combustion byproducts disposed of or used at each site:

CCB Receiver	Fly Ash (dry tons)	Bottom Ash (dry tons)	FGD Gypsum (dry tons)	FGD Sludge (dry tons)	CCBs Use
STI, MD	245,125	0	0	0	concrete
Lehigh, MD	33,983	2,340	0	0	concrete
MERG, MD	156	0	0	0	concrete, grout testing
Bulk Materials, Int'l, WV	0	3,012	0	0	cement kiln feed
USG, MD	0	0	39,695	0	wallboard products
MERG Essroc	0	0	20,018	0	cement kiln fluidized lime
BMI-Keystone	0	0	1,194	0	cement kiln fluidized lime
Waste Mgmt, VA	15,216	835	0	63	landfill, daily cover
Mountainview LF, MD	1,115	62	0	0	landfill, daily cover
Tri-Cities LF, VA	31,195	1,224	0	3,678	landfill, structural fill
The East End LF, VA	4,713	166	47,326	0	landfill, daily cover

and (b) The different uses by type and volume of coal combustion byproducts: