



west virginia department of environmental protection

Appendix E: MSC Consent Order

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, West Virginia 25304-2345

v.

Order No.:CO-SIP-C-2015-14
Facility ID No. 03-54-009-00002

MOUNTAIN STATE CARBON, LLC
1851 Main Street
Follansbee, West Virginia 26037

Consent Order

This Consent Order (“Order”) is issued by the Director of the Division of Air Quality (“Director”), under the authority of West Virginia Code, Chapter 22, Article 5, Section 1 *et. seq.* to Mountain State Carbon, LLC (“MSC”), a wholly owned subsidiary of AK Steel Corporation.

I. Findings of Fact

In support of this Order, the Director, Division of Air Quality, hereby finds the following:

1. MSC owns and operates a coke facility that produces metallurgical-grade coke and coke gas byproducts (light oil, ammonium sulfate, fuel gas, coal tar, sulfuric acid)

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from coal. It is located at 1851 Main Street, Follansbee, West Virginia 26037 (“Facility”).

2. The Facility produces coke from metallurgical coal by heating the coal in specially-designed ovens in the absence of air. This process also produces coke oven gas (“COG”) as it heats up and transforms the metallurgical coal into coke. The COG produced in the oven rises to the top of the oven chamber then exits the oven and is transported by pipeline to the by-products plant where valuable products are extracted from the COG. The remaining COG is then used as fuel to heat the coke oven and produce steam in on-site boilers. Excess COG is sent to the excess COG Flare where it is combusted.
3. Metallurgical coal contains small concentrations of sulfur. The coking of coal produces hydrogen sulfide (H₂S). While many coke batteries do not employ any desulfurization control, MSC operates a desulfurization unit with an H₂S scrubber and acid plant that controls H₂S in the COG. The burning of the COG as fuel and in the excess COG Flare converts the remaining H₂S to sulfur dioxide (“SO₂”).
4. Periodic required maintenance of the desulfurization unit requires taking offline the H₂S scrubber and acid plant. Due to the nature of a coke battery, the coke battery cannot temporarily cease operation, thus continued operation is necessary during the desulfurization unit outage.
5. MSC identified all sources of stack and fugitive SO₂ at the Facility. The primary sources of SO₂ at the Facility are the following:

Primary Facility SO ₂ Sources		
#1 Battery Combustion (P001-4)	Boiler 6 (P017)	Excess COG Flare (P024-1)
#2 Battery Combustion (P002-4)	Boiler 7 (P018)	# 1, 2, 3, Battery Pushing Baghouse (P001-5)
#3 Battery Combustion (P003-4)	Boiler 9 (S1)	#8 Battery Pushing Venturi Scrubber (P004-5)
#8 Battery Combustion (P004-4)	Boiler 10 (S5)	Acid Plant Tail Gas (P021-19)

6. The Excess COG flare stack operates in compliance with Section 8.1.6 of the Facility’s existing Title V Permit to Operate that limits the COG rate to 7.1 MMSCF per day. Modeling demonstrations support that an Excess COG flare stack emissions rate of 139.8 pounds of SO₂ per hour (approximately 24 MMSCF of COG per day)

will not compromise attainment with the NAAQS. MSC recognizes that an increase of COG to the flare from existing permitted levels will require a permit pursuant to 45 CSR § 13.

7. The Cross Creek Tax District, Brooke County, West Virginia, which includes the MSC facility, was designated by U.S. EPA as nonattainment for the 2010 primary SO₂ National Ambient Air Quality Standard (NAAQS). 78 Fed. Reg. 47191 (August 5, 2013). U.S. EPA based its determination on air quality monitoring data.
8. The nonattainment designation for the 2010 SO₂ NAAQS was based on data collected during the three calendar year period of 2009 through 2011. For the most recent three calendar year period of 2012 through 2014, three of the four ambient air monitors in the nonattainment area have demonstrated attainment with the NAAQS.
9. Pursuant to Consent Decree, Civil Action No. 5:93-cv-195, filed January 30, 1996, and a source-specific SIP submission, 69 Fed. Reg. 24986 (May 5, 2004), as codified at 40 C.F.R. § 52.2520(d), the facility is authorized to conduct limited planned and unplanned maintenance on the plant's desulfurization system to ensure its performance and reliability. The events are commonly referred to as maintenance outages. It is technically infeasible to intermittently shutdown a coke battery for maintenance outages on the desulfurization system. Furthermore, the Consent Decree and source-specific SIP submission contemplate that the outage events occur during meteorologically desirable periods to ensure that ground level concentrations of SO₂ are minimized. Modeling demonstrations for outages with respect to the 1-hour standard indicate that meteorological periods can occur throughout the year and more likely to be found during the months of April and November.

II. Order for Compliance

Now, therefore, in accordance with Chapter 22, Article 5, Section 1 *et. seq.* of the West Virginia Code, it is hereby agreed between the parties, and ORDERED by the Director:

1. COG Combustion Sources

- a. Except during maintenance outages as defined in Section II.4.a, SO₂ emissions from COG combustion sources shall not exceed the following limitations:

COG Combustion Sources	SO ₂ in (lb/hr) as a daily average
#1 Battery (P001-4)	21.4
#2 Battery (P002-4)	21.4
#3 Battery (P003-4)	24.5
#8 Battery (P004-4)	115.4
Combined Boilers #6, #7, #9, #10 (P017, P018, S1, S5)	85.7

- b. MSC shall monitor the quantity of COG combusted in each COG combustion source and shall record the daily total of COG combusted at each COG combustion source. MSC shall continuously operate and maintain a flow monitor subject to applicable and appropriate methodologies of 40 CFR Part 60.
- c. MSC shall continuously monitor the concentration of H₂S, in grains of H₂S per 100 cubic feet of COG and shall record the daily average H₂S concentration. The H₂S monitor system shall extract COG from the main COG distribution pipeline after the COG has been processed through the byproducts plant. MSC shall continuously operate and maintain a H₂S continuous emission monitor (CEM) subject to 40 CFR § 60 Appendix B, Performance Specification 7 and an annual relative accuracy testing audit (RATA) pursuant to the provisions of 40 CFR § 60, Appendix A, Method 15.
- d. MSC shall calculate and record the pounds of SO₂ per hour as a daily average for each COG combustion source, based on the following equation:

$$\text{Concentration H}_2\text{S [grains /100 SCF COG]} \times$$

$$\begin{aligned}
 & \text{COG Combusted [MMSCF/Day]} \\
 & \div \\
 & \quad 24 \text{ [Hrs/Day]} \\
 & \quad \times \\
 & \quad 1.88 \text{ [lbs SO}_2\text{ / lbs H}_2\text{S]} \\
 & \quad \times \\
 & \quad 10,000 \text{ [100 SCF / MMSCF]} \\
 & \quad \div \\
 & \quad 7000 \text{ [grains/ lb]} \\
 & = \text{ lbs/hr SO}_2 \text{ (as daily average)}
 \end{aligned}$$

Where,

1.88 is the stoichiometric conversion of H₂S to SO₂ at 100% combustion, based

on a molecular weight of 64 for SO₂ and 34 for H₂S

7000 is the unit conversion of grains to pounds [lbs]

MMSCF represents million cubic feet of gas at standard temperature and pressure

- e. MSC shall operate and maintain a data acquisition and monitoring system for the collection and archival of sulfur emissions data collected by the H₂S and flow monitors on each COG combustion source.
- f. The requirements set forth in Section II.1 become effective on January 1, 2017.

2. Pushing Emissions Control Sources

- a. SO₂ emissions from pushing emissions control sources shall not exceed the following limitations:

Pushing Emission Control Sources	SO₂ in (lb/hr)
#1, 2, 3 Batteries Total (P001-5)	10.48
#8 Battery (P004-5)	15.72

- b. MSC will conduct a stack test for sulfur dioxide of the #8 Battery pushing emissions control (PEC) source by June 30, 2016. MSC will conduct a stack test for sulfur dioxide of the Nos. 1, 2, and/or 3 Batteries PEC source within 6 months of start-up of Nos. 1, 2, and/or 3 Batteries or by June 30, 2016 (whichever is later), utilizing 40 CFR § 60, Appendix A, Method 6

or equivalent. Thereafter, stack testing for each Battery PEC shall occur twice per Title V permit term.

- c. MSC shall submit to the Director for approval a test protocol detailing the proposed test methods, the date, and the time the proposed testing is to take place, as well as identifying the sampling locations and other relevant information. The test protocol must be received by the Director no less than thirty (30) days prior to the date the testing is to take place. In addition, MSC shall notify the Director at least fifteen (15) days prior to any testing so the Director may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Director.
- d. Test results shall be submitted to the Director no more than sixty (60) days after the date the testing takes place.

3. Acid Plant Tail Gas Scrubber

- a. SO₂ emissions from the acid plant tail gas scrubber shall not exceed the following limitation:

Source	SO ₂ in (lbs/hr.)
Acid Plant Tail Gas Scrubber (P021-19)	6.0

- b. MSC will conduct an initial stack test of the acid plant tail gas scrubber by June 30, 2016, utilizing 40 CFR § 60, Appendix A, Method 6 or equivalent. Thereafter, stack testing for the acid plant tail gas scrubber shall occur twice every five years. Upon incorporation of this Consent Order into the Facility Title V permit pursuant to Section II.7, stack testing for the acid plant tail gas scrubber shall occur twice per permit term.
- c. MSC shall submit to the Director for approval a test protocol detailing the proposed test methods, the date, and the time the proposed testing is to take place, as well as identifying the sampling locations and other relevant

information. The test protocol must be received by the Director no less than thirty (30) days prior to the date the testing is to take place. In addition, MSC shall notify the Director at least fifteen (15) days prior to any testing so the Director may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Director.

- d. Test results shall be submitted to the Director no more than sixty (60) days after the date the testing takes place.
- e. MSC shall monitor scrubber recirculation flow rate to ensure compliance with the emission limit in Section II.3.a.
- f. The testing protocol in Section II.3.c shall include a procedure for establishing a minimum scrubber recirculation flow rate as a 24-hour average that demonstrates compliance with the emission limit in Section II.3.a.
- g. For each calendar day, MSC shall maintain the scrubber recirculation flow rate as a 24-hour average at or above the minimum rate as established during the stack test.
- h. For each calendar day that the Acid Plant Tail Gas Scrubber operates, MSC shall record the 24-hour average scrubber recirculation flow rate.
- i. MSC may re-establish the minimum scrubber recirculation flow rate limit through subsequent stack tests.
- j. The operational limitation required by Section II.3.g shall become effective no later than ninety days following completion of the initial stack test.

4. Maintenance Outages

- a. MSC conducts outages necessary for the maintenance, repair and replacement of the COG H₂S scrubber, acid plant and associated ancillary

equipment for continued desulfurization of the facility's COG. The following restrictions shall apply during the outages:

- i. MSC shall be limited to a maximum of 20 days in any calendar year for planned maintenance outages of the desulfurization unit in the coke by-products recovery plant. No single scheduled outage period shall extend beyond 240 hours. The start of a planned maintenance shall begin at the time of the first hour that is greater than 50 grains of H₂S/100 cubic feet of COG. The planned maintenance shall be concluded at the time of the first hour (following a maintenance start) that is less than or equal to 50 grains of H₂S/100 cubic feet of COG.
- ii. MSC shall notify the Director in writing 30 days prior to undertaking any planned maintenance outage of the desulfurization unit. Such notice shall include, at a minimum, a detailed explanation of each and every maintenance and/or repair activity intended to be undertaken and a schedule for completion of each such activity, as well as evidence of compliance with the Sections II.4.iii and II.4.iv.
- iii. MSC utilized air quality dispersion modeling to determine what periods represent the most favorable dispersion of excess SO₂ emissions to prevent to the greatest extent practicable any violation of the National Ambient Air Quality Standard ("NAAQS") for SO₂, and based on such modeling, MSC shall conduct planned maintenance outages during the months of April and November.
- iv. Prior to any planned maintenance outage of the desulfurization unit, MSC shall prepare and submit a SO₂ mitigation plan to the Director outlining what measures MSC will employ during the outage to ensure continued attainment of the NAAQS. This plan shall include the employment of reasonable controls and process measures to reduce SO₂ emissions from the Facility. These

controls and measures include, but are not limited to, reduced coke production rates at the Coke Oven Batteries #1, #2, #3 and #8. During the outage, MSC shall operate at a coke production rate of no more than 63 ovens per day on # 8 Battery, or no more than a combined 51 ovens per day on #8 Battery and no more than 72 ovens per day total on the #1, #2, #3 Batteries.

- v. No later than 30 days after completing a planned maintenance outage of the desulfurization unit, MSC shall submit a report identifying the monitored SO₂ impacts associated with the planned maintenance outage of the desulfurization unit. This report shall include any deviation of the SO₂ mitigation plan that was submitted for the respective outage period. Should all necessary monitoring data not be available within 15 days following the planned maintenance outage, the report shall be filed 15 days following receipt of the applicable monitoring data. If monitored NAAQS exceedances occur, MSC shall submit to the Director for approval a mitigation plan for future outages. Such plan shall be submitted within 60 days of submission of the monitored impacts report, and include a commitment by MSC to abide by such plan.
- vi. During the planned maintenance outage, MSC shall only use coal in the coke batteries with an average blended sulfur content of no greater than 1.25%. Compliance with the sulfur content limits will be supplier certification data or similar data.
- vii. MSC shall be limited to a maximum of 3 days, or 72 hours, taken in any combination of hours or days in any calendar year, for unplanned maintenance outages of the desulfurization unit in the coke by-products recovery plant. For the purposes of counting hours, unplanned maintenance outages begin at the time of the first hour that is greater than 50 grains of H₂S/100 cubic feet of COG, and conclude at the time of the first hour (following a maintenance

start) that is less than or equal to 50 grains of H₂S/100 cubic feet of COG. During any unplanned maintenance outage, MSC shall employ the emissions control and mitigation measures described in Sections II.4.iv to the extent practicable under the circumstances. As soon as practicable, but no later than 24 hours after an unplanned outage has commenced, MSC shall notify the Director of such outage.

- b. The requirements set forth in Section II.4 become effective on January 1, 2017.
 - c. The restrictions in this Section II.4 shall not apply if MSC conducts the maintenance outage without taking offline the H₂S scrubber in a circumstance where MSC employs equivalent redundant controls for desulfurization of the Facility's COG.
5. MSC shall maintain all records required by this Consent Order for a minimum of five years. All such records shall be located at the Facility and shall be available for WVDEP review.
 6. MSC shall combine the #9 Boiler Stack and #10 Boiler Stack and divert the gas flow into the already combined #6 and #7 Boiler Stack ("Combined Boiler Stack"). MSC shall complete the engineering for the Combined Boiler Stack by April 1, 2016. MSC shall complete the construction and commence operation of the Combined Boiler Stack by January 1, 2017.
 7. Within 180 days of the effective date of this Consent Order, MSC shall submit to the Department complete 45 CSR § 13 and Title V permit modification applications, requesting the incorporation of the terms of this Section II "Order for Compliance" into the respective operating permits. Upon incorporation of the "Order for Compliance" terms into final operating permits, this Consent Order shall terminate. Thereafter, revisions to the "Order for Compliance" terms incorporated into the operating permits can be achieved pursuant to appropriate procedures for permit amendments and modifications as set forth in 45 CSR § 13-4, 45 CSR § 13-5, 45 CSR § 30-6.4, and 45 CSR § 30-6.5.

8. MSC shall physically disconnect the COG pipeline leading to the Mingo Junction Energy Center located in Mingo Junction, Ohio, by January 1, 2017. The physical disconnection of the COG pipeline shall occur within the MSC plant boundary. MSC shall also not provide COG to any entity offsite of the MSC plant proper.
9. MSC shall submit quarterly reports to the Director by April 30th for the 1st quarter, by July 31st for the 2nd quarter, by October 31st for the 3rd quarter and by January 31st for the 4th quarter. The first quarterly report shall be submitted to the Director by April 30, 2017. These quarterly reports shall include the following:
 - a. The pounds of SO₂ per hour as a daily average for each COG combustion source as required by Section II.1.d.
 - b. The daily 24-hour average scrubber circulation flow rate as required by Section II.3.h.


III. Other Provisions

1. The Company hereby waives its right to appeal this Order under the provisions of Chapter 22, Article 5, Section I of the Code of West Virginia. Under this Order, the Company agrees to take all actions required by the terms and conditions of this Order and consents to and will not contest the Director's jurisdiction regarding this Order. However, the Company does not admit to any factual and legal determinations made by the Director and reserves all rights and defenses available regarding liability or responsibility in any proceedings regarding the Company other than proceedings, administrative or civil, to enforce this Order.
2. The Director reserves the right to take further action if compliance with the terms and conditions of this Order does not adequately address the NAAQS nonattainment noted herein and reserves all rights and defenses which he or she may have pursuant to any legal authority, as well as the right to raise, as a basis for supporting such legal authority or defenses, facts other than those contained in the Findings of Fact.
3. If any event occurs which causes delay in the achievement of the requirements of this Order, the Company shall have the burden of proving that the delay was caused by

circumstances beyond its reasonable control which could not have been overcome by due diligence (i.e., force majeure). Force majeure shall not include delays caused or contributed to by the lack of sufficient funding. Within five (5) working days after the Company becomes aware of such a delay, notification shall be provided to the Director and the Company shall, within ten (10) working days of initial notification, submit a detailed written explanation of the anticipated length and cause of the delay, the measures taken and/or to be taken to prevent or minimize the delay, and a timetable by which the Company intends to implement these measures. If the director agrees that the delay has been or will be caused by circumstances beyond the reasonable control of the Company (i.e., force majeure), the time for performance hereunder shall be extended for a period of time equal to the delay resulting from such circumstances. A force majeure amendment granted by the Director shall be considered a binding extension of this Order and of the requirements herein. The determination of the Director shall be final and not subject to appeal.

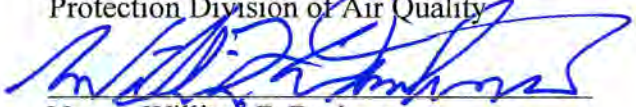
4. Compliance with the terms and conditions of this Order shall not in any way be construed as relieving MSC of the obligation to comply with any applicable law, permit, other order, or any other requirement otherwise applicable. Violations of the terms and conditions of this Order may subject MSC to additional penalties and injunctive relief in accordance with the applicable law.
5. The provisions of this Order are severable and should a court or board of competent jurisdiction declares any provisions to be invalid or unenforceable, all other provisions shall remain in full force and effect.
6. This Order is binding on MSC and its successors and assigns.
7. This Order shall become effective immediately upon signing by both parties.

Mountain State Carbon, LLC



Name: Joseph C. Alter
Title: Vice President-General Counsel and
Corporate Secretary, AK Steel Corporation

West Virginia Department of Environmental
Protection Division of Air Quality



Name: William F. Durham
Title: Director