AIR QUALITY PROGRAM
301 39th Street, Bldg. #7
Pittsburgh, PA 15201-1811

Federally Enforceable Installation Permit For 1-Hour SO_2 NAAQS

Issued To: **U. S. Steel Mon Valley Works**
Edgar Thomson Plant
13th Street and Braddock Avenue
Braddock, PA 15104

ACHD Permit#: **0051-I006**

Date of Issuance: September 14, 2017

Expiration Date: (See Section III.12)

Issued By: _____
JoAnn Truchan, P.E.
Section Chief, Engineering

Prepared By: _____
Hafeez A. Ajenifuja
Air Quality Engineer

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AMENDMENTS:

DATE SECTION(S)

I. CONTACT INFORMATION

Facility Location:
U. S. Steel Mon Valley Works
Edgar Thomson Plant
13th Street and Braddock Avenue
Braddock, PA 15104

Permittee/Owner:
U. S. Steel Mon Valley Works
Edgar Thomson Plant
13th Street and Braddock Avenue
Braddock, PA 15104

Responsible Official:	**Kurt Barshick**
Title:	General Manager
Company:	U. S. Steel Mon Valley Works
Address:	P.O. Box 878 Dravosburg, PA 15122
Telephone Number:	412-675-2600
Fax Number:	412-675-5407

Facility Contact:	**Coleen M. Davis**
Title:	Sr. Environmental Control Engineer
Telephone Number:	412-273-4730
Fax Number:	412-273-7099
E-mail Address:	cdavis@uss.com

AGENCY ADDRESSES:

ACHD Contact:
Chief Engineer
Allegheny County Health Department
Air Quality Program
301 39th Street, Building #7
Pittsburgh, PA 15201-1811

EPA Contact:
Enforcement Programs Section (3AP12)
USEPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

II. FACILITY DESCRIPTION

FACILITY DESCRIPTION

The U. S. Steel Mon Valley Works Edgar Thomson Plant (ET) is an iron and steel making facility that produces mainly steel slabs. Raw materials such as coke, iron-bearing materials, and fluxes are charged to blast furnaces in the iron making process. Molten metal (iron) is tapped from the blast furnace at the casthouse into transfer ladles. The hot metal is then transferred to a hot metal mixer or direct pour station in preparation for desulfurization. For desulfurization, a reagent is added to the hot metal, causing sulfur and other impurities to form and rise to the surface. Desulfurized hot metal is then introduced into the basic oxygen process (BOP), where the hot metal is transformed into molten steel. Scrap, alloys, fluxes, and oxygen are also introduced at the BOP. The liquid steel is tapped from the BOP vessels and transferred to the ladle metallurgy facility (LMF) or Vacuum Degasser, where the properties of the steel can be more precisely refined according to customer specifications. To achieve this additional refining at the LMF or Vacuum Degasser, specific alloying materials are added to the process. The refined liquid steel is then charged to the dual strand continuous caster mold. The steel slabs are formed in the continuous caster and are cut to length, ground, slit as necessary, and shipped offsite. There are three Riley Boilers at ET, which are used to generate steam, heat, and electricity for the plant. The three primary fuels for the boilers are Blast Furnace Gas (BFG), Coke Oven Gas, (COG), and Natural Gas (NG).

The facility has two (2) processes that are operated by an outside contractor:

1. BOP Slag Processing; and
2. Waste Product Recycling and Briquetting.

The BOP slag handling system is being operated by Tube City IMS, LLC, while the Waste Product Recycling and Briquette is operated by Braddock Recovery Inc, a division of Harsco Corporation.

Both Tube City IMS, Inc. and Braddock Recovery Inc. are located on U .S. Steel Edgar Thomson property and are considered Title V facilities by ACHD. These facilities are part of the same major source, acting as support facilities to Edgar Thomson Plant, and will be obtaining their own Title V operating permit in the near future.

In addition, BOC Gases (Linde) is another support facility that is located outside U. S. Steel Edgar Thomson compound but supplies oxygen to U. S. Steel Edgar Thomson Plant. BOC Gases is also supplying gases to other companies and is therefore not considered a co-located Title V facility at this time.

The facility, which is located in Braddock, Pennsylvania, is a major source of particulate matter less than 10 microns in diameter (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOC), and Hazardous Air Pollutants (HAPs), as defined in Section 2101.20 of Article XXI.

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The emission units regulated by this permit are summarized in Table II-1:

TABLE II-1: Emission Unit Identification

I.D.	SOURCE DESCRIPTION	SO_2 CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
P001a	Blast Furnace No. 1 Casthouse	NA	1,752,000 TPY (Production)	Coke, Iron- Bearing Materials, Fluxes	S002
P001b	Blast Furnace No. 1 Stoves	NA	495 MMBtu/hour (total)	BFG, COG & Natural Gas	S001
P002a	Blast Furnace No. 3 Casthouse	NA	1,752,000 TPY (Production)	Coke, Iron- Bearing Materials, Fluxes	S002
P002b	Blast Furnace No. 3 Stoves	NA	495 MMBtu/hour (total)	BFG, COG & Natural Gas	S004
P003	Basic Oxygen Process (BOP) Shop	NA	3, 467,500 TPY (Production)	Hot Metal (Iron), Fluxes, Scrap, Alloy Additives	S005-S008
P005	Dual Strand Caster	NA	3, 467,500 TPY (Production)	Steel (Liquid), Fluxes	N/A
B001	Riley Boiler No. 1	NA	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S012
B002	Riley Boiler No. 2	NA	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S013
B003	Riley Boiler No. 3	NA	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S014

DECLARATION OF POLICY

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III. GENERAL CONDITIONS

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15. Reporting Requirements (§2103.12.k)

a. The permittee shall submit reports of any required monitoring at least every six (6) months. All instances of deviations from permit requirements must be clearly identified in such reports. All required reports must be certified by the Responsible Official.

b. Prompt reporting of deviations from permit requirements is required, including those attributable to upset conditions as defined in this permit and Article XXI §2108.01.c, the probable cause of such deviations, and any corrective actions or preventive measures taken.

c. All reports submitted to the Department shall comply with the certification requirements of General Condition III.4 above.

d. Semiannual reports required by this permit shall be submitted to the Department as follows:

1) One semiannual report is due by July 31 of each year for the time period beginning January 1 and ending June 30.
2) One semiannual report is due by January 31 of each year for the time period beginning July 1 and ending December 31.

e. In accordance with Department procedures, reports may be emailed to the Department at aqreports@alleghenycounty.us in lieu of mailing a hard copy.

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IV. SITE LEVEL TERMS AND CONDITIONS

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27. SO_2 Compliance Monitoring

The permittee shall not operate, or allow to be operated, any source in such manner that unburned coke oven gas is emitted into the open air. In addition, the permittee shall not flare, mix, or combust coke oven gas, or allow such gas to be flared, mixed or combusted unless the concentration of sulfur compounds, measured as hydrogen sulfide, in such gas is less than or equal to 35 grains per hundred dry standard cubic feet of coke oven gas produced by the Clairton Plant, when all sulfur emissions from the Claus Sulfur Recovery Plant and the tail gas cleaning equipment thereon, expressed as equivalent H_2S are added to the measured H_2S. The concentration of sulfur compounds specified shall include the tail-gas sulfur, measured as hydrogen sulfide, emitted from sulfur removal equipment. [§2105.21.h].

28. SO_2 Compliance

The restrictions and requirements in Section V.A will become effective on or before October 4, 2018.

V. EMISSION UNIT LEVEL TERMS AND CONDITIONS

A. SO_2 Limits

The permittee is subject to the following conditions:

1. Restrictions:

a. The combustion units listed in Table V-A-1 shall only combust natural gas, blast furnace gas, and coke oven gas.

b. The permittee shall construct a new stack consisting of combined flue systems for Riley Boilers 1, 2, and 3. All three Riley boilers shall exhaust at all times to the new stack, constructed to a minimum release height of 70 meters.

c. SO_2 emissions from the following sources shall not exceed the limitations in Tables V-A-1 and V-A-2 below: [§2102.04.b.6, §2105.21.h.4]

TABLE V-A-1: Combustion Unit Emission Limitations

PROCESS/EQUIPMENT	MAXIMUM ALLOWABLE SO_2 EMISSION RATE (lb/hr)
Riley Boiler 1	556.91 (On a combined stack basis)
Riley Boiler 2	
Riley Boiler 3	
Blast Furnace 1 Stoves	98.50
Blast Furnace 3 Stoves	90.00

TABLE V-A-2: Emission Limitations (Non-Combustion)

PROCESS/EQUIPMENT	MAXIMUM ALLOWABLE SO_2 EMISSION RATE (lb/hr)
Blast Furnace 1 Casthouse (roof & fume suppression)	2.01
Blast Furnace 3 Casthouse (roof & fume suppression)	1.69
BOP Process (roof)	6.64
Continuous Casting (roof)	5.25
Casthouse Baghouse	45.10

2. Testing Requirements:

a. The permittee shall have sulfur dioxide (SO_2) emissions stack tests performed on the boiler combined stacks within 6 months of completion of equipment installation. Emissions testing of the boiler combined stack and emission units listed in Table V-A-1 shall be tested at least once every two years. SO_2 emission tests shall be conducted according to Article XXI, §2108.02. The permittee shall submit a stack test protocol to the Department for approval at least 45 days prior to the test date(s). [§2108.02.b and §2108.02.e]

[redacted]

3. Monitoring Requirement:

a. The permittee shall determine the hourly H_2S concentration of the gas, per conditions V.A.3.b and V.A.3.c, and the amount of fuel combusted in each emission unit listed in Tables V-A-1 and V-A-2. [§2102.04.b.6; §2103.12.i]

b. The permittee shall determine the H_2S content of the blast furnace gas combusted at the facility at least once every calendar quarter. The sulfur content of BFG shall be determined by obtaining and analyzing samples of BFG produced at the blast furnaces at a sample location downstream of the gas cleaning system but prior to a combustion source. [§2102.04.b.6; §2103.12.i]

c. Except for monitor malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), the permittee shall continuously monitor and record the H_2S concentration (in grains(gr)/100 dscf) of the COG combusted and the fuel flow rate. Continuously shall be defined as at least once every 15 minutes. Under the current operating scenario, coke oven gas measurements are taken at the Clairton Plant. [§2102.04.b.6; §2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep records of fuel combusted on an hourly basis in each of the emission units listed in Table V-A-1. [§2103.12.j]

b. The permittee shall record all instances of non-compliance with the conditions of this permit upon occurrence along with corrective action taken to restore compliance**.** [§2103.12.j]

[redacted]

5. Reporting Requirements:

a. The permittee shall report to the Department semi-annually, in accordance with General Condition III.15, all instances of non-compliance with the conditions of this permit along with all corrective action taken to restore the subject equipment to compliance. If all the terms and conditions of this permit are complied with during the reporting period, then no report is necessary under this permit condition. [§2103.12.k]

b. Reporting instances of non-compliance in accordance with condition V.A.5.a above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

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