ALLEGHENY COUNTY HEALTH DEPARTMENT

AIR QUALITY PROGRAM

301 39th Street, Bldg. #7
Pittsburgh, PA 15201-1891

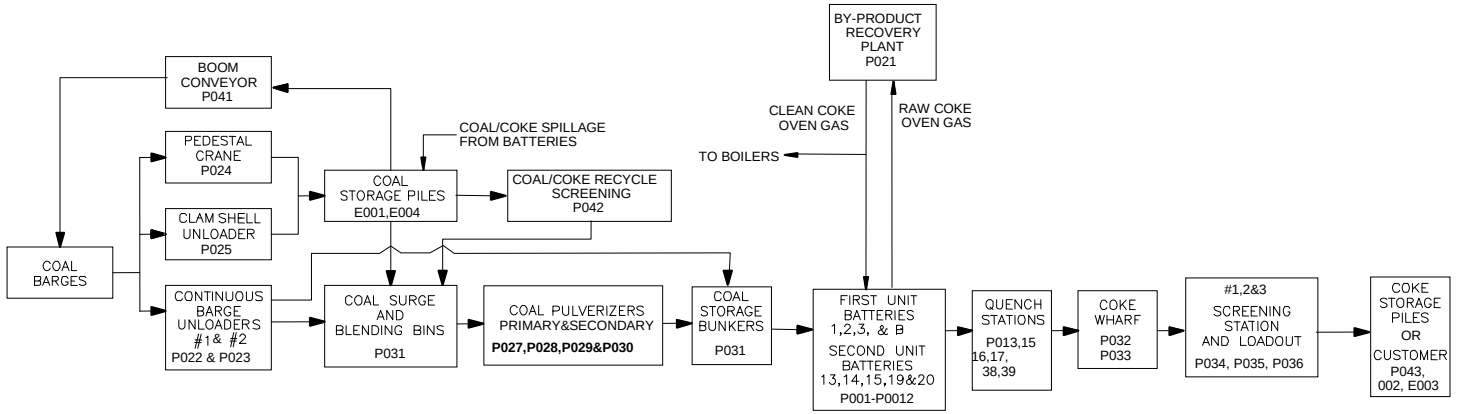
Major Source
&
Federally Enforceable State Operating Permit

Issued To:	United States Steel Corporation Mon Valley Works Clairton Plant	**ACHD Permit #:**	0052
Facility:	Clairton Coke Works 400 State Street Clairton, PA 15025-1855	**Date of Issuance:**	March 27, 2012
		Expiration Date:	March 26, 2017
		Renewal Date:	September 27, 2016

Issued By: _____
Sandra L. Etzel
Air Pollution Control Mgr.

Prepared By: Hafeez A. Ajenifuja
Air Quality Engineer

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
P009	Coke Battery No. 15	PEC Baghouse (P052 - Serves Batteries 13, 14 & 15)	545,675 tons of coal charged per year	Coal, recycled coke plant materials, and bulk density control additives	S009
P010	Coke Battery No. 19	PEC Baghouse (P053 - Serves Batteries 19 & 20)	1,002,290 tons of coal charged per year	Coal, recycled coke plant materials, and bulk density control additives	S010
P011	Coke Battery No. 20	PEC Baghouse (P053 - Serves Batteries 19 & 20)	1,002,290 tons of coal charged per year	Coal, recycled coke plant materials, and bulk density control additives	S011
P012	Coke Battery B	PEC Baghouse (P054)	1,491,025 tons of coal charged per year	Coal, recycled coke plant materials, and bulk density control additives	S012
P013	Quench Tower No. 1 (Serves Batteries 1, 2 and 3)	Baffles	1,553,805 tons of coal per year	Incandescent coke and water	NA
P015	Quench Tower No. 5 (Serves Batteries 13, 14 & 15)	Baffles	1,637,025 tons of coal per year	Incandescent coke and water	NA
P038	Quench Tower No. 6 (Alternate-serves Batteries 13, 14 & 15)	Baffles	1,637,025 tons of coal per year	Incandescent coke and water	NA
P016	Quench Tower No. 7 (Serves Batteries 19 & 20)	Baffles	2,004,580 tons of coal per year	Incandescent coke and water	NA
P039	Quench Tower No. 8 (Alternate-serves Batteries 19 & 20)	Baffles	2,004,580 tons of coal per year	Incandescent coke and water	NA
P017	Quench Tower B (Serves Battery B)	Baffles	1,491,025 tons of coal per year	Incandescent coke and water	NA
P019	Desulfurization Plant	Afterburner	6,394,800 tons of coke per year	Coke oven tail gas	S023
P020	Keystone Cooling Tower	Mist Eliminators	39,420,000,000 gallons of water cooled per year	Heated non-contact cooling water	NA
P021	Coke By-Product Recovery Plant	Gas Blanketing	8,240,605 tons of coal charged per year	Raw coke oven gas	
P022	Continuous Barge Unloader No. 1	NA	4,598,635 tons of coal per year	Coal	NA
P023	Continuous Barge Unloader No. 2	NA	3,641,605 tons of coal per year	Coal	NA

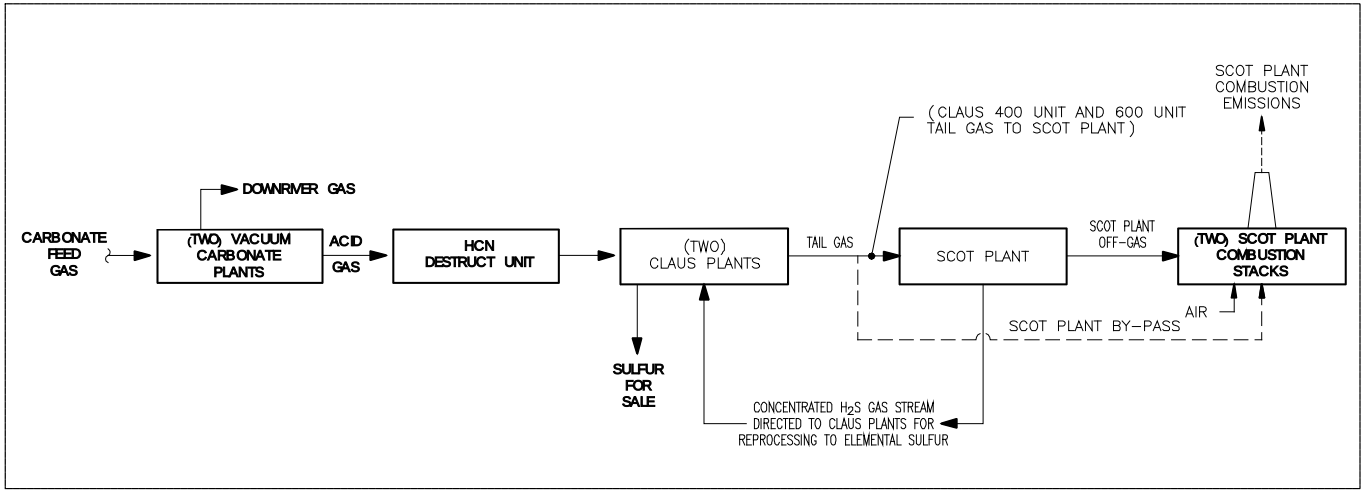


USS, A DIVISION OF USX CORPORATION
CLAIRTON WORKS — CLAIRTON PENNSYLVANIA

GENERAL FACILITY PROCESS FLOW DIAGRAM

FILE	DRW. BY	CHK. BY	APP. BY	DATE	REVISION	DATE	BY
697519b	JS	DB		10/31/00			

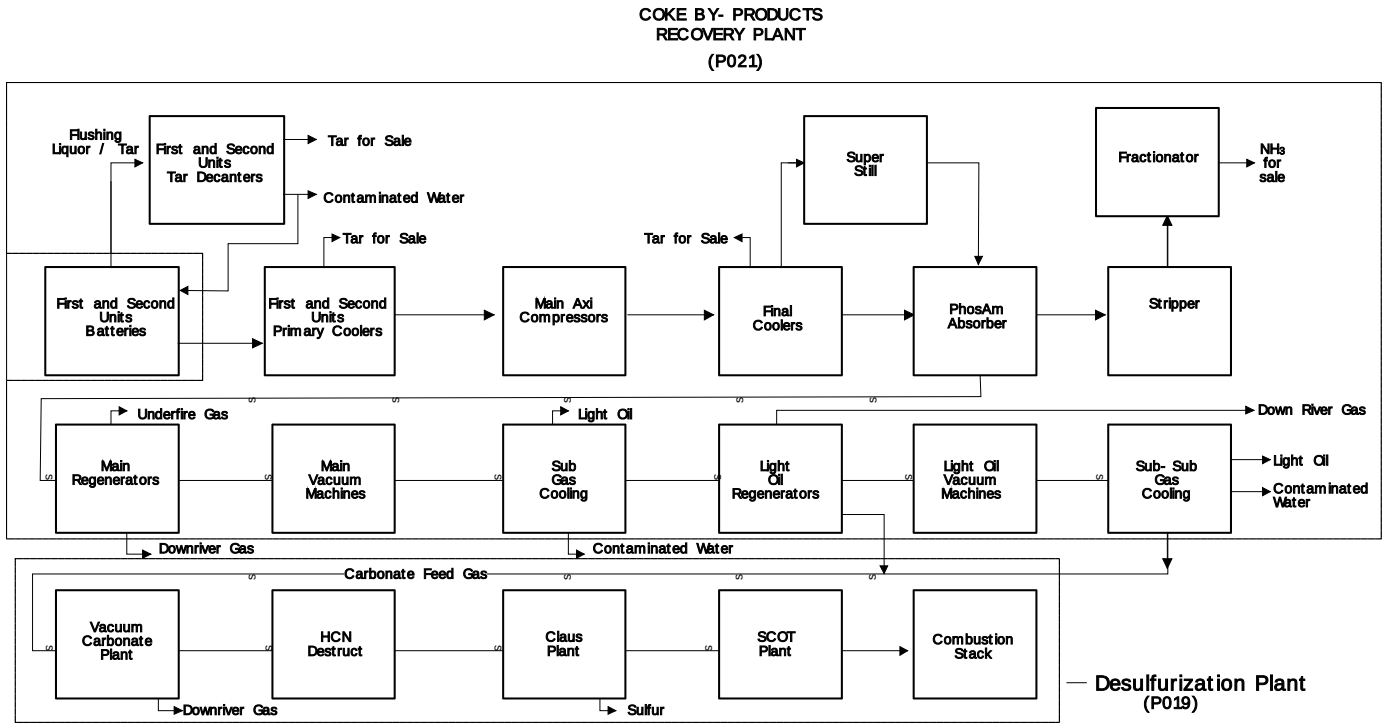
DESULFURIZATION
PLANT (P019)



USS, A DIVISION OF USX CORPORATION
CLAIRTON WORKS — CLAIRTON PENNSYLVANIA

DESULFURIZATION PLANT

FILE	DRW. BY	CHK. BY	APP. BY	DATE	REVISION	DATE	BY
697511b	JS	RT		10/17/00			



USS, A DIVISION OF USX CORPORATION
CLAIRTON WORKS — CLAIRTON PENNSYLVANIA

By- Products and Desulfurization Plant
Overall Process Flow Diagram

FILE	DRW. BY	CHK. BY	APP. BY	DATE	REVISION	DATE	BY
USXCairtonwrks	JS	RT		11/ 10/ 00			

K. Desulfurization Plant: P019

Process Description: Removes sulfur compounds from the coke oven gas after processing the gas in the by-products plant. The plant consists of a Vacuum Carbonate Unit, two Claus Plants, a SCOT Plant and an HCN Destruct Unit
Facility ID: P019
Max. Design Rate: 6,394,800 tons of coke per year
Capacity: 6,394,800 tons of coke per year
Raw Materials: Coke oven tail gas
Control Device: Afterburner

1. Restrictions:

a. The SCOT Plant incinerator shall be properly maintained and operated according to good engineering and air pollution control practices at all times. [§2105.06, RACT Plan 234]

b. The permittee shall not operate, or allow to be operated, the desulfurization plant in such manner that the opacity of visible emissions from a flue or process fugitive emissions from the desulfurization plant, excluding uncombined water: [§2104.01.a]

1) Equal or exceed an opacity of 20% for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or,
2) Equal or exceed an opacity of 60% at any time.

c. The permittee shall, at all times: [Enforcement Order No. 200, November 18, 1994]

1) Properly maintain two Claus Plants at the coke oven gas desulfurization facility. Each Claus Plant shall be capable of independently processing all of the coke oven gas produced by the coke plant at full production.
2) Operate one Claus Plant when coke oven gas is being produced.
3) Have its second Claus Plant ready for start-up and operation when a breakdown of the first Claus Plant occurs, except when the second Claus Plant is down for repairs, maintenance or modification. All repairs, maintenance and modifications to Claus Plants shall be made as expeditiously as practicable. The second Claus Plant shall start up and be fully operational within 18 hours of each breakdown on the first Claus Plant if the plant production is below 5,000 tons of coke per day at the time of the breakdown, or within 30 minutes of each such breakdown if the production is 5,000 tons of coke per day or greater.

d. The permittee shall: [Enforcement Order No. 200, November 18, 1994]

1) Operate and maintain an HCN (hydrogen cyanide) Destruct Unit at all times that coke oven gas is being produced.
2) Have two catalytic reactors in the HCN Destruct Unit, each of which is capable of independently processing all of the feed gas to the HCN Destruct Unit when the coke plant is operating at full production. The second catalytic reactor shall be ready for immediate operation at all times except when the second catalytic reactor is down for repairs. All repairs to catalytic reactors shall be made as expeditiously as practicable.

e. The permittee shall: [Enforcement Order No. 200, November 18, 1994]

1) Operate and maintain a Vacuum Carbonate Unit at all times that coke oven gas is being produced at the Clairton Works.
2) Have two absorber columns in the Vacuum Carbonate Unit, each of which is capable of independently processing all of the gas flow through the Vacuum Carbonate Unit when the coke plant is operating at full production.
3) Have two Axi compressors in the Vacuum Carbonate Unit, each of which is capable of independently processing all of the acid gases generated at the Vacuum Carbonate Unit when the coke plant is operating at full production.
4) Operate one absorber column and one Axi compressor at all times when coke oven gas is being produced.
5) Have its second absorber column and its second Axi compressor in the Vacuum Carbonate Unit ready at all times for operation within two hours except when the second absorber column or second Axi compressor is down for repairs, maintenance or modifications, or when there is a sudden, unexpected failure of a primary unit(s). If there is a sudden, unexpected failure of the primary absorber column or the primary Axi compressor, the secondary unit(s) shall be operational within eight hours of such failure(s). All repairs, maintenance and modifications to absorber columns and the Axi compressors shall be made as expeditiously as practicable.

f. The permittee shall: [Enforcement Order No. 200, November 18, 1994]

1) At all times, properly maintain two strippers in the Vacuum Carbonate Unit at the coke oven gas desulfurization facility.
2) Insure that each stripper shall be capable of independently processing all of the solution from the absorber column.
3) Operate one stripper in its Vacuum Carbonate Unit at all times when coke oven gas is being produced.
4) At all times, have its second stripper ready for operation within three (3) hours except when the second stripper is down for repairs, maintenance or modification. All repairs, maintenance and modifications to the strippers shall be made as expeditiously as practicable.

g. The permittee shall, at all times: [Enforcement Order No. 200, November 18, 1994]

1) Maintain in good working order spare heat exchangers in the Vacuum Carbonate Units at the Clairton Works coke oven gas desulfurization facility as set forth below:

Listing of Critical Heat Exchangers and Spare Heat Exchangers
For the Vacuum Carbonate Unit at the Clairton Works
Coke Oven Gas Desulfurization Facility

Unit
a. 100 Vacuum Carbonate Units Carbonate Reboiler
b. Process Water Cooler
c. Carbonate Solution Heat Exchanger

d. 600 Vacuum Carbonate Units
Carbonate Reboiler

e. Carbonate Solution Heat Exchanger

f. Process Water Cooler

g. For Both 100 and 600 Vacuum Carbonate Units
Vacuum Pump After-cooler

2) Maintain in good working order spare pumps in the Vacuum Carbonate Units at the coke oven gas desulfurization facility as appropriate:

Listing of Critical Pumps and Spare Pumps
For the Vacuum Carbonate Units at the Clairton Works
Coke Oven Gas Desulfurization Facility

Unit

a. 100 Vacuum Carbonate Units
Compressor Lube Oil

b. Turbine Lube Oil

c. Lean Carbonate Solution

d. Direct Condenser

e. Rich Carbonate Solution

f. 600 Vacuum Carbonate Units

g. Rich Solution

h. Lean Carbonate Solution

i. Direct Condenser Water

j. Common Spare for Rich Solution, Lean Carbonate Solution, and Direct Condenser Water

k. Lube Oil

h. The permittee shall not operate, or allow to be operated, any process in such manner that emissions of particulate matter from such process exceed seven (7) pounds in any 60 minute period or 100 pounds in any 24-hour period, except that no person subject to these requirements shall be required to reduce emissions to a greater degree than 99 percent. This condition shall apply to the sum of all stack emissions from such process including all emissions from any air pollution control device outlet(s) associated with such process. All fugitive emissions from such process shall be included in the sum of all stack emissions for purposes of this Subsection unless

the stack emissions can be accurately measured and all fugitive emissions do not exceed the standards established by §2104.01 of this Article or any alternative standard(s) established for such source pursuant to §2104.01 of Article XXI. [§2104.02.b]

i. The permittee shall not operate, or allow to be operated, any process, except for miscellaneous sulfur-emitting processes for which there is an emissions standard under Part E of Article XXI, in such manner that the concentration of sulfur oxides, expressed as sulfur dioxide, in the effluent gas exceeds 500 ppm (dry basis) at any time. [§2104.03.c]

j. 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, no person shall 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 the following concentrations: [§2105.21.h]

1) For coke batteries designated 13, 14, 15, 20, and B, a concentration of ten (10) grains per hundred dry cubic feet of coke oven gas;
2) The standard set forth in V.K.1.j.1) above for coke oven batteries designated 13, 14, 15, 20, and B shall be deemed satisfied for such batteries if the coke oven gas from batteries designated 1, 2, 3, 13, 14, 15, 19 , 20 and B and treated by the Clairton Works coke oven gas desulfurization system in existence as of June 24, 1993, has a sulfur compound concentration, measured as H_2S, of no greater than 40 grains per hundred dry standard cubic feet of coke oven gas produced by the Clairton Works, when all sulfur emissions from its 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 shall include tail-gas sulfur, measured as hydrogen sulfide, emitted from sulfur removal equipment.

2. Testing Requirements:

a. At least once every two (2) years, the permittee shall perform a stack test of the SCOT plant incinerator waste gas stream to measure the emission rate of sulfur compounds. This shall be determined by the performance of three sets of two-hour average measurements of sulfur compounds in the waste gas stream and the associated volume gas flows. All concentration and flow measurements for each run shall be performed over the same two-hour sampling period. Acceptable H_2S and organic sulfide measurement techniques are specified in Chapters 15 and 16 of the Department's Source Testing Manual. Waste gas stream flow rates shall be determined by calibrated pitot tube measurements. All testing shall be performed in accordance with Article XXI. [Enforcement Order No. 200 (11/18/94) and §2108.02]

b. The permittee shall perform emission tests on the SCOT Plant for all the criteria pollutants and benzene (PM, PM_{10}, NO_x, SO_2, CO, VOC and benzene) to develop emission factors that can be applied to quantify criteria pollutants and benzene emissions. Such testing shall be conducted in accordance with approved EPA methods in Appendix A of 40 CFR Part 60, Article XXI §2108.02, and as approved by the Department. Reports of the stack testing shall be submitted to the Department within 90 days of the date of the stack test(s). (§2103.12.h.1; §2108.02.b, §2108.02.e.)

c. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 above and Article XXI §2108.02. (§2103.12.h.1)

3. Monitoring Requirements:

In order to demonstrate compliance with the concentration of sulfur compounds in the clean coke oven gas as specified in §2105.21.h, the permittee shall continuously monitor the concentration of sulfur compounds, measured as H_2S, in the desulfurized coke oven gas according to the continuous Method approved by the Department.. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall maintain records of all repairs, maintenance and modifications to: [§2103.12.j]
   a) The two Claus Plants; and
   b) The absorber columns, strippers and axi compressors in the Vacuum Carbonate Unit.

b. The permittee shall maintain records of the following information: [§2103.12.j]

   1) For each day and for the month, the average grains of H_2S per 100 dscf of coke oven gas (COG) processed by the desulfurization system:
      a) In the raw COG delivered;
      b) In the clean COG;
      c) In the tail gas; and
      d) In the total of the clean COG and the tail gas;

   2) The number of days on which the average grains H_2S per 100 dscf of COG (total of clean COG measurements and tail gas measurements) exceed the applicable standard, rounding off to the nearest 0.1 grain; and

   3) The monthly percentage availability (on-line time) of the desulfurization system, based on the total hours of coke operations and the total hours that both the plant was fully available and all COG was normally processed; and

   4) For each full or partial outage of the desulfurization system, including any full or partial bypassing of the system:
      a) The starting and ending dates and times;
      b) The total time of each outage, and the total for the month, to the nearest tenth of an hour;
      c) The corresponding Department Breakdown Number; and the reason(s) or cause(s) for the outage.

5. Reporting Requirements:

a. The permittee shall report any event that causes the breakdown or unavailability of: [§2103.12.k and Enforcement Order 3/28/90]

   1) Any Claus plant, stripper, absorber column or axi compressor to be ready for immediate operation, or to be available as spare equipment;
   2) Both a heat exchanger and its respective spare, as set forth in V.K.1.g.1) above or
   3) Both a pump and its respective spare, as set forth in V.K.1.g.2) above.

b. No later than twenty (20) days after the end of each month, a written report of a summary of the following during each such month shall be submitted to the Department: [§2103.12.k and

Enforcement Order 3/28/90]

1) For each day and for the month, the average grains of H_2S per 100 dscf of coke oven gas (COG) processed by the desulfurization system:
   a) In the raw COG delivered;
   b) In the clean COG;
   c) In the tail gas; and
   d) In the total of the clean COG and the tail gas;

2) The number of days on which the average grains H_2S per 100 dscf of COG (total of clean COG measurements and tail gas measurements) exceed the applicable standard, rounding off to the nearest 0.1 grain; and

3) The monthly percentage availability (on-line time) of the desulfurization system, based on the total hours of coke operations and the total hours that both the plant was fully available and all COG was normally processed; and

4) For each full or partial outage of the desulfurization system, including any full or partial bypassing of the system:

   a) The starting and ending dates and times;
   b) The total time of each outage, and the total for the month, to the nearest tenth of an hour;
   c) The corresponding Department Breakdown Number; and the reason(s) or cause(s) for the outage.

6. Work Practice Standards:

None except as provided elsewhere in this permit.

7. Additional requirements:

The permittee shall conduct an engineering evaluation of the SCOT Plant stack emissions within 8 months of permit issuance and submit a report to the Department within 30 days of completion of the evaluation. The engineering evaluation will include but not limited to the following:

a. General review of existing equipment;
b. General review of existing operating and maintenance procedures;
c. Evaluation of gas combustion to ensure complete combustion; and
d. Evaluation of the desulfurization process to determine factors affecting SCOT plant stack emissions

PERMIT SHIELD IN EFFECT