United States Steel Corporation

Mon Valley Works - Edgar Thomson Plant

Installation Permit Application
Thin Slab Caster Project

May 2019

United States Steel Corporation
Mon Valley Works

Michael G. Dzurinko
Director, Environmental Control

May 2, 2019

Ms. JoAnn Truchan, P.E.
Allegheny County Health Department
Air Quality Program
301 39th Street, Building #7
Pittsburgh, PA 15201

RE: United States Steel Corporation
Edgar Thomson Plant (TVOP No. 0051)
Installation Permit Application – Endless Strip Production Facility

Dear Ms. Truchan,

United States Steel Corporation (U. S. Steel) operates the Edgar Thomson Plant in Braddock, Allegheny County. This facility currently operates pursuant to Title V Operating Permit (TVOP) No. 0051.

U.S. Steel is pleased to submit this Installation Permit Application to construct state-of-the-art facilities that would replace the existing continuous caster with a new Endless Strip Production (ESP) process at the Edgar Thomson Plant. This project is part of the overarching Mon Valley Works modernization and emissions reduction strategy. Based upon current design and engineering data, we expect that implementation of this strategy at our Mon Valley Works facilities will result in significant improvements in emissions compared to the existing facilities to be replaced, including reductions in emissions of Particulate Matter (PM) of approximately 60%, PM10 and PM2.5 of approximately 35%, sulfur dioxide of approximately 50%, and nitrogen oxides of approximately 80%.

The addition of the state-of-the-art ESP process at the Edgar Thomson Plant is a key component of this strategy and will be the first of its kind anywhere in the United States. Employing this state-of-the-art technology will strengthen our ability to improve air quality and reduce our carbon footprint.

Enclosed is a complete permit application package which includes the following elements:

- Application Report;
  - Project Description
  - Calculation Methodology
  - Regulatory Applicability
  - BACT Analysis
- Air Permit Application Forms;

- Compliance Review Form;
- Detailed Emission Calculations;
- Process Flow Diagrams;
- Site Map;
- Air Toxics Policy Review; and
- Application Fee.

We appreciate the Department's assistance and attention to this important permit application. If you have any questions on this application or need any additional information, please contact me by email at MDzurinko@uss.com or by phone at (412) 233-1467; or Chris Hardin by phone at (412) 433-5904 or by email at CWHardin@uss.com.

Sincerely,

Michael G. Dzurinko

cc: C. Davis (USS)
T. Woodwell (USS)
C. Hardin (USS)
D. Hacker (USS)

PROJECT REPORT

United States Steel Corporation
Mon Valley Works - Edgar Thomson Plant

Installation Permit Application

Thin Slab Caster Project

Prepared by:

TRINITY CONSULTANTS
4500 Brooktree Drive
Suite 103
Wexford, PA 15090
(724) 935-2611

May 2019

Trinity Consultants

EHS solutions delivered uncommonly well

United States Steel Corporation
Pittsburgh, PA 15219

BNY Mellon, N.A.
Pittsburgh, PA

0620271240

8-26
430

DO NOT CASH UNLESS WARNING BAND AND CHECK BACKGROUND ARE BLUE. WATERMARK ON BACK. HOLD AT ANGLE TO VIEW

VOID VOID VOID

ONE THOUSAND AND NO/100 DOLLARS

03/20/2019

VOID AFTER 90 DAYS

PAY ONLY 1,000.00

VOID VOID VOID HEALTH DEPT.

TO THE ORDER OF

ALLEGHENY COUNTY OF 0002
ACHD-AIR POLLUTION CONTRL FUND
AIR QUALITY PROGRAM-BUILDING 7
301 39TH ST
PITTSBURGH, PA 15201-1891

VOID VOID VOID VOID VOID

AUTHORIZED SIGNATURE REQUIRED

⑈0620271240⑈ ⑆043301601⑆ 902⑈0761⑈

United States Steel Corporation 03/20/2019 **0620271240**

For ERS Invoice Types: Contact Plant For Inquiries Please Visit: SteelTrack.uss.com OMLP

DIV. 74 ALLEGHENY COUNTY OF VENDOR CODE: 105586 - PAGE 1 OF 1

PO No.	Rel No.	Invoice Type	Invoice Date	Invoice No.	Discount	Net Remittance	Fac	Remit Comments
		STANDARD	03/15/2019	15-MAR-2019-A3		1,000.00	817	IMMEDIATE CHECK

RECEIVED

MAY 02 2019

ALLEGHENY COUNTY HEALTH DEPT.
AIR QUALITY PROGRAM

SEQ-707-2 REV 7/14

CHECK TOTAL: **1,000.00**

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

United States Steel Corporation (U. S. Steel) operates the Mon Valley Works, an integrated coke and steel-making operation located in Allegheny County, Pennsylvania. The complex is comprised of three (3) main plants: the Irvin Plant, the Clairton Plant, and the Edgar Thomson Plant. The proposed project will involve the installation of new sources of air emissions at the Edgar Thomson Plant. The Edgar Thomson Plant is located in Braddock, Pennsylvania and is currently authorized by Title V Operating Permit No. 0051.

The Edgar Thomson Plant is an existing major source of nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), hazardous air pollutants (HAPs), and volatile organic compounds (VOCs), as defined in §2101.20 of Article XXI. Allegheny County, or portions of it, is currently designated as nonattainment for SO_2 and $PM_{2.5}$.

U. S. Steel is proposing to install a new thin slab caster operation at the Edgar Thomson Plant. As part of this project, the existing continuous caster will be shut down. This project is part of the overarching Mon Valley Works modernization and emissions reduction strategy. The addition of the state-of-the-art ESP process at the Edgar Thomson Plant will be the first of its kind anywhere in the United States. Employing this state of the art technology will strengthen our ability to improve air quality and reduce our carbon footprint. The project emissions increase will be well below the Significant Emission Rate (SER) thresholds for triggering a major modification for all regulated New Source Review (NSR) pollutants.

This application is for an Installation Permit requesting authorization to construct the proposed project. The required application elements are organized as follows:

- Section 2: Facility Description
- Section 3: Emission Calculations
- Section 4: Regulatory Applicability Analysis
- Section 5: New Source Review (NSR) Applicability Analysis
- Section 6: Best Available Control Technology (BACT) Summary
- Appendix A: Air Quality Permit Application Forms
- Appendix B: Compliance Review Form
- Appendix C: Emission Calculations
- Appendix D: Process Flow Diagrams
- Appendix E: Site Map
- Appendix F: Air Toxics Policy Review

The proposed project involves the installation of a new Endless Strip Production (ESP) process at the Edgar Thomson Plant which is a thin slab caster process. The ESP process will receive molten steel from the melt shop. Each heat will be transported to the ESP process and poured out from the ladle via a tundish (an intermediate vessel) into a thin slab mold. The tundish vessel is rectangular in shape and is lined with high-temperature refractory. It functions as an intermediate reservoir for the molten steel which allows for continuous flow to the caster at an even, controlled rate during ladle changes. The tundish bottom is equipped with a stopper rod to control the flow of liquid steel into the mold, and with a submerged entry nozzle (SEN) to eliminate re-oxidation of the steel. From the thin slab caster, the liquid steel will be cooled to a completely solidified strand before being directly fed into the High Reduction Mill (HRM), where it is rolled to a transfer bar with a thickness of about 8 - 20 mm. The transfer bar will be reheated up to desired temperatures by a compact inductive heating furnace, descaled in a high pressure water descaler, and deformed to the final strip thickness by means of a 5-stand finishing train. As the strip exits out of the last finishing stand at the desired temperature, the strip material is cooled down to the target coiling temperatures on the laminar cooling line and coiled. The separation of the transfer bar / strip into single coils will be done either by the pendulum shear (semi-batch mode) or by the high speed shear just in front of the first down coiler (endless mode). Following installation of the new ESP process, the existing continuous caster will not be needed and will be shut down.

New air emission sources to be installed with the proposed ESP process include the following:

- Two (2) gas-fired tundish preheating stations, each with a heat input rating of 7.51 MMBtu/hr;
- Two (2) gas-fired SEN preheaters, each with a heat input rating of 0.82 MMBtu/hr;
- One (1) gas-fired tundish drying station, with a heat input rating of 3.41 MMBtu/hr; and
- Three (3) cooling towers, with a total water circulation rate of approximately 6.1 million gal/hr.

In addition to the new sources, there will be an associated small increase in emissions from paved and unpaved roadways at Edgar Thomson Plant due to transportation of finished coils from the ESP process to the warehouse, as well as shipping from the warehouse out of the plant. However, overall fugitive emissions in the Mon Valley will be reduced as part of the modernization efforts.

While some existing infrastructure may be used to support the Project, there are no associated emissions increases from existing units that will occur as a result of this project. As noted, the existing dual strand caster operations at the Edgar Thomson Plant will be permanently shut down as part of this project. There will be a transition period to facilitate the initial startup and commissioning phase of the new ESP process, which is expected to occur over approximately six months. During this time, the new thin slab caster will begin taking heats from the steel making operations on the day shift and will gradually ramp up to two shifts, and eventually making a full transition to full-time (three shift) operations when appropriate. Over the course of the six-month transition phase, the existing dual strand caster will operate during periods of operation at the new thin slab caster. However, the existing dual strand caster and the new thin slab caster will not be operated at the same time. In addition, following completion of the project, slabs will no longer be processed at the Irvin Plant resulting in significant decrease in emissions.

All emissions sources affected by the proposed project (new and associated) are described in detail below and depicted on a process flow diagram included in Appendix D.

2.1. TUNDISH PREHEATING

The ESP process will include two (2) tundish preheating stations which serve to preheat the tundish to operating temperature prior to casting. The preheaters will be direct-fired units capable of burning natural gas or a blend of coke oven gas with natural gas. Each preheater will be equipped with low-NO_X burners and will have a maximum heat input rating of 7.51 MMBtu/hr. The preheating stations will operate up to approximately five and a half hours per day (2,008 hours per year), each. Emissions from the tundish preheating stations will result from the combustion of fuel and will occur inside the caster building (i.e., the preheaters will not have stacks vented to the atmosphere).

2.2. SEN PREHEATING

The ESP process will include two (2) SEN preheating stations which serve to preheat the SEN before casting. The preheaters will be direct-fired units capable of burning natural gas or a blend of coke oven gas with natural gas. Each preheater will be equipped with low-NO_X burners and will have a maximum heat input rating of 0.82 MMBtu/hr. The preheating stations will operate up to approximately five and a half hours per day (2,008 hours per year), each. Emissions from the SEN preheating stations will result from the combustion of fuel and will occur inside the caster building (i.e., the preheaters will not have stacks vented to the atmosphere).

2.3. TUNDISH DRYING

The ESP process will include one (1) tundish drying station which will serve to dry the tundish after repair of the refractory lining to make it ready for the next preheating cycle. The dryer will be a direct-fired unit capable of burning natural gas or a blend of coke oven gas with natural gas. The dryer will be equipped with low-NO_X burners and will have a maximum heat input rating of 3.41 MMBtu/hr. The tundish drying station will operate up to approximately fourteen (14) hours per day (5,110 hours per year). Emissions from the tundish drying station will result from the combustion of fuel and will occur inside the caster building (i.e., the dryer will not have a stack vented to the atmosphere).

2.4. COOLING TOWERS

The proposed ESP process will include three (3) cooling towers to supply both contact and non-contact cooling water to various parts of the process. The capacity of the towers will range from 792,540 gallons per hour up to 4,007,640 gallons per hour. All of the cooling towers will be low-drift design (0.001% drift rate). They will operate on a full-time basis (8,760 hours per year, each).

2.5. ROADWAYS

As part of the project, U. S. Steel has accounted for the associated truck traffic that will occur as a result of transporting finished coils from the caster building to warehouse storage, as well as from storage to the plant exit for delivery to customers. This traffic impacts both paved and unpaved roadway segments. U. S. Steel employs dust suppression/mitigation currently at the facility, and will continue to do so for the roadways impacted by this project.

The characteristics of air emissions from the proposed sources for the ESP process, along with the methodology used for calculating emissions, are described in narrative form below. Detailed supporting calculations are also provided in Appendix C. Note that all emission calculations that are based on published emission factors have included a 15% "safety factor" consistent with ACHD's historical practices.

Emissions from the preheating and drying stations will result from gas combustion in the direct-fired burners. Emissions will also result from the operation of the three cooling towers. Finally, there will be associated fugitive dust emissions from paved and unpaved roadways as a result of the project. The methods by which emissions from each of these sources has been calculated are summarized below. A detailed analysis of the air toxics emissions and applicability of ACHD's Air Toxics Policy is included in Appendix F. The project qualifies for the de minimis provisions under the Air Toxics Policy.

3.1. COMBUSTION SOURCES

Potential emissions of nitrogen oxides (NOx), carbon monoxide (CO), and carbon dioxide (CO_2) are calculated using factors provided by the vendor that will supply the preheating and drying stations. Potential emissions of other criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas-fired external combustion sources and the FIRE database for coke oven gas-fired combustion sources. Emissions of other greenhouse gases are calculated using U.S. EPA's emission factors in 40 CFR 98 Subpart C. For each of the combustion sources, emissions from both fuel scenarios (100% natural gas or 90% coke oven gas blended with 10% natural gas) have been calculated. When needed to estimate emissions, calculations assume a site-specific heat content of natural gas and coke oven gas. Finally, emissions have been calculated using the maximum fuel consumption expected based on the operating schedule of each source.

3.2. COOLING TOWERS

For the new proposed cooling towers, potential emissions were calculated based on methodology presented in Reisman, J. and Frisbie, G., "Calculating Realistic PM_{10} Emissions from Cooling Towers."[1] The calculations assume a total dissolved solids (TDS) content of 1,500 ppm and tower-specific circulation rates based on vendor design criteria. The towers will be designed with high efficiency drift eliminators (0.001% drift rate), which is reflected in the emissions calculations.

3.3. ROADWAYS

There will be segments of paved and unpaved roadways at the facility which will be impacted by the new ESP process. Emission factors, in terms of pounds of PM per vehicle mile traveled (VMT), for the paved roads are estimated using the equations in U.S. EPA AP-42, 5th Edition, Section 13.2.1, Paved Roads. Emission factors for the unpaved roads are estimated using the equations in U.S. EPA AP-42, 5th Edition, Section 13.2.2, Unpaved Roads. The increase in VMT has been estimated on a project-specific basis, identifying the specific distances travelled and using production values to estimate the number of vehicle trips. U. S. Steel applies water and/or chemical dust suppressant to facility roads, providing an estimated 90% reduction of emissions.

[1] https://www.energy.ca.gov/sitingcases//palomar/documents/applicants_files/Data_Request_Response/Air%20Quality/Attachment%204-1.pdf

This section documents the applicability determinations made for state, local and Federal air quality regulations. Applicability or non-applicability of the following regulatory programs is addressed:

- New Source Review (Prevention of Significant Deterioration/Nonattainment New Source Review);
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- Allegheny County Health Department air quality regulation (Article XXI).

In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing ACHD to confirm that identified regulations are not applicable. Note that explanations of non-applicability are limited to those regulations for which there may be some question of applicability to specific operations associated with the project. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

4.1. NEW SOURCE REVIEW APPLICABILITY

The federal NSR program regulates the installation of new major sources or major modifications to existing major sources. The NSR permitting regulations are comprised of two (2) programs: 1) Prevention of Significant Deterioration for projects located in areas where specified pollutant levels have met National Ambient Air Quality Standards (NAAQS); and 2) Nonattainment New Source Review (NNSR) for projects located in areas where pollutant levels have not attained the corresponding NAAQS.

4.1.1. Major Source Status

The Edgar Thomson plant is an existing major source located in the City of Braddock, Allegheny County, Pennsylvania which is currently designated as being in non-attainment with the National Ambient Air Quality Standards (NAAQS) for SO_2 and $PM_{2.5}$. In addition, because the county is located within the Ozone Transport Region (OTR), the area is considered non-attainment for ozone precursor pollutants (NO_X and VOC). Therefore, both Non-Attainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD) permitting requirements are potentially applicable to the proposed project. As an existing major source, a major modification under NSR is triggered when a project results in a net increase in emissions for any regulated pollutant greater than the respective significant emission rate (SER).

4.1.2. NSR Analysis

ACHD's Article XXI regulations adopt the Federal PSD permitting procedures from 40 CFR §52.21 and the state NNSR permitting procedures from 25 PA Code §127.203. To determine the major NSR applicability for the ESP project under these two programs, the steps outlined in the U.S. EPA's NSR Workshop Manual, pages A.46-49 were generally followed. A traditional NSR applicability analysis is based on two steps: (1) determining emissions increases from the proposed project; and if increases are greater than the corresponding SER for any pollutant (2) determining the net emissions increases from the proposed project and other contemporaneous changes at the facility. These steps are discussed in detail in the following sections.

Step 1 – Determine Emissions Increases from the Proposed Project

Only project-related emissions are evaluated in this step; any contemporaneous increases or decreases are considered in Step 2.

1. Determine baseline actual emissions (BAE) from the highest 24-month average actuals over the last 10 years for PSD pollutants and the last 5 years for NNSR pollutants. The same 24-month period must be use for all sources affected by the project (existing sources that will be modified or will see an increase associated with the project). A different baseline period can be used for different pollutants, but must include all affected sources of that pollutant.

2. Determine future emissions after the project. For new sources, use potential-to-emit (PTE). For existing sources that are modified or otherwise associated with the project, use projected actual emissions (PAE).

3. Calculate project increase = PAE (or PTE) – BAE.

4. Compare project increase of each pollutant to the corresponding SER. If any pollutant exceeds the SER, then proceed to Step 2 for that pollutant.

The proposed ESP project primarily involves the installation of new sources, with the exception of associated increases from plant roadways. Therefore, PTE from the proposed new sources and the increases in roadway emissions associated with the project, as well as decreases from the shutdown of the existing continuous caster, were used in determining the project emissions increase for comparison against the SERs. As shown in Table 4-1, project increases do not exceed the SER for any pollutant, so it is not necessary to proceed to Step 2 netting for major modifications under NSR. Detailed emission calculations for all sources are included in Appendix C.

Table 4.1-1. NSR Evaluation Step 1 – Project Increases

Pollutant	Project Increase (tpy)	NSR SER (tpy)	NSR Major Modification?
CO	-0.99	100	**NO**
NO_X	-0.15	40	**NO**
PM	3.87	25	**NO**
PM_{10}	2.68	15	**NO**
$PM_{2.5}$	0.16	10	**NO**
NH_3	0.03	40	**NO**
Pb	0.00001	0.6	**NO**
SO_2	3.84	40	**NO**
VOC	0.05	40	**NO**
CO_2e	663.57	75,000	**NO**

4.1.3. Minor (De Minimis) NNSR Provisions for Ozone Precursors and SO_2

Since this project is considered a de minimis (non-major) emissions increase as the result of the major modification applicability review for NO_x, VOC and SO_2, then a second applicability test is performed in accordance with 25 Pa Code §127.203a(a)(2). Note that these provisions do not apply to $PM_{2.5}$ or $PM_{2.5}$ precursors.

This applicability determination is an additional netting analysis that is performed similar to the major NNSR applicability determination except for the following elements:

- All contemporaneous increases/decreases that occurred within 10 years prior to the receipt of a completed application are to be included in the analysis;
- The analysis does not apply to $PM_{2.5}$ or $PM_{2.5}$ precursors; and
- If the net emissions increase, using the above methodology, is significant, then only the requirement to obtain emissions offsets applies.

U. S. Steel has identified the following contemporaneous projects at Edgar Thomson that fall within this window for NOx, VOC and/or SO_2:

- BOP Open Hood Water Cooling Tower (particulate emissions only – not subject to this review);
- BOP Gas Cleaning Water Cooling Tower (particulate emissions only – not subject to this review); and
- Fire pump replacement (Request for Determination with <0.01 tpy VOC and 0.3 tpy NO_x and 0.001 tpy SO_2).

Given the small project emissions increase shown in Table 4-1 and these changes, the project will not trigger minor NNSR provisions.

4.2. NEW SOURCE PERFORMANCE STANDARDS

New Source Performance Standards (NSPS), located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except where expressly noted.

The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the ESP Project.

4.2.1. NSPS Subpart A – General Provisions

All affected sources subject to source-specific NSPS are subject to the general provisions of NSPS Subpart A unless specifically excluded by the source-specific NSPS. Subpart A requires initial notification, performance testing, recordkeeping and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable. Because the project will not trigger any new NSPS requirements, Subpart A will not be applicable to the project.

4.2.2. NSPS Subpart D – Standards of Performance for Fossil Fuel-Fired Steam Generating Units

NSPS Subpart D applies to fossil-fuel-fired steam generating units with heat input ratings greater than 250 MMBtu/hr, which were installed after August 17, 1971. The combustion sources proposed as part of the ESP process are all direct-fired heaters and will not generate steam. Therefore this subpart will not apply.

4.2.3. NSPS Subpart Db – Standards of Performance for Industrial-Commercial Steam Generating Units

NSPS Subpart Db applies to steam generating units and process heaters with heat input ratings greater than 100 MMBtu/hr, which were installed after June 19, 1984. NSPS Subpart Db defines a process heater as "a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst." The combustion sources proposed as part of the ESP process are direct-fired units that do not meet this definition and are well below the 100 MMBtu/hr applicability threshold, and therefore will not be subject to this subpart.

4.2.4. NSPS Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Dc applies to a steam generating units and process heaters for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr. The combustion sources proposed as part of the ESP process are

direct-fired units that do not meet the definition of a process heater and will be below the 10 MMBtu/hr applicability threshold, and therefore will not be subject to this subpart.

4.2.5. NSPS Subpart AAa – Standards of Performance for Steel Plants: EAFs and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

NSPS Subpart AAa applies to electric arc furnaces (EAFs), argon-oxygen decarburization (AOD) vessels, and dust-handling systems that commence construction, modification, or reconstruction after August 17, 1983. The proposed ESP project will not include EAF or AOD sources; therefore this subpart will not apply.

4.2.6. NSPS Subpart TT – Metal Coil Surface Coating

NSPS Subpart TT applies to metal coil surface coating operations that commence construction, modification, or reconstruction after January 5, 1981. Affected facility operations include: each prime coat operation, each finish coat operation, and each prime and finish coat operation combined when the finish coat is applied wet on wet over the prime coat and both coatings are cured simultaneously. The proposed ESP process will not involve the application or curing of coatings. As such, this subpart will not apply.

4.2.7. Non-Applicability of All Other NSPS

NSPS standards are developed for particular industrial source categories, and the applicability of a particular NSPS to a facility can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed project.

4.3. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

National Emission Standards for Hazardous Air Pollutants (NESHAPs), located in 40 CFR 61 and 63 are applicable to major sources of HAPs and certain designated area sources of HAPs. A major source of HAP is one with potential emissions in excess of 25 tpy for total HAPs and/or potential emissions in excess of 10 tpy for any individual HAP. The Edgar Thomson plan is an existing major source of HAP since its potential emissions of HAP are greater than the major source thresholds. NESHAP apply to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The following is a summary of applicability and non-applicability determinations for NESHAP regulations of relevance to the proposed project.

4.3.1. NESHAP Subpart A – General Provisions

NESHAP Subpart A, General Provisions, contains national emissions standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources, which are subject to another NESHAP, are subject to the general provisions of NESHAP Subpart A, unless specifically excluded by the source specific NESHAP.

4.3.2. NESHAP Subpart MMMM – Surface Coating of Miscellaneous Metal Parts and Products

NESHAP Subpart MMMM applies to facilities that conduct surface coating operations which coat miscellaneous metal parts as defined in 40 CFR 63.3881(a). The proposed ESP process will not include any surface coating, therefore this subpart will not apply.

4.3.3. NESHAP Subpart DDDDD – Industrial, Commercial, and Institutional Boilers (Area Source Boiler MACT)

40 CFR 63 Subpart DDDDD regulates HAP emissions from new, reconstructed and existing industrial, commercial, and institutional boilers and process heaters at major HAP sources. This subpart defines a process heater as "an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials." The combustion sources proposed as part of this project are direct-fired units which do not meet this definition. As such, this subpart will not apply.

4.3.4. NESHAP Subpart Q – Industrial Process Cooling Towers

40 CFR 63 Subpart Q regulates industrial cooling towers at certain types of facilities (including primary and secondary metal producers) which use chromium-based water treatment chemicals in the cooling towers. U. S. Steel does not use chromium-based water treatment chemicals currently, and will not use them in the new proposed cooling towers. As such, this subpart will not apply.

4.3.5. NESHAP Subpart SSSS – Metal Coil Surface Coating

This subpart applies to the use of toxics in metal coil surface coating operations at major sources. The proposed ESP process will not involve the application or curing of coatings. As such, this subpart will not apply.

4.3.6. Non-Applicability of All Other NESHAP

NESHAP standards are developed for particular industrial source categories, and the applicability of a particular NESHAP subpart to a facility can be readily ascertained based on the industrial source category covered. All other NESHAP subparts are categorically not applicable to the proposed project.

4.4. ARTICLE XXI APPLICABILITY

The Allegheny County Air Pollution Control Regulations (from Article XXI) that are applicable to the sources proposed for the ESP project are outlined below.

4.4.1. Article XXI §2104.01a - Visible Emissions

This regulation states that opacity shall not equal or exceed 20% for a period aggregating more than 3 minutes in any 60 minute period, or 60% at any time. The operations of the Edgar Thomson plant, including the sources proposed as part of this project, will be subject to these general opacity requirements. Compliance will be demonstrated through the use of good combustion practices for the heaters/dryers, high efficiency drift eliminators and low TDS for the cooling towers, and routine dust control measures for roadways.

4.4.2. Article XXI §2104.02.a - Particulate Emissions: Processes – Fuel Burning or Combustion Equipment

This regulation applies to fuel-burning or combustion equipment, where the actual heat input to such equipment is greater than 0.50 MMBtu/hr. PM emissions from natural gas-fired equipment is limited to 0.008 lb/MMBtu, and from coke oven gas-fired equipment PM is limited to 0.02 lb/MMBtu. The proposed preheaters and dryers are subject to this limitation, and are expected to meet this as shown in the detailed emission calculations in Appendix C.

4.4.3. Article XXI §2104.02.b - Particulate Emissions: Processes - General

PM for process not specifically listed under this regulation is limited to 7 lbs in any 60 minute period or 100 lbs in any 24-hour period unless reduced by at least 99%. As shown in the detailed calculations in Appendix C, all proposed sources are expected to comply with these limitations.

4.4.4. Article XXI §2104.03.a - SO_2 Emissions

For equipment fired only with natural gas and/or liquefied petroleum gas, this regulation limits SO_2 emissions at a rate no greater than the potential to emit. For other equipment with a heat input rating greater than 0.5 MMBtu/hr and less than 50 MMBtu/hr, SO_2 emissions are limited to 1.0 lb/MMBtu. The proposed combustion sources will be subject to this regulation. As shown in the detailed calculations in Appendix C, these units will meet the applicable limits of this regulation.

4.4.5. Article XXI §2104.04 - Odor Emissions

Under this regulation, malodors are prohibited beyond the property line. U. S. Steel will ensure that the facility does not emit malodors beyond the property line through proper operation and maintenance of equipment.

4.4.6. Article XXI §2104.05 - Materials Handling

Emissions from materials handling shall not be visible beyond the property line. No emissions from material handling activities are anticipated from the proposed operations.

4.4.7. Article XXI §2104.07 – Stack Heights

This regulation specifies that the degree of emission limitation required of any source for purposes of demonstrating compliance with a NAAQS shall not be affected by that portion of any stack height that exceeds Good Engineering Practice (GEP) or any other dispersion techniques as defined by federal regulations. Emissions from the sources being proposed as part of this project will be fugitive in nature and will not be directed to the atmosphere through a stack.

4.4.8. Article XXI §2104.08 - National Emission Standards for Hazardous Air Pollutants

The federal NESHAP and MACT requirements are incorporated into ACHD regulations by reference. The potentially applicable regulations are discussed in Section 4.3 above.

4.4.9. Article XXI §2105.03 - Proper Operation and Maintenance of Air Pollution Equipment

All required air pollution control equipment must be properly installed, operated and maintained consistent with good air pollution control practices. The proposed project scope includes equipment that has air pollution control measures as part of their inherent design (e.g., low-NO_X burners, high-efficiency drift eliminators, etc.). No add-on control equipment will be installed as part of this project.

4.4.10. Article XXI §2105.05 - New Source Performance Standards

The federal NSPS requirements are incorporated into ACHD regulations by reference. The potentially applicable NSPS regulations are discussed in Section 4.2 above.

4.4.11. Article XXI §2105.06 - Major NO_X and VOC Sources

This section applies to all major sources of NO_X or VOCs in existence as of November 1, 1992, for which no applicable emission limitations have been established by regulations under Article XXI. The facility is an existing major source with respect to NO_X and VOC, and as such this regulation does apply. The sources proposed as part of the ESP project that will emit NO_X and VOC are the combustion units, all of which will have heat input ratings less than 20 MMBtu/hr. As such, these combustion units will be subject to presumptive RACT requirements under §2105.06.d.6.A., which require installation, maintenance, and operation of the sources in accordance with manufacturer's specifications. In addition, these sources will be subject to BACT requirements as new sources.

4.4.12. Article XXI §2105.21 – Coke Ovens and Coke Oven Gas

Under 2105.21.h. of this regulation, coke oven gas supplied by the Clairton Coke Works cannot be combusted unless the concentration of hydrogen sulfide (H_2S) is less than or equal to 40 grains per 100 scf. The combustion units proposed as part of the ESP process will be designed to burn a blend of coke oven gas from Clairton along with natural gas (90/10 blend), so this limit will apply. The Title V permit for this facility already contains a limitation of 35 grains per 100 scf. U. S. Steel proposes to retain this limit for the new equipment.

4.4.13. Article XXI §2105.40.a - Fugitive Sources (Permitting Sources)

This section of Article XXI specifies that a permitted source may not be operated in a manner that emissions are visible beyond the property line, have opacity of more than 20% or more for a period aggregating more than 3 minutes in any 60 minute period, or 60% at any time. U. S. Steel will ensure that emissions from the proposed process are not visible beyond the property line, and will comply with the opacity requirements.

4.4.14. Article XXI §2105.42 – Parking Lots & Roadways

Under this regulation, emissions from plant roadways cannot be visible beyond the property line, cannot have opacity greater than 20% for more than three minutes in any 60-minute period, or great than 60% at any time. The Edgar Thomson plant is subject to this regulation, and routinely utilizes dust suppression techniques to comply.

4.4.15. Article XXI §2105.43 - Transport Emissions (Permitted Sources)

This section requires that no person shall transport, or allow to be transported, any solid or liquid material outside the boundary line of any source in such manner that there is any visible emission, leak, spill, or other escape of such material during transport. U. S. Steel will ensure that there are no visible emissions, leaks or spills during transporting of materials associated with the proposed project.

4.4.16. Article XXI §2105.45 – Construction and Land Clearing

This regulation prohibits opacity in excess of 20% for more than three minutes in any 60-minute period, or great than 60% at any time from construction or land clearing activities. U. S. Steel will ensure that all construction activities related to the proposed project meet this requirement.

4.4.17. Article XXI §2105.49 - Fugitive Emissions

This rule requires reasonable action must be taken to prevent fugitive emissions from becoming air-borne. U. S. Steel will employ measures to prevent fugitive emissions from becoming airborne as needed to comply with this rule.

4.4.18. Article XXI §2105.82 – Control of VOC from Industrial Solvent Cleaning Operations

Under this regulation, any industrial solvent used for repair, maintenance, or servicing of parts, products, tools, machinery, equipment or general work areas must meet applicable VOC content limits as specified in the rule. This regulation applies generally to the operations at the Edgar Thomson plant and U. S. Steel will maintain records of solvents used to demonstrate compliance with the VOC content limits, control requirements, or exemption criteria. U. S. Steel will follow the prescribed work practices for proper handling and storage of VOC-containing solvents.

5. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DISCUSSION

Under ACHD air permitting regulations in Article XXI, new sources of air emissions must implement BACT. The proposed project will involve the installation of new equipment, therefore sources applicable to this requirement must be deemed by ACHD to satisfy this requirement before an Installation Permit can be issued. BACT for the proposed equipment has been evaluated using a "top-down" approach for each pollutant of concern generally following U.S. EPA's guidance for conducting BACT analyses for PSD evaluations. The BACT analysis is based on the following five (5) steps:

- Step 1. Identify all possible control technologies;
- Step 2. Eliminate technically infeasible options;
- Step 3. Rank the technically feasible control technologies based upon emission reduction potential;
- Step 4. Evaluate ranked controls based on energy, environmental, and/or economic considerations; and
- Step 5. Select BACT.

The following sections discuss the BACT analysis for the proposed equipment in detail.

5.1. SUPPORTING DOCUMENTATION FOR BACT ANALYSIS

In the preparation of this analysis, numerous sources were consulted to identify potential technologies and to evaluate their technical and economic feasibility. The following is a list of references used in preparing this analysis:

- EPA's Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Reduction (LAER) Clearinghouse (RBLC) database for similar source types;
- Recently promulgated PADEP and ACHD RACT requirements;
- NSPS and NESHAP standards for similar sources;
- Information provided by air pollution control equipment vendors;
- Previous engineering experience with similar sources and control applications; and/or
- Review of literature from industrial technical or trade organizations.

BACT analysis and selection is described in the following sections. Given the relatively small emissions from each of the proposed sources, the BACT analysis focuses on the primary pollutants of concerns for each source as follows:

- Combustion Units: NO_X, SO_2;
- Cooling Towers: PM; and
- Roadways: PM.

5.2. BACT FOR COMBUSTION SOURCES

The proposed combustion sources associated with this project are small direct-fired gas-fueled combustion units ranging in size from 0.82 MMBtu/hr to 7.51 MMBtu/hr. The units will all be equipped with low-NO_X burners inherent to their design. As a result, NO_X emissions from the units will be very low (approximately 2.1 tons per year from all sources). The larger sources (tundish preheaters and dryer) will have NO_X emissions less than 0.02 lb/MMBtu. Because these sources have the potential to be fueled with coke oven gas, there is potential for SO_2 emissions that are somewhat higher than the natural gas firing scenario. Total SO_2 emissions from all combustion sources are expected to be 4.6 tons per year, and will be minimized by pretreatment of the coke oven gas that is burned.

Potentially applicable NO_X control technologies include:

- Selective Non-Catalytic Reduction (SNCR);
- Selective Catalytic Reduction (SCR);

- Low-NO_X or Ultra Low-NO_X Burners; and
- Good Combustion Practices.

Both SNCR and SCR involve the injection of reagent into the combustion zone. Because the proposed combustion units are direct-fired, this could result in the reagent contacting the steel and affecting product quality (if there even was adequate space for injection). There are no known applications of these control measures on steel industry process heaters. For this reason, both SCNR and SCR are determined to be **technically infeasible.** The proposed units will be equipped with low-NOX burners as is common for new sources of this type. In addition, combustion units of this size (< 10 MMBtu/hr) can follow good combustion practices to minimize NO_X emissions. Both of these control strategies are widely cited and used for combustion units of this size and type. Therefore, U. S. Steel is proposing low-NO_X burners and good combustion practices in accordance with manufacturer's recommendations as BACT.

Because the proposed units will burn coke oven gas, there will be SO_2 related emissions. Based on a search of combustion units of this size in U.S. EPA's RBLC database, the only technologies used to reduce SO_2 is the use of low-sulfur fuels. While larger combustion units have employed post-combustion control strategies like scrubbing or sorbent injection to reduce SO_2 emissions, these are very costly controls which would be **economically infeasible and technically infeasible** in this application. The proposed units will have the capability of burning a 90/10 blend of coke oven gas/natural gas. The coke oven gas fuel will be pre-treated to remove sulfur compounds to no more than 35 grains of H_2S per 100 scf prior to its delivery to the combustion units. H_2S content of the coke oven gas is monitored continuously for compliance with this limit. Therefore, U. S. Steel concludes that the pre-treatment and monitoring of sulfur compounds in the coke oven gas will constitute BACT for these combustion sources.

5.3. BACT FOR COOLING TOWERS

Particulate emissions from cooling towers are generated when water droplets are carried away from the tower, where the water then evaporates and leaves particulates behind. The emissions are a function of the cooling tower drift rate as well as the concentration and density of the total dissolved solids (TDS) in the water. Drift can be minimized through the use of high-efficiency drift/mist eliminators. TDS can be managed through monitoring and management/treatment of the cooling water supply. U. S. EPA's RBLC database identifies high-efficiency drift eliminators capable of reducing cooling tower drift down to ~0.001%. U. S. Steel is proposing to install high-efficiency cooling towers with a drift rate of 0.001% as BACT for these new sources.

5.4. BACT FOR ROADWAYS

Particulate emissions from paved and unpaved roadways occur when silt on the roadways becomes airborne. Emissions are a function of the silt content, moisture content, and vehicle miles traveled (VMT) of the roadway. The proposed project will result in a small increase in associated vehicle traffic on both paved and unpaved segments of plant roadways (much of the transportation will be done by rail, minimizing impacts to roadways). U. S. Steel routinely employs dust mitigation measures on roadways (e.g., application of water or chemical dust suppressant) as needed to mitigate dust. U. S. Steel has determined that this constitutes BACT and will continue this practice for the new roadways.

APPENDIX A: AIR QUALITY PERMIT APPLICATION FORMS

ALLEGHENY COUNTY HEALTH DEPARTMENT

AIR QUALITY PERMIT APPLICATION FORM

SECTION 1. PERMIT DESCRIPTION

Check Type of Permit:	Installation	Operating
Initial		
New Construction	X	
Major Modification		
Minor Modification		
Reactivation		
Temp.Source/Multi.Loc		
New Permit		
Renewal		
Adm. Permit Amend.		
Other (Explain Below)		

This permit application is for a:	
Major Source	X
Minor Source	
Synthetic Minor Source (See Section 10)	

Amount enclosed:

$1,000 for IP

FOR ACHD USE ONLY

Permit Number: 0051-I007

Completeness: _____

Administration: _____

Engineering: _____

Assigned to: _____

Brief Description of Permit Application/Source:
Installation of a new thin slab caster process at the Edgar Thomson Plant. As a result of this project, the existing continuous caster (P005) will be decommissioned.

SECTION 2. APPLICANT INFORMATION

Applicant Type Code	Applicant Name or Registered Fictitious Name
01	United States Steel Corporate, Mon Valley Works

RECEIVED
FOR ACHD USE ONLY
MAY 02 2019
ALLEGHENY COUNTY HEALTH DEPT.
AIR QUALITY PROGRAM

First Name	M. I.	Last Name
Kurt		Barshick

Title General Manager, Mon Valley Works

Mailing Address (Street # and Name or P. O. Box #, Box #, RR #, RD #)
P.O. Box 878

Relationship of Applicant to Permitted Activity. See instructions for appropriate code.

City	State	Zip Code + Extension
Dravosburg	PA	15034

Telephone 412-675-2600 FAX 412-675-5407 E-mail kbarshick@uss.com

SECTION 3. SITE INFORMATION

Facility Site Name
Edgar Thomson Plant

Federal Tax Identification Number

Address (Street #, Street Prefix, Street Name, Street Type, Street Suffix) ***P. O. BOX # IS NOT ACCEPTABLE***
13th Street and Braddock Avenue

Municipality	State	Zip Code + Extension
Braddock	PA	15104

Telephone (Day) 412-273-4730 Telephone (Eve.) 412-273-4730 FAX

SECTION 3. (cont.)

MAP LOCATION: Please provide the Universal Transverse Mercator (UTM) coordinates or the exact latitude and longitude of the plant. UTM coordinates are preferable to latitude and longitude and can be determined from US Geological Survey 7.5 Minute 1:24,000 scale maps.

Attach a drawing of your source showing all emission points. Number each stack S001, S002, S003, etc., and number each fugitive emission location F001, F002, etc. Identify roads as paved or unpaved, marking all parking lots (see Form E). Identify the plant boundary on the map. Include local roads and other necessary identifiers that will allow the Department to locate your source on County-wide maps.

UTM North _____ Or Latitude 40 Degrees 23 Minutes 44.73 Seconds NORTH

UTM East _____ Or Longitude 79 Degrees 51 Minutes 39.14 Seconds WEST

PLANT PROPERTY _____ Acres or _____ Square feet

BUILDING AREA _____ Acres or _____ Square feet

GIVE TRAVEL DIRECTIONS FROM DOWNTOWN PITTSBURGH:

Take I-376 East toward Monroeville. Take Exit 77 toward Swissvale and bear left onto Monongahela Ave and then right onto S. Braddock Ave. Proceed approximately 1.5 miles (road name will change to Kenmawr Ave. and turn into Ridge St.). Take ramp on right and bear left onto Kenmawr Ave., which will change name to Braddock Ave. Proceed approximately 1 mile and plant will be on your right.

DESCRIPTION OF BUSINESS

GIVE A BRIEF DESCRIPTION OF BUSINESS OR ACTIVITY CARRIED OUT AT THIS LOCATION:
Iron and steel making

PRINCIPAL PRODUCT(S):
Steel slabs and coils

APPROXIMATE NUMBER OF EMPLOYEES: ~625

If employment is seasonal, give the typical peak employment and indicate what season.

STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE FOR THIS LOCATION:
If there is more than one activity at this location, provide the Standard Industrial Code (SIC) for the principal activity, and other SIC codes in descending order of importance.

Primary SIC Code: 33 Primary activity: Primary Metal Industries

Secondary SIC Code: _____ Secondary activity: _____

Tertiary SIC Code: _____ Tertiary activity: _____

SECTION 4. ENVIRONMENTAL CONTACT		
First Name Coleen	M. I.	Last Name Davis
Title Sr. Environmental Control Engineer		
Telephone (412) 273-4730		FAX (412) 273-7099
Mailing Address (Street # and Name or P. O. Box #, Box #, RR #, RD #) 13th Street and Braddock Avenue		
City Braddock	State PA	Zip Code + Extension 15104
E-mail CDavis@uss.com		

SECTION 5: APPLICABLE REQUIREMENTS

In this section, briefly describe all applicable federal, state, or local air rules or requirements pertaining to the facility or any part of the facility.

"Applicable requirements" can come from any of the following:

(i.) Regulations that have been promulgated or approved by the EPA under the Clean Air Act or the regulations adopted under the Clean Air Act through rulemaking at the time of issuance but have future-effective compliance dates.

(ii.) A regulation under Allegheny County Article XXI (Air Pollution Control), including those incorporated by reference.

(iii.) A term or condition of any installation or operating permits issued pursuant to the County air quality regulations.

(iv.) A standard or other requirement under Section 111 of the Clean Air Act, including subsection (d).

(v.) A standard or other requirement under Section 112 of the Clean Air Act (42 U.S.C.A. □ 7412), including any requirement concerning accident prevention under subsection (r) (7).

(vi.) A standard or other requirement of the acid rain program under Title IV of the Clean Air Act (42 U.S.C.A.□□ 7641 - 7651o) or the regulations promulgated under the Clean Air Act.

(vii.) Requirements established under Section 504(b) or Section 114(a)(3) of the Clean Air Act (42 U.S.C.A. □ 7414(a)(3).

(viii.) A standard or other requirement governing solid waste incineration, under Section 129 of the Clean Air Act (42 U.S.C.A. □ 7429).

(ix.) A standard or other requirement for consumer and commercial products, under Section 183(e) of the Clean Air Act (42 U.S.C.A. □ 7511b(e)).

(x.) A standard or other requirement for tank vessels, under Section 183(f) of the Clean Air Act (42 U.S.C.A. □ 7511b).

(xi.) A standard or other requirement of the program to control air pollution from outer continental shelf sources, under Section 328 of the Clean Air Act (42 U.S.C.A. □ 7627).

(xii.) A standard or other requirement of the regulations promulgated to protect stratospheric ozone under Title VI of the Clean Air Act (42 U.S.C.A. □□ 7671-7671q), unless the Administrator of the EPA has determined that such requirements need not be contained in a Title V permit.

(xiii.) A national ambient air quality standard or increment or visibility requirement under Title I, Part C of the Clean Air Act (42 U.S.C.A. □□ 7470-77491), but only as it would apply to temporary sources permitted pursuant to Section 504(e) of the CAA (42 U.S.C.A. □ 7661d).

Include any regulations that are final, but may require controls to be put on, or lower emission rates to come into effect in the future. Be as specific as necessary. For example, if you have boilers rated at 10, 70, and 100 MMBtu, then for sulfur dioxide emissions list Article XXI 2104.03 a.1, 2, and 3. When you complete the Forms for specific operations, you will be requested to repeat those requirements unique to that unit. Include general emission requirements, such as 2104.04, odor emissions, if they apply.

If there are any limitations on source operation affecting emissions or any work practice standards, provide details in this section. Include supporting documents, if necessary. If the facility is claiming any exemptions to a part of an applicable requirements stated above or any other requirements, clearly identify what section. Copy this page as needed, and attach these additional pages to this section.

An example of how Section 5.A might be completed:

Emission Regulation	**Description**
Art. XXI □ 2104.02.a.2	**PM** 0.40 #/10^6 BTU
Art. XXI □ 2104.03.a.1	**SO_2** 1.0 #/10^6 BTU
Art. XXI □ 2104.01.a	**Opacity** □20% for ≤3 min./hr. or 60% at no time
Art. XXI □ 2105.06.d.1	Low **NOx** Burners w/overfire air

List and summarize all applicable federal, state, or local air rules or requirements pertaining to the facility or any part of the facility. Also describe any regulated work practice standards that affect air emissions. Include any regulations that are in place, but have delayed deadlines for compliance. (COPY THIS PAGE AS NEEDED)

REGULATION	DESCRIPTION
2102.04(b)	See Section 4.4 of attached application report

SECTION 6: METHOD OF DEMONSTRATING COMPLIANCE

List the method of demonstrating compliance with each of the emission standards (these may become conditions of the Operating Permit):

A. Compliance Method/ Monitoring Devices:

EMISSION UNIT #	POLLUTANT	REFERENCE TEST METHOD OR COMPLIANCE METHOD OR MONITORING DEVICE	FREQUENCY / DURATION OF SAMPLING
N/A			
Attach any details that would further explain the method of compliance.			

B. Record keeping and Reporting:

1. List what parameter will be recorded and the frequency of recording:

PARAMETER	FREQUENCY
Fuel Usage	Monthly

2. Describe what is to be reported and the frequency of reporting? (Reports must be submitted at least every six (6) months)

DESCRIPTION	FREQUENCY
N/A	

3. Beginning reporting date: __ /__ /__

COPY THIS PAGE AS NEEDED

SECTION 7: COMPLIANCE PLAN

A source may apply for and receive an Operating Permit if one or more emission units are out of compliance with a regulation, provided that an adequate plan is in place to bring the unit(s) into compliance.

A.__ 1. At the time of this permit application is your source in compliance with all applicable requirements, and do you expect your source to remain in compliance with these requirements during the permit duration (with the exception noted in item C)?

_X_ Yes __ No

2. Will your source be in compliance with all applicable requirements scheduled to take effect during the term of the permit, and will they be met by the applicable deadline?

_X_ Yes __ No

B.__ If you checked "No" for any question in Part A, please attach information identifying the requirement(s) and emission units for which compliance is not achieved, briefly describe how compliance will be achieved with the applicable requirement(s), and provide a detailed Schedule of Compliance (i.e., a schedule of remedial measures, including an enforceable sequence of actions with milestones and projected compliance dates). Title this portion of the document "Schedule M: Compliance Information". Indicate the frequency for submittal of progress reports (at least every six (6) months) and the starting date for submittal of progress reports.

C.__ Do you have scheduled shutdown of control equipment for maintenance while the emission units are still operating?

__ Yes _X_ No

If yes, attach a description of the equipment that will be taken out of service, what pollutants and emission sources are affected, the schedule and duration of the shutdown, and what actions will be taken to minimize emissions.

SECTION 8: OTHER PERMITS

Do you own or are you related to any other permitted company in Pennsylvania?

_X_ Yes __ No

If so, please list the company names:

U. S. Steel Mon Valley Works – Clairton Plant

U. S. Steel Mon Valley Works – Irvin Plant

U. S. Steel Mon Valley Works – Fairless Plant

SECTION 9: COMPLIANCE CERTIFICATION

You are required to submit a certificate of compliance with all applicable requirements and a method of determining compliance with those requirements (CEMS, monitoring, tests, record keeping and other reporting). Compliance certifications are to be submitted at least on an annual basis. Please answer the following:

Schedule for Submission of Compliance Certification during the term of the permit:

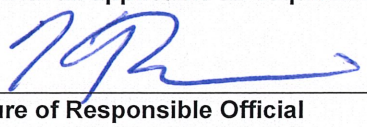
_X__ We will submit a Compliance Certification annually at the same time as the submittal of the annual administrative fee. OR

___ Beginning on: __ /__ /__

CERTIFICATION OF COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS

A "responsible official" must sign this certification. Applications without original signed certifications or necessary corporate authorizations will be returned as incomplete.

Except for the requirements identified in Section 7 for which compliance is not yet achieved, I hereby certify that, based on information and belief formed after reasonable inquiry, the source identified in this application is in compliance with all applicable air requirements.



Signature of Responsible Official

Kurt Barshick; General Manager MVW
Name and Title of Signer (Print or Type)

P.O. Box 878
Mailing Address (Street # and Name or P. O. Box #, RR #, RD #, Box #)

Dravosburg, PA 15034
City, State, and Zip Code + Extension

Date: 4/26/2019

SECTION 10: SYNTHETIC MINOR

A Major source may, at its option, choose to place limits on its operation or emissions in order to become a "Synthetic Minor" source, and not be subject to the additional requirements of a Major source. These limits will become permit restrictions and will be federally enforceable.

Does this application include any requested restrictions?
_X_ Yes __ No

If so, have these restrictions caused this site to go below Major source thresholds and become a Synthetic Minor?
__ Yes _X_ No

Is this facility requesting to become a Synthetic Minor source?
__ Yes _X_ No
(Please check the box on the top of page 1 as well.)

Be sure to include on each source information sheets, Forms A, B, and C, a complete description of the limitations that make this source a Synthetic Minor. Attach extra pages, if needed.

SECTION 11: INFORMATION FOR INSTALLATION PERMITS

Is this a new Major source or Major Modification for any criteria pollutant which is in or impacting a non-attainment area?
__ Yes _X_ No

If yes, list below for which pollutant(s).

Attach all required documents required under Article XXI, sections 2102.05 and 2102.06.

Is this a new Major source or Major Modification for any criteria pollutant which is in or impacting an attainment area or unclassified area?
__ Yes _X_ No

If yes, list below for which pollutant(s).

Attach all required documents required under Article XXI, sections 2102.05 and 2102.07.

A source applying for a Minor Installation Permit may request public review at this time.

Are you requesting public review for a Minor Installation Permit?

__ Yes _X_ No

SECTION 12: ALTERNATIVE OPERATING SCENARIOS

This permit allows for certain flexibility in operations. Please note the explanation of this section in the instructions. While filling out your permit application, consider all the different operating scenarios you might want to operate under during the 5-year term of your permit. This may include a change in inks or solvents, operating schedules, or other expected departures from operations that cannot be adequately described in the main body of the permit application.

Do you seek approval of any alternative operating scenario?

__ Yes _X_ No

If "Yes": Complete Form N to provide complete information for each alternative operating scenario to be employed at this location. Duplicate pages as needed.

Please note that there may be additional reporting requirements for alternative scenarios.

SECTION 13: ADDITIONAL SUBMITTALS

A form must be submitted for each process, boiler, incinerator, etc., as indicated below. Provide the numbers of each type of unit below, and submit the designated form for each unit. Also, identify each criteria pollutant and other regulated pollutant emitted by this source (facility). See Article XXI, definition of hazardous air pollutant and section 2101.10. Include also other pollutants not regulated, but with known emission rates. Provide the total below, and submit an emissions summary for each pollutant. List below all attachments made for this application. All applicable forms must be attached to each copy of the application.

_4_ Number of Processes - Submit one Form A for each process. Number each P001, P002, etc.
__ Number of Boilers - Submit one Form B for each boiler. Number each B001, B002, etc.
__ Number of Incinerators - Submit Form C for each incinerator. Number each I001, I002, etc.
__ Number of storage tanks - Submit one Form D for each tank or group of tanks. Number each D001, D002, etc.
__ Dry bulk materials storage and handling - Submit Form E.
_1_ Roads and vehicles - Submit Form F.
__ Miscellaneous fugitive emissions - Submit Form G.
_1_ Number of Form F: Roads and Vehicles.
__ Number of Form G: Miscellaneous Fugitive Emissions.
_6_ Number of Form K: One Emissions Summary Form for Each Pollutant.
__ Number of Form M: One Form M for each.
__ Number of Form N: One Form N for each scenario.

Are map(s)/drawing(s) attached? _X_ Yes __ No

Are required documents attached pertaining to an Installation Permit? _X_ Yes __ No

Are other comments/notes attached? _X_ Yes __ No

Is a **Best Available Control Technology (BACT) analysis attached for installations?** _X_ Yes __ No

Is a **Compliance Assurance Monitoring** (CAM) **Plan** (40 CFR Part 64) attached? (applicable to Title V Operating Permit Renewals.) __ Yes _X_ No

SECTION 14: ANNUAL APPLICATION / ADMINISTRATION FEE CALCULATION

INSTALLATION PERMIT APPLICATION - Check all that pertain to this application:

If this source is applicable to more than one category listed below, it is subject to the **highest** of the applicable fees, not to the total.

A	☐	Prevention of Significant Deterioration ($22,700)
B	☐	Involving ACHD Development of a MACT Standard ($8,000)
C	☐	Major new source or Major Modification ($8,000)
D	☐	Any source subject to an existing NSPS, NESHAP, or MACT ($1,700)
E	X	Any other Installation Permit ($1,000)
F	☐	Modification to an existing Installation Permit ($300)

Installation Permit Fee $ 1,000

Note: An administrative fee of $750.00 will be billed to the source, beginning 30 days after the Installation Permit is approved, and annually on the anniversary of the approval thereafter, until a complete Operating Permit Application has been submitted to the Department.

OPERATING PERMIT APPLICATION - Check all that pertain to this application:

A. ***Base fee*** (Minor or Synthetic Minor Source - $375.00 / Major Source - $750.00): $ ____

B. **Hazardous Air Pollutant Source fee** - (Major Source only - if any "hazardous air pollutants" (see §2101.10) are listed on Form K, add $375.00) +$ _____

C. **Acid Rain Source fee** (Major Source only - if any "acid rain" regulations are listed in Section 5, - add $375.00) +$ _____

D. **Adjusted Base fee** - Add A., B., and C.: =$ _____

E. **Noncomplying Source fee** (if "No" is checked in Section 7 Part A) Add 50% of the "Adjusted Base fee" from line D. above: +$ _____

F. **Total Fee Due** - Add D. and E.: =$ ____

Checks are to be made payable to the "ACHD Air Pollution Control Fund."

All sources that apply for Operating Permits will be required to pay an annual administrative fee equal to the Operating Permit Application Fee. Major sources are also required to pay annual emissions fees. These are to be paid at the scheduled submittal of the annual emissions inventory.

SECTION 14. BILLING CONTACT

First Name Kurt	M. I.	Last Name Barshick	
Title General Manager Mon Valley Works			
Telephone 412-675-2600		FAX 412-675-5407	
Mailing Address (Street # and Name or P. O. Box #, Box #, RR #, RD #): P.O. Box 878			
City Dravosburg	State PA	Zip Code + Extension 15034	
E-mail kbarshick@uss.com			

SECTION 15: SIGNATURES AND CERTIFICATION

CERTIFICATION OF COMPLETED APPLICATION

CERTIFICATION {for corporate applicants: Attach Certificate of Corporate Authority}

Subject to the penalties of Title 18 Pa. C.S. Section 4904 relating to unsworn falsification to authorities, I certify that I have the authority to submit this Permit Application on behalf of the applicant named herein and that the information provided in this Application is true and correct to the best of my knowledge and information.

Signature _____ Date 4-26-2019

Kurt Barshick
Name – Print or Type

General Manager, Mon Valley Works
Title – Print or Type

P.O. Box 878
Mailing Address – Print or Type

Dravosburg, PA 15034
City, State, and Zip Code + Extension – Print or Type

(412)675-2600 Day Phone Number

(412)675-5407 Fax Phone Number

Signature of Preparer of Form (if different than applicant).

Signature

Name, Mailing Address, and Phone# - Print or Type

Christopher Hardin

1350 Penn Ave, Suite 200

Pittsburgh, PA 15222

{For corporations:
Certificate of Corporate Authority must be completed, by the Corporate Secretary, and attached}

CERTIFICATE OF CORPORATE AUTHORITY

I, Duane D. Holloway, certify that I am the Secretary of the corporation named above; that Kurt Barshick, who has signed this document on behalf of the corporation was then General Manager, Mon Valley Works of the said corporation; and that I know his/her signature and his/her signature is genuine; and that said Agreement was fully signed, sealed, and attested for and in behalf of said corporation by authority of its governing body.

ATTESTED TO BY: _____ DATE: 4/26/19

{Signature}

NAME: Duane D. Holloway

{Print or type}

TITLE: SECRETARY

[AFFIX CORPORATE SEAL]

PERMIT APPLICATION FORM A
PROCESS OPERATIONS

PLANT NAME AND LOCATION: Edgar Thomson Plant

PART I - DESCRIPTION OF PROCESS (MAKE A COPY OF SCHEDULE A FOR EACH PROCESS.)

Company Identification or Description: Tundish Preheating Stations (2 Stations)

Installer: Unknown at this time Installation Date: TBD, Begin ~2020

Contractor (if operated by another): N/A

Design ___ Charging or _X_ Production rate (specify units): 390 metric tons

Total Annual Production (specify units normally used): 3,000,000 tons (for new caster)

Raw Materials: Liquid steel

Materials Produced: Steel coils

Process Operation Units: (Name and Previous County Permit Number, if any)

(1.) Tundish Preheating Station 1
(2.) Tundish Preheating Station 2
(3.)
(4.)
(5.)
(6.)

Diagram of Process Flow: Attach a separate sheet with a drawing of a flow diagram of this process, labeling each segment listed under Process Operation Segments. Label product intake points and product discharge points for each segment. Label emissions discharge points and the location of emissions control devices.

PART II - PROCESS OPERATION SCHEDULE (per station)

A. Normal schedule: (Provide information for last year. If a new unit, please estimate)

Hours/day 6 Days/week 7 Weeks/year 52 Hours/year 2,008

Start time __:__ End time __:__

Seasonal: Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February of the calendar year reported.

	Percent of Annual Production		
December, January, & February	25	June, July, & August	25
March, April, & May	25	September, October, & November	25

B. Requested limits: (Limitations on operating hours are optional.) Choose One:

_X **(See Fuel Limits)** 8760 hours (no limitations) or

___ I/We request the following limitation -- **This may become a federally enforceable permit condition:** Describe how this can be enforced: either list an operating schedule or downtime (e.g. only operate 8:00 to 4:00) or an operating hour reporting requirement.

_____ Total days x _____ Hours/day = _____ Hours/year

PART III – FUELS (per station)

A. Normal operation (Provide information for last year. If a new unit, please estimate)

____ Year _____ or _X_____ Estimate

	Primary	Secondary	Other	Other
Type:	COG/NG Blend	Natural Gas		
Max Amount/hour	7.51 MMBtu /hr	7.51 MMBtu /hr		
Sulfur Content (% wt):	35 gr/100 scf (H_2S, max)	Negl.		
Ash Content (% wt):	Negl.	Negl.		
BTU Rating (specify units)	7.51 MMBtu/ hr	7.51 MMBtu / hr		
Annual Fuel Consumption	15079 MMBtu/ yr	15079 MMBtu / yr		
Seasonal Fuel Consumption (%):				
December, January, and February	25	25		
March, April, and May	25	25		
June, July, and August	25	25		
September, October, and November	25	25		

Fuel Mixing: If more than one fuel is used, explain usage, stating whether it is burned separately, mixed in a fixed ratio of 90% coke oven gas (MMBtus) : 10% natural gas (MMBtus) (give units such as BTU, mmcf, gallons per ton, etc.), mixed in a variable ratio of__:__ to __:__, determined by heat input (give reason).

B. Requested limits (limitations on operations are optional, but may allow a Major source to be exempted from some requirements) **These may become permit conditions**. Please check one:

__ Full use of any fuel or combination at any time (no limitations)

_X_ The following limitations on types of fuels or the combination of fuels are requested (describe how compliance with this method will be demonstrated)

50,890 MMBtu/yr of fuel, aggregate for Tundish Preheating Stations 1 and 2, SEN Preheating Stations 1 and 2 and Tundish Drying Station

PART IV - OTHER LIMITATIONS

Identify any other requested limitations, such as on production rates or materials use. Describe how compliance with these restrictions will be demonstrated. **These limitations may become permit conditions**.

N/A

PART V - APPLICABLE REQUIREMENTS

Describe all applicable requirements affecting air emissions for this unit.

Regulation #	Requirements
2104.01.a	Opacity < 20% for 3-minutes in any 60-minute period, or < 60% at any time
2104.02.a	PM < 0.008 lb/MMBtu for natural gas; < 0.02 lb/MMBtu for COG/NG blend
2104.03.a	SO2 < PTE for natural gas; < 1.0 lb/MMBtu for COG/NG blend
2105.06	Presumptive RACT = installation, maintenance & operation in accordance with manufacturer's recommendations
2105.21	H2S concentration in COG < 40 gr/100 scf

PART VI - EMISSION CONTROLS **NOT APPLICABLE**

Complete the following applicable sections for each pollution control device. Attach additional sheets to provide sufficient information and engineering calculations to support the contol device performance.

On the space to the left of each device, number the device(s) by the order in which they process the waste stream(s). Fill out the requested information, then complete the table for efficiencies by pollutant for each device.

Percent Capture _____ % (not control efficiency)
Gas flow through control units _____ @ _____ ^{o}F

_____ **BAGHOUSE (fabric collector)**

Manufacturer's Name and Model _____
Type of bag material _____
Total filter cloth area _____ sq. ft., air to cloth ratio _____
Bag cleaning method: _____ , cycle _____ min
Pressure Drop: clean _____ "H_20, dirty _____ "H_20

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **ELECTROSTATIC PRECIPITATOR**

Manufacturer's Name and Model: _____
Type: __ Single Stage, __ Two Stage, __ Plate, __ Tube
Total collecting area: _____ sq. ft., cleaning cycle _____ min.
Gas Velocity: _____ ft./sec. corona power _____ kw
Bulk resistivity of dust: _____ ohm-cm Moisture content of gases: _____ vol. %

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **CYCLONE (dry gas only)**

Manufacturer's Name and Model: _____
Gas Inlet: width _____ ft., height _____ ft.
Diameter: gas outlet _____ ft., cyclone cylinder (s) _____ ft.
Length of cyclone: _____ ft., no. of cylinder(s) _____ Pressure Drop _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **CONDENSER**

Manufacturer's Name and Model: _____

Type: surface _____ , contact _____

Heat transfer area: _____ sq. ft., max process pressure _____ psia

Heat duty: _____ BTU/hr. Coolant temp: inlet _____ ^{o}F outlet _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **WET COLLECTOR**

Manufacturer's Name and Model: _____

Type: __ venturi, __ cyclone, __ spray chamber, __ packed bed

Entrainment/separator: type _____ , bed depth _____

Type & construction of chemicals added to the scrubbing liquid:

Pressure drop _____ "H_2O

Scrubbing liquid: flow rate _____ gpm, inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **AFTERBURNER**

Manufacturer's Name and Model: _____

Type: __ direct flame, __ catalytic

If catalytic: inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F, catalyst life _____

If direct flame: internal volume _____ cu. ft., average temp. _____ ^{o}F

Residence time at average temp. _____ sec

Auxiliary fuel: max. rating _____ BTU/hr. set point _____ ^{o}F, _____ BTU/hr.

Size of Chamber _____ cu. ft., flow rate _____

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading (gn./cu. ft.)

_____ **ADSORPTION EQUIPMENT**

Manufacturer's Name and Model: _____

Type: __ Continuous, __ Fixed bed

Adsorbing material: _____ , Bed depth _____ in., Flow area _____ sq. ft.

Breakthrough (breakpoint) time: _____ , Pressure Drop: _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **OTHER TYPES** Name and describe. Attach complete details.

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

FUGITIVE DUST CONTROLS: Describe below or attach a complete explanation of all controls of fugitive emissions not discussed in Form E - Roads or Form F - Storage Piles.

PART VII - STACK DATA (Not Applicable, Fugitive)

Stack data must be provided for each flue, duct, pipe, stack, chimney or conduit (stacks) at which collected emissions are vented to open air through a restricted opening.

Stack Identification: _____

UTM East _____ UTM North _____ or

Longitude _____ Latitude _____

Most important stacks have been located on topographic or air navigation charts. If you know the UTM coordinates or latitude and longitude, provide this information. If there is a number of stacks close together, a common location may be used

Stack Height: _____ ft. Ground level elevation _____ ft. Diameter _____ ft.

Material Outer: _____ lining: _____

Exit temperature (°F): _____ Exit Velocity: _____ f/s.

Exhaust Rate: _____ (ACFM) % Moisture: _____

Nearest building to stack:

distance _____ ft. height _____ ft. length _____ ft. width _____ ft.

Processes Sharing Stack: If more than one process shares a stack, list them and estimate relative contribution of each.

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

PART VIII - REMARKS

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual Emissions to this sheet. Reference all emission factors and efficiencies of control equipment.

PART IX - EMISSIONS

PART 9a: EMISSIONS -- SHORT TERM LB/HR (POUNDS PER HOUR) OR OTHER **See Appendix C for Detailed Calculations**

(Per Station)

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.10	0.11	1.27	0.03	0.15	0.05	<0.001	0.09
Maximum Potential	0.10	0.11	1.27	0.03	0.15	0.05	<0.001	0.09
Actual or Estimated	0.10	0.11	1.27	0.03	0.15	0.05	<0.001	0.09

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART 9b: EMISSIONS -- ANNUAL TPY (TONS PER YEAR) **(Per Station)**

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.10	0.11	1.28	0.15	0.65	0.05	<0.001	0.09
Maximum Potential	0.10	0.11	1.28	0.15	0.65	0.05	<0.001	0.09
Actual or Estimated	0.10	0.11	1.28	0.15	0.65	0.05	<0.001	0.09

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PERMIT APPLICATION FORM A
PROCESS OPERATIONS

PLANT NAME AND LOCATION: Edgar Thomson Plant

PART I - DESCRIPTION OF PROCESS (MAKE A COPY OF SCHEDULE A FOR EACH PROCESS.)

Company Identification or Description: SEN Preheater Stations (2 Stations)
Installer: Unknown at this time Installation Date: TBD, Begin ~2020
Contractor (if operated by another): N/A
Design ___ Charging or _X_ Production rate (specify units): 390 metric tons
Total Annual Production (specify units normally used): 3,000,000 tons (for new caster)
Raw Materials: Liquid steel
Materials Produced: Steel coils
Process Operation Units: (Name and Previous County Permit Number, if any)
(1.) SEN Preheating Station 1
(2.) SEN Preheating Station 2
(3.)
(4.)
(5.)
(6.)

Diagram of Process Flow: Attach a separate sheet with a drawing of a flow diagram of this process, labeling each segment listed under Process Operation Segments. Label product intake points and product discharge points for each segment. Label emissions discharge points and the location of emissions control devices.

PART II - PROCESS OPERATION SCHEDULE (per station)

A. Normal schedule: (Provide information for last year. If a new unit, please estimate)
Hours/day 6 Days/week 7 Weeks/year 52 Hours/year 2,008
Start time __:__ End time __:__
Seasonal: Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February of the calendar year reported.

	Percent of Annual Production		
December, January, & February	25	June, July, & August	25
March, April, & May	25	September, October, & November	25

B. Requested limits: (Limitations on operating hours are optional.) Choose One:
_X **(See Fuel Limits)** 8760 hours (no limitations) or
___ I/We request the following limitation -- **This may become a federally enforceable permit condition:** Describe how this can be enforced: either list an operating schedule or downtime (e.g. only operate 8:00 to 4:00) or an operating hour reporting requirement.
_____ Total days x _____ Hours/day = _____ Hours/year

PART III – FUELS (per station)

A. Normal operation (Provide information for last year. If a new unit, please estimate)

____ Year _____ or _X_____ Estimate

	Primary	Secondary	Other	Other
Type:	Blend	Natural Gas		
Max Amount/hour	0.82 MMBtu /hr	0.82 MMBtu /hr		
Sulfur Content (% wt):	35 gr/100 scf (H_2S, max)	Negl.		
Ash Content (% wt):	Negl.	Negl.		
BTU Rating (specify units)	0.82 MMBtu/ hr	0.82 MMBtu / hr		
Annual Fuel Consumption	1644 MMBtu/ yr	1644 MMBtu / yr		
Seasonal Fuel Consumption (%):				
December, January, and February	25	25		
March, April, and May	25	25		
June, July, and August	25	25		
September, October, and November	25	25		

Fuel Mixing: If more than one fuel is used, explain usage, stating whether it is burned separately, mixed in a fixed ratio of_90% coke oven gas (MMBtus)_:_10% natural gas (MMBtus)_ (give units such as BTU, mmcf, gallons per ton, etc.), mixed in a variable ratio of__:__ to __:__, determined by ___ (give reason).

B. Requested limits (limitations on operations are optional, but may allow a Major source to be exempted from some requirements) **These may become permit conditions**. Please check one:

__ Full use of any fuel or combination at any time (no limitations)

_X_ The following limitations on types of fuels or the combination of fuels are requested (describe how compliance with this method will be demonstrated)

50,890 MMBtu/yr of fuel, aggregate for Tundish Preheating Stations 1 and 2, SEN Preheating Stations 1 and 2 and Tundish Drying Station

PART IV - OTHER LIMITATIONS

Identify any other requested limitations, such as on production rates or materials use. Describe how compliance with these restrictions will be demonstrated. **These limitations may become permit conditions**.

N/A

PART V - APPLICABLE REQUIREMENTS

Describe all applicable requirements affecting air emissions for this unit.

Regulation #	Requirements
2104.01.a	Opacity < 20% for 3-minutes in any 60-minute period, or < 60% at any time
2104.02.a	PM < 0.008 lb/MMBtu for natural gas; < 0.02 lb/MMBtu for COG/NG blend
2104.03.a	SO2 < PTE for natural gas; < 1.0 lb/MMBtu for COG/NG blend
2105.06	Presumptive RACT = installation, maintenance & operation in accordance with manufacturer's recommendations
2105.21	H2S concentration in COG < 40 gr/100 scf

PART VI - EMISSION CONTROLS **NOT APPLICABLE**

Complete the following applicable sections for each pollution control device. Attach additional sheets to provide sufficient information and engineering calculations to support the contol device performance.

On the space to the left of each device, number the device(s) by the order in which they process the waste stream(s). Fill out the requested information, then complete the table for efficiencies by pollutant for each device.

Percent Capture _____ % (not control efficiency)
Gas flow through control units _____ @ _____ ^{o}F

_____ **BAGHOUSE (fabric collector)**

Manufacturer's Name and Model _____
Type of bag material _____
Total filter cloth area _____ sq. ft., air to cloth ratio _____
Bag cleaning method: _____ , cycle _____ min
Pressure Drop: clean _____ "H_20, dirty _____ "H_20

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **ELECTROSTATIC PRECIPITATOR**

Manufacturer's Name and Model: _____
Type: __ Single Stage, __ Two Stage, __ Plate, __ Tube
Total collecting area: _____ sq. ft., cleaning cycle _____ min.
Gas Velocity: _____ ft./sec. corona power _____ kw
Bulk resistivity of dust: _____ ohm-cm Moisture content of gases: _____ vol. %

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **CYCLONE (dry gas only)**

Manufacturer's Name and Model: _____
Gas Inlet: width _____ ft., height _____ ft.
Diameter: gas outlet _____ ft., cyclone cylinder (s) _____ ft.
Length of cyclone: _____ ft., no. of cylinder(s) _____ Pressure Drop _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **CONDENSER**

Manufacturer's Name and Model: _____

Type: surface _____ , contact _____

Heat transfer area: _____ sq. ft., max process pressure _____ psia

Heat duty: _____ BTU/hr. Coolant temp: inlet _____ ^{o}F outlet _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **WET COLLECTOR**

Manufacturer's Name and Model: _____

Type: __ venturi, __ cyclone, __ spray chamber, __ packed bed

Entrainment/separator: type _____ , bed depth _____

Type & construction of chemicals added to the scrubbing liquid:

Pressure drop _____ "H_2O

Scrubbing liquid: flow rate _____ gpm, inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **AFTERBURNER**

Manufacturer's Name and Model: _____

Type: __ direct flame, __ catalytic

If catalytic: inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F, catalyst life _____

If direct flame: internal volume _____ cu. ft., average temp. _____ ^{o}F

Residence time at average temp. _____ sec

Auxiliary fuel: max. rating _____ BTU/hr. set point _____ ^{o}F, _____ BTU/hr.

Size of Chamber _____ cu. ft., flow rate _____

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading (gn./cu. ft.)

_____ **ADSORPTION EQUIPMENT**

Manufacturer's Name and Model: _____

Type: __ Continuous, __ Fixed bed

Adsorbing material: _____ , Bed depth _____ in., Flow area _____ sq. ft.

Breakthrough (breakpoint) time: _____ , Pressure Drop: _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **OTHER TYPES** Name and describe. Attach complete details.

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

FUGITIVE DUST CONTROLS: Describe below or attach a complete explanation of all controls of fugitive emissions not discussed in Form E - Roads or Form F - Storage Piles.

PART VII - STACK DATA (Not Applicable, Fugitive)

Stack data must be provided for each flue, duct, pipe, stack, chimney or conduit (stacks) at which collected emissions are vented to open air through a restricted opening.

Stack Identification: _____

UTM East _____ UTM North _____ or

Longitude _____ Latitude _____

Most important stacks have been located on topographic or air navigation charts. If you know the UTM coordinates or latitude and longitude, provide this information. If there is a number of stacks close together, a common location may be used

Stack Height: _____ ft. Ground level elevation _____ ft. Diameter _____ ft.

Material Outer: _____ lining: _____

Exit temperature (°F): _____ Exit Velocity: _____ f/s.

Exhaust Rate: _____ (ACFM) % Moisture: _____

Nearest building to stack:

distance _____ ft. height _____ ft. length _____ ft. width _____ ft.

Processes Sharing Stack: If more than one process shares a stack, list them and estimate relative contribution of each.

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

PART VIII - REMARKS

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual Emissions to this sheet. Reference all emission factors and efficiencies of control equipment.

PART IX - EMISSIONS

PART 9a: EMISSIONS -- SHORT TERM LB/HR (POUNDS PER HOUR) OR OTHER **See Appendix C for Detailed Calculations**

(**per station)**

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.01	0.01	0.14	0.08	0.24	0.01	<0.001	0.01
Maximum Potential	0.01	0.01	0.14	0.08	0.24	0.01	<0.001	0.01
Actual or Estimated	0.01	0.01	0.14	0.08	0.24	0.01	<0.001	0.01

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART 9b: EMISSIONS -- ANNUAL TPY (TONS PER YEAR) **(per station)**

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.01	0.01	0.14	0.08	0.24	0.01	<0.001	0.01
Maximum Potential	0.01	0.01	0.14	0.08	0.24	0.01	<0.001	0.01
Actual or Estimated	0.01	0.01	0.14	0.08	0.24	0.01	<0.001	0.01

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART IX - EMISSIONS (CONTINUED)

List all known pollutants, including, but not limited to those found under Article XXI section 2101.20 in the definition of Hazardous Air Pollutants.

Transfer this information to the summary emissions sheets.

See detailed calculations included in Appendix C to this application.

PERMIT APPLICATION FORM A
PROCESS OPERATIONS

PLANT NAME AND LOCATION: Edgar Thomson Plant

PART I - DESCRIPTION OF PROCESS (MAKE A COPY OF SCHEDULE A FOR EACH PROCESS.)

Company Identification or Description: Tundish Drying Station

Installer: Unknown at this time Installation Date: TBD, Begin ~2020

Contractor (if operated by another): N/A

Design ___ Charging or _X_ Production rate (specify units): 390 metric tons

Total Annual Production (specify units normally used): 3,000,000 tons (for new caster)

Raw Materials: Liquid steel

Materials Produced: Steel coils

Process Operation Units: (Name and Previous County Permit Number, if any)

(1.) Tundish Drying Station
(2.)
(3.)
(4.)
(5.)
(6.)

Diagram of Process Flow: Attach a separate sheet with a drawing of a flow diagram of this process, labeling each segment listed under Process Operation Segments. Label product intake points and product discharge points for each segment. Label emissions discharge points and the location of emissions control devices.

PART II - PROCESS OPERATION SCHEDULE

A. Normal schedule: (Provide information for last year. If a new unit, please estimate)

Hours/day 14 Days/week 7 Weeks/year 52 Hours/year 5,110

Start time __:__ End time __:__

Seasonal: Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February of the calendar year reported.

	Percent of Annual Production		
December, January, & February	25	June, July, & August	25
March, April, & May	25	September, October, & November	25

B. Requested limits: (Limitations on operating hours are optional.) Choose One:

_X **(See Fuel Limits)** 8760 hours (no limitations) or

___ I/We request the following limitation -- **This may become a federally enforceable permit condition:** Describe how this can be enforced: either list an operating schedule or downtime (e.g. only operate 8:00 to 4:00) or an operating hour reporting requirement.

_____ Total days x _____ Hours/day = _____ Hours/year

PART III – FUELS

A. Normal operation (Provide information for last year. If a new unit, please estimate)

____ Year _____ or _X_____ Estimate

	Primary	Secondary	Other	Other
Type:	Blend	Natural Gas		
Max Amount/hour	3.41 MMBtu /hr	3.41 MMBtu /hr		
Sulfur Content (% wt):	35 gr/100 scf (H_2S, max)	Negl.		
Ash Content (% wt):	Negl.	Negl.		
BTU Rating (specify units)	3.41 MMBtu/ hr	3.41 MMBtu / hr		
Annual Fuel Consumption	17446 MMBtu/ yr	17446 MMBtu / yr		
Seasonal Fuel Consumption (%):				
December, January, and February	25	25		
March, April, and May	25	25		
June, July, and August	25	25		
September, October, and November	25	25		

Fuel Mixing: If more than one fuel is used, explain usage, stating whether it is burned separately, mixed in a fixed ratio of_90% coke oven gas (MMBtus)_:_10% natural gas (MMBtus)_ (give units such as BTU, mmcf, gallons per ton, etc.), mixed in a variable ratio of__:__ to __:__, determined by _heat input_ (give reason).

B. Requested limits (limitations on operations are optional, but may allow a Major source to be exempted from some requirements) **These may become permit conditions**. Please check one:

__ Full use of any fuel or combination at any time (no limitations)

_X_ The following limitations on types of fuels or the combination of fuels are requested (describe how compliance with this method will be demonstrated)

50,890 MMBtu/yr of fuel, aggregate for Tundish Preheating Stations 1 and 2, SEN Preheating Stations 1 and 2 and Tundish Drying Station

PART IV - OTHER LIMITATIONS

Identify any other requested limitations, such as on production rates or materials use. Describe how compliance with these restrictions will be demonstrated. **These limitations may become permit conditions**.

N/A

PART V - APPLICABLE REQUIREMENTS

Describe all applicable requirements affecting air emissions for this unit.

Regulation #	Requirements
2104.01.a	Opacity < 20% for 3-minutes in any 60-minute period, or < 60% at any time
2104.02.a	PM < 0.008 lb/MMBtu for natural gas; < 0.02 lb/MMBtu for COG/NG blend
2104.03.a	SO2 < PTE for natural gas; < 1.0 lb/MMBtu for COG/NG blend
2105.06	Presumptive RACT = installation, maintenance & operation in accordance with manufacturer's recommendations
2105.21	H2S concentration in COG < 40 gr/100 scf

PART VI - EMISSION CONTROLS **NOT APPLICABLE**

Complete the following applicable sections for each pollution control device. Attach additional sheets to provide sufficient information and engineering calculations to support the contol device performance.

On the space to the left of each device, number the device(s) by the order in which they process the waste stream(s). Fill out the requested information, then complete the table for efficiencies by pollutant for each device.

Percent Capture _____ % (not control efficiency)
Gas flow through control units _____ @ _____ ^{o}F

_____ **BAGHOUSE (fabric collector)**

Manufacturer's Name and Model _____
Type of bag material _____
Total filter cloth area _____ sq. ft., air to cloth ratio _____
Bag cleaning method: _____ , cycle _____ min
Pressure Drop: clean _____ "H_20, dirty _____ "H_20

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **ELECTROSTATIC PRECIPITATOR**

Manufacturer's Name and Model: _____
Type: __ Single Stage, __ Two Stage, __ Plate, __ Tube
Total collecting area: _____ sq. ft., cleaning cycle _____ min.
Gas Velocity: _____ ft./sec. corona power _____ kw
Bulk resistivity of dust: _____ ohm-cm Moisture content of gases: _____ vol. %

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **CYCLONE (dry gas only)**

Manufacturer's Name and Model: _____
Gas Inlet: width _____ ft., height _____ ft.
Diameter: gas outlet _____ ft., cyclone cylinder (s) _____ ft.
Length of cyclone: _____ ft., no. of cylinder(s) _____ Pressure Drop _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **CONDENSER**

Manufacturer's Name and Model: _____

Type: surface _____ , contact _____

Heat transfer area: _____ sq. ft., max process pressure _____ psia

Heat duty: _____ BTU/hr. Coolant temp: inlet _____ ^{o}F outlet _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **WET COLLECTOR**

Manufacturer's Name and Model: _____

Type: __ venturi, __ cyclone, __ spray chamber, __ packed bed

Entrainment/separator: type _____ , bed depth _____

Type & construction of chemicals added to the scrubbing liquid:

Pressure drop _____ "H_2O

Scrubbing liquid: flow rate _____ gpm, inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **AFTERBURNER**

Manufacturer's Name and Model: _____

Type: __ direct flame, __ catalytic

If catalytic: inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F, catalyst life _____

If direct flame: internal volume _____ cu. ft., average temp. _____ ^{o}F

Residence time at average temp. _____ sec

Auxiliary fuel: max. rating _____ BTU/hr. set point _____ ^{o}F, _____ BTU/hr.

Size of Chamber _____ cu. ft., flow rate _____

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading (gn./cu. ft.)

_____ **ADSORPTION EQUIPMENT**

Manufacturer's Name and Model: _____

Type: __ Continuous, __ Fixed bed

Adsorbing material: _____ , Bed depth _____ in., Flow area _____ sq. ft.

Breakthrough (breakpoint) time: _____ , Pressure Drop: _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **OTHER TYPES** Name and describe. Attach complete details.

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

FUGITIVE DUST CONTROLS: Describe below or attach a complete explanation of all controls of fugitive emissions not discussed in Form E - Roads or Form F - Storage Piles.

PART VII - STACK DATA (Not Applicable, Fugitive)

Stack data must be provided for each flue, duct, pipe, stack, chimney or conduit (stacks) at which collected emissions are vented to open air through a restricted opening.

Stack Identification: _____

UTM East _____ UTM North _____ or

Longitude _____ Latitude _____

Most important stacks have been located on topographic or air navigation charts. If you know the UTM coordinates or latitude and longitude, provide this information. If there is a number of stacks close together, a common location may be used

Stack Height: _____ ft. Ground level elevation _____ ft. Diameter _____ ft.

Material Outer: _____ lining: _____

Exit temperature (°F): _____ Exit Velocity: _____ f/s.

Exhaust Rate: _____ (ACFM) % Moisture: _____

Nearest building to stack:

distance _____ ft. height _____ ft. length _____ ft. width _____ ft.

Processes Sharing Stack: If more than one process shares a stack, list them and estimate relative contribution of each.

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

PART VIII - REMARKS

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual Emissions to this sheet. Reference all emission factors and efficiencies of control equipment.

PART IX - EMISSIONS

PART 9a: EMISSIONS -- SHORT TERM LB/HR (POUNDS PER HOUR) OR OTHER **See Appendix C for Detailed Calculations**

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.04	0.05	0.58	0.04	0.06	0.02	<0.001	0.04
Maximum Potential	0.04	0.05	0.58	0.04	0.06	0.02	<0.001	0.04
Actual or Estimated	0.04	0.05	0.58	0.04	0.06	0.02	<0.001	0.04

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART 9b: EMISSIONS -- ANNUAL TPY (TONS PER YEAR)

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.11	0.13	1.48	0.16	0.28	0.05	<0.001	0.11
Maximum Potential	0.11	0.13	1.48	0.16	0.28	0.05	<0.001	0.11
Actual or Estimated	0.11	0.13	1.48	0.16	0.28	0.05	<0.001	0.11

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PERMIT APPLICATION FORM A
PROCESS OPERATIONS

PLANT NAME AND LOCATION: Edgar Thomson Plant

PART I - DESCRIPTION OF PROCESS (MAKE A COPY OF SCHEDULE A FOR EACH PROCESS.)

Company Identification or Description: New Cooling Towers

Installer: Unknown at this time Installation Date: TBD, Begin ~2020

Contractor (if operated by another): N/A

Design ___ Charging or _X_ Production rate (specify units): 390 metric tons (for new caster)

Total Annual Production (specify units normally used): 3,000,000 tons (for new caster)

Raw Materials: N/A

Materials Produced: N/A

Process Operation Units: (Name and Previous County Permit Number, if any)

(1.) Indirect Cooling Water Cooling Tower
(2.) Direct Cooling Water Cooling Tower
(3.) Laminar Cooling Water Cooling Tower
(4.)
(5.)
(6.)

Diagram of Process Flow: Attach a separate sheet with a drawing of a flow diagram of this process, labeling each segment listed under Process Operation Segments. Label product intake points and product discharge points for each segment. Label emissions discharge points and the location of emissions control devices.

PART II - PROCESS OPERATION SCHEDULE (per station)

A. Normal schedule: (Provide information for last year. If a new unit, please estimate)

Hours/day 24 Days/week 7 Weeks/year 52 Hours/year 8,760

Start time __:__ End time __:__

Seasonal: Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February of the calendar year reported.

	Percent of Annual Production		
December, January, & February	25	June, July, & August	25
March, April, & May	25	September, October, & November	25

B. Requested limits: (Limitations on operating hours are optional.) Choose One:

_X_ 8760 hours (no limitations) or

___ I/We request the following limitation -- **This may become a federally enforceable permit condition:** Describe how this can be enforced: either list an operating schedule or downtime (e.g. only operate 8:00 to 4:00) or an operating hour reporting requirement.

_____ Total days x _____ Hours/day = _____ Hours/year

PART III – FUELS (Not Applicable)

A. Normal operation (Provide information for last year. If a new unit, please estimate)

____ Year _____ or _____ Estimate	Primary	Secondary	Other	Other
Type:				
Max Amount/hour				
Sulfur Content (% wt):				
Ash Content (% wt):				
BTU Rating (specify units)				
Annual Fuel Consumption				
Seasonal Fuel Consumption (%):				
December, January, and February				
March, April, and May				
June, July, and August				
September, October, and November				

Fuel Mixing: If more than one fuel is used, explain usage, stating whether it is burned separately, mixed in a fixed ratio of__: (give units such as BTU, mmcf, gallons per ton, etc.), mixed in a variable ratio of__:__ to __:__, determined by ___ (give reason).

B. Requested limits (limitations on operations are optional, but may allow a Major source to be exempted from some requirements) **These may become permit conditions**. Please check one:

__ Full use of any fuel or combination at any time (no limitations)

__ The following limitations on types of fuels or the combination of fuels are requested (describe how compliance with this method will be demonstrated)

PART IV - OTHER LIMITATIONS

Identify any other requested limitations, such as on production rates or materials use. Describe how compliance with these restrictions will be demonstrated. **These limitations may become permit conditions**.

N/A

PART V - APPLICABLE REQUIREMENTS

Describe all applicable requirements affecting air emissions for this unit.

Regulation #	Requirements
2104.01.a	Opacity < 20% for 3-minutes in any 60-minute period, or < 60% at any time
2104.02.b	PM < 7 lbs/hr or 100 lbs/day

PART VI - EMISSION CONTROLS

Complete the following applicable sections for each pollution control device. Attach additional sheets to provide sufficient information and engineering calculations to support the contol device performance.

On the space to the left of each device, number the device(s) by the order in which they process the waste stream(s). Fill out the requested information, then complete the table for efficiencies by pollutant for each device.

Percent Capture _____ % (not control efficiency)
Gas flow through control units _____ @ _____ ^{o}F

_____ **BAGHOUSE (fabric collector)**

Manufacturer's Name and Model _____
Type of bag material _____
Total filter cloth area _____ sq. ft., air to cloth ratio _____
Bag cleaning method: _____ , cycle _____ min
Pressure Drop: clean _____ "H_20, dirty _____ "H_20

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **ELECTROSTATIC PRECIPITATOR**

Manufacturer's Name and Model: _____
Type: __ Single Stage, __ Two Stage, __ Plate, __ Tube
Total collecting area: _____ sq. ft., cleaning cycle _____ min.
Gas Velocity: _____ ft./sec. corona power _____ kw
Bulk resistivity of dust: _____ ohm-cm Moisture content of gases: _____ vol. %

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **CYCLONE (dry gas only)**

Manufacturer's Name and Model: _____
Gas Inlet: width _____ ft., height _____ ft.
Diameter: gas outlet _____ ft., cyclone cylinder (s) _____ ft.
Length of cyclone: _____ ft., no. of cylinder(s) _____ Pressure Drop _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

PART VI - EMISSION CONTROLS (CONTINUED)

_____ **CONDENSER**

Manufacturer's Name and Model: _____

Type: surface _____ , contact _____

Heat transfer area: _____ sq. ft., max process pressure _____ psia

Heat duty: _____ BTU/hr. Coolant temp: inlet _____ ^{o}F outlet _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **WET COLLECTOR**

Manufacturer's Name and Model: _____

Type: __ venturi, __ cyclone, __ spray chamber, __ packed bed

Entrainment/separator: type _____ , bed depth _____

Type & construction of chemicals added to the scrubbing liquid:

Pressure drop _____ "H_2O

Scrubbing liquid: flow rate _____ gpm, inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **AFTERBURNER**

Manufacturer's Name and Model: _____

Type: __ direct flame, __ catalytic

If catalytic: inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F, catalyst life _____

If direct flame: internal volume _____ cu. ft., average temp. _____ ^{o}F

Residence time at average temp. _____ sec

Auxiliary fuel: max. rating _____ BTU/hr. set point _____ ^{o}F, _____ BTU/hr.

Size of Chamber _____ cu. ft., flow rate _____

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading (gn./cu. ft.)

_____ **ADSORPTION EQUIPMENT**

Manufacturer's Name and Model: _____

Type: __ Continuous, __ Fixed bed

Adsorbing material: _____ , Bed depth _____ in., Flow area _____ sq. ft.

Breakthrough (breakpoint) time: _____ , Pressure Drop: _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

PART VI - EMISSION CONTROLS (CONTINUED)

X	**OTHER TYPES** Name and describe. Attach complete details.
$PM/PM_{10}/PM_{2.5}$	Mist Eliminator (0.001% drift rate)

FUGITIVE DUST CONTROLS: Describe below or attach a complete explanation of all controls of fugitive emissions not discussed in Form E - Roads or Form F - Storage Piles.

PART VII - STACK DATA (Not Applicable, Fugitive)

Stack data must be provided for each flue, duct, pipe, stack, chimney or conduit (stacks) at which collected emissions are vented to open air through a restricted opening.

Stack Identification: _____

UTM East _____ UTM North _____ or

Longitude _____ Latitude _____

Most important stacks have been located on topographic or air navigation charts. If you know the UTM coordinates or latitude and longitude, provide this information. If there is a number of stacks close together, a common location may be used

Stack Height: _____ ft. Ground level elevation _____ ft. Diameter _____ ft.

Material Outer: _____ lining: _____

Exit temperature (°F): _____ Exit Velocity: _____ f/s.

Exhaust Rate: _____ (ACFM) % Moisture: _____

Nearest building to stack:

distance _____ ft. height _____ ft. length _____ ft. width _____ ft.

Processes Sharing Stack: If more than one process shares a stack, list them and estimate relative contribution of each.

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

PART VIII - REMARKS

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual Emissions to this sheet. Reference all emission factors and efficiencies of control equipment.

PART IX - EMISSIONS

PART 9a: EMISSIONS -- SHORT TERM LB/HR (POUNDS PER HOUR) OR OTHER **Totals for All New Towers**

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	0.76	0.55	N/A	N/A	N/A	N/A	N/A	0.002
Maximum Potential	0.76	0.55	N/A	N/A	N/A	N/A	N/A	0.002
Actual or Estimated	0.76	0.55	N/A	N/A	N/A	N/A	N/A	0.002

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART 9b: EMISSIONS -- ANNUAL TPY (TONS PER YEAR)

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	PM2.5
Allowable	3.32	2.41	N/A	N/A	N/A	N/A	N/A	0.01
Maximum Potential	3.32	2.41	N/A	N/A	N/A	N/A	N/A	0.01
Actual or Estimated	3.32	2.41	N/A	N/A	N/A	N/A	N/A	0.01

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PERMIT APPLICATION FORM B
FUEL BURNING OR COMBUSTION EQUIPMENT

PLANT NAME AND LOCATION: NOT APPLICABLE

Schedule B requires information on boilers, heaters, and other combustion units. Complete one form for each unit, making copies of this form as needed.

PART I - DESCRIPTION OF COMBUSTION UNIT (MAKE A COPY OF SCHEDULE B FOR EACH UNIT)

Company Identification or Description: _____

Unit Make: _____ Unit Model: _____

Description of Unit and Type of Firing (e.g. spreader stoker, traveling grate, etc.)

Installer: _____ Installation Date: __ /__ /__

Contractor (if operated by another): _____

Installation Date: __ /__ /__ Your Identification: _____

Previous County Air Pollution Permit Number (if any): N/A

Rated Capacity (BTU/hr) _____ Maximum Capacity (BTU/hr):

Normal Use (BTU/hr) _____

Percent of Heat Used for:

Power Generation _____ % process _____ % space heating _____ % (Annual average)

PART II - OPERATION SCHEDULE

A. Normal schedule: (Provide information for last year. If a new unit, please estimate)

Hours/day _____ Days/week _____ Weeks/year _____ Hours/year _____

Start time __:__ End time __:__

Seasonal: (Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February of the calendar year reported.)

Percent of Annual Production

December, January, & February _____ June, July, & August _____

March, April, & May _____ September, October, & November _____

B. Requested limits: (limitations on operating hours are optional) Choose One:

__ 8760 hours (no limitations) or

__ I/We request the following limitation -- **This may become a federally enforceable permit condition:** Describe how this can be enforced: Either list an operating schedule or downtime (e.g. only operate 8:00 to 4:00) or an operating hour reporting requirement.

_____ Total days x _____ Hours/day = _____ Hours/year

PART III - FUELS

A. Normal operation (Provide information for last year. If a new unit, please estimate)

_____ Year _____ or _____ Estimate

	Primary	Secondary	Other	Other
Type:	N. Gas			
Max Amount/hour				
Sulfur Content (% wt):				
Ash Content (% wt):				
BTU Rating (specify units)				
Annual Fuel Consumption				
Seasonal Fuel Consumption (%):				
December, January & February				
March, April, and May				
June, July, and August				
September, October, & November				

Fuel Mixing: If more than one fuel is used, explain usage, stating whether it is burned separately, mixed in a fixed ratio of__:__ (give units such as BTU, mmcf, gallons per ton, etc.), mixed in a variable ratio of__:__ to __:__, determined by __ (give reason).

B. Requested limits (limitations on operations are optional, but may allow a Major source to be exempted from some requirements) **These may become permit conditions**. Please check one:

__ Full use of any fuel or combination at any time (no limitations) OR

__ The following limitations on types of fuels or the combination of fuels (describe how compliance with this method will be demonstrated):

PART IV - OTHER LIMITATIONS

Identify any other requested limitations, such as on production rates or materials use. Describe how compliance with these restrictions will be demonstrated. **These limitations may become permit conditions**.

PART V - APPLICABLE REQUIREMENTS

Describe all applicable air requirements for this source.

Regulation #	Requirements

PART VI - EMISSION CONTROLS **NOT APPLICABLE**

Complete the following applicable sections for each pollution control device. Attach additional sheets to provide sufficient information and engineering calculations to support the contol device performance.

On the space to the left of each device, number the device(s) by the order in which they process the waste stream(s). Fill out the requested information, then complete the table for efficiencies by pollutant for each device.

Percent Capture _____ % (not control efficiency)
Gas flow through control units _____ @ _____ °F

_____ **BAGHOUSE (fabric collector)**

Manufacturer's Name and Model: _____
Type of bag material: _____
Total filter cloth area: _____ sq. ft. air to cloth ratio _____
Bag cleaning method: _____ cycle _____ minute(s)
Pressure Drop: clean _____ "H_20, dirty _____ "H_20

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **ELECTROSTATIC PRECIPITATOR**

Manufacturer's Name and Model: _____
Type: __ single stage, __ two stage, __ plate, __ tube
Total collecting area: _____ sq. ft. cleaning cycle _____ min
Gas Velocity: _____ ft./sec. corona power _____ kw
Bulk resistivity of Dust: _____ ohm-cm Moisture content of gases _____ vol. %

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

_____ **CYCLONE (dry gas only)**

Manufacturer's Name and Model: _____
Gas Inlet: width _____ ft., height _____ ft.
Diameter: gas outlet _____ ft., cyclone cylinder (s) _____ ft.
Length of cyclone: _____ ft., no. of cylinder(s) _____ Pressure Drop _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **CONDENSER**

Manufacturer's Name and Model: _____

Type: surface _____ , contact _____

Heat transfer area: _____ sq. ft., max process pressure _____ psia

Heat duty: _____ BTU/hr. Coolant temp: inlet _____ ^{o}F outlet _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **WET COLLECTOR**

Manufacturer's Name and Model: _____

Type: __ venturi, __ cyclone, __ spray chamber, __ packed bed

Entrainment/separator: type _____ , bed depth: _____

Type & construction of chemicals added to the scrubbing liquid:

Pressure drop _____ "H_2O

Scrubbing liquid: flow rate _____ gpm, inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **AFTERBURNER**

Manufacturer's Name and Model: _____

Type: __ direct flame, __ catalytic

If catalytic: inlet temp. _____ ^{o}F, outlet temp. _____ ^{o}F, catalyst life _____

If direct flame: Internal volume _____ cu. ft., average temp. _____ ^{o}F

Residence time at average temp. _____ sec

Auxiliary fuel: max. rating _____ BTU/hr. set point _____ ^{o}F, _____ BTU/hr.

Size of Chamber _____ cu. ft. flow rate _____

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading (gn./cu. ft.)

_____ **ADSORPTION EQUIPMENT**

Manufacturer's Name and Model: _____

Type: __ continuous, __ fixed bed

Adsorbing material: _____ bed depth _____ in., flow area _____ sq. ft.

Breakthrough (breakpoint) time: _____ Pressure drop: _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

PART VI - EMISSION CONTROLS (CONTINUED) **NOT APPLICABLE**

_____ **OTHER TYPES:** Name and describe. Attach complete details.

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

FUGITIVE DUST CONTROLS: Describe below or attach a complete explanation of all controls of fugitive emissions not discussed in Form E - Roads or Form F - Storage Piles.

PART VII - STACK DATA

Stack data must be provided for each flue, duct, pipe, stack, chimney or conduit (stacks) at which collected emissions are vented to open air through a restricted opening.

Stack Identification: _____

UTM East _____ UTM North _____ or

Longitude _____ Latitude _____

Most important stacks have been located on topographic or air navigation charts. If you know the UTM coordinates or latitude and longitude, provide this information. If there is a number of stacks close together, a common location may be used

Stack Height: _____ ft. Ground level elevation _____ ft. Diameter _____ ft.

Material Outer: _____ Lining: _____

Exit temperature (F): _____ Exit Velocity: _____ (f/s).

Exhaust rate: _____ (ACFM) % Moisture: _____

Nearest building to stack:

Distance _____ ft. height _____ ft. length _____ ft. width _____ ft.

Processes Sharing Stack: If more than one process shares a stack, list them and estimate relative contribution of each.

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

PART VIII - REMARKS

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual Emissions to this sheet. Reference all emission factors and efficiencies of control equipment.

PART IX - EMISSIONS

PART 9a: EMISSIONS -- SHORT TERM LB/HR (POUNDS PER HOUR) OR OTHER _____

Pollutant	Particulate	PM10	SO2	CO	NO_X	VOC	LEAD	
Allowable								
Maximum Potential								
Actual or Estimated								

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART 9b: EMISSIONS -- ANNUAL TPY (TONS PER YEAR)

Pollutant	Particulate	PM10	SO2	CO	NOX	VOC	LEAD	
Allowable								
Maximum Potential								
Actual or Estimated								

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART IX - EMISSIONS (CONTINUED)

List all known pollutants, including, but not limited to those found under Article XXI section 2101.20 in the definition of Hazardous Air Pollutants.

Transfer this information to the summary emissions sheets.

PERMIT APPLICATION FORM C
SOLID WASTE INCINERATOR

PLANT NAME AND LOCATION: NOT APPLICABLE

Schedule C requires information on incinerators. Complete one form for each unit, making copies of this form as needed. Do not use this form for afterburners used as control devices.

PART I - DESCRIPTION OF COMBUSTION UNIT (MAKE A COPY OF SCHEDULE C FOR EACH UNIT)

Company Identification or Description: _____

Unit Make: _____ Model and Class: _____

American Incinerator Association Class of Waste _____ @ _____ BTU/lb as fired

Daily Amount Waste _____ Lbs. (__) Estimated, (__) Actual

Installer: _____ Installation Date: __ /__ /__

Contractor (if operated by another): _____

Installation Date: __ /__ /__ Your Identification: _____

Previous County Air Pollution Permit Number (if any): _____

Primary Combustion Chamber:	Length	_____ ft.	____ in.	Grate Area	_____	sq. ft.
	Width	_____ ft.	____ in.	Burner capacity	_____	BTU/hr
	Height	_____ ft.	____ in.	Hearth area	_____	sq. ft.
	Volume	_____ cu. ft.		Heat release	_____	BTU/hr/cu ft
Secondary Combustion Chamber:	Length	_____ ft.	____ in.	Smallest Area	_____	sq. ft.
	Width	_____ ft.	____ in.	Burner capacity	_____	BTU/hr
	Height	_____ ft.	____ in.	Max velocity	_____	ft/sec
	Volume	_____ cu. ft.				
	Flue Gas Flow	_____ acfm@	_____ °F	_____ %	% excess air	

Attach a flow diagram of all waste and fuel streams

PART II - OPERATION SCHEDULE

A. Normal schedule: (Provide information for last year. If a new unit, please estimate)

Hours/day _____ Days/week _____ Weeks/year _____ Hours/year _____

Start time __:__ End time __:__

Seasonal: (Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February of the calendar year reported.)

Percent of Annual Production

December, January, & February _____ June, July, & August _____

March, April, & May _____ September, October, & November _____

B. Requested limits: (limitations on operating hours are optional) Choose One:

__ 8760 hours (no limitations) or

__ I/We request the following limitation – **This may become a federally enforceable permit condition:** Describe how this can be enforced: Either list an operating schedule or downtime (e.g. only operate 8:00 to 4:00) or an operating hour reporting requirement.

_____ Total days x _____ Hours/day = _____ Hours/year

PART III - FUELS

A. Normal operation (Provide information for last year. If a new unit, please estimate)

____ Year _____ or _____ Estimate

	Primary	Secondary	Other	Other
Type:				
Max amount/hour				
Sulfur content (% wt):				
Ash content (% wt):				
BTU Rating (specify units)				
Annual Fuel Consumption				
Seasonal Fuel Consumption (%):				
December, January and February				
March, April, and May				
June, July, and August				
September, October, and November				

Fuel Mixing: If more than one fuel is used, explain usage, stating whether it is burned separately, mixed in a fixed ratio of__:__ (give units such as BTU, mmcf, gallons per ton, etc.), mixed in a variable ratio of__:__ to __:__, determined by __ (give reason).

B. Requested limits (limitations on operations are optional, but may allow a Major source to be exempted from some requirements) **These may become permit conditions**. Please check one:

____ Full use of any fuel or combination at any time (no limitations) OR

____ The following limitations on individual fuels or the combination of fuels (describe how compliance with this method will be demonstrated):

PART IV - OTHER LIMITATIONS

Identify any other requested limitations, such as on production rates or materials use. Describe how compliance with these restrictions will be demonstrated. **These limitations may become permit conditions**.

PART V - APPLICABLE REQUIREMENTS

Describe all applicable air requirements for this source.

Regulation #	Requirements

PART VI - EMISSION CONTROLS

Complete the following applicable sections for each pollution control device. Attach additional sheets to provide sufficient information and engineering calculations to support the contol device performance.

On the space to the left of each device, number the device(s) by the order in which they process the waste stream(s). Fill out the requested information, then complete the table for efficiencies by pollutant for each device.

Percent Capture _____ % (not control efficiency)
Gas flow through control units _____ @ _____ ^{o}F

_____ **BAGHOUSE (fabric collector)**

Manufacturer's Name and Model: _____
Type of bag material: _____
Total filter cloth area: _____ sq. ft. air to cloth ratio _____
Bag cleaning method: _____ cycle _____ min
Pressure Drop: clean _____ "H_20, dirty _____ "H_20

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading Corr. To 7% O_2 (gn/cu. ft)

_____ **ELECTROSTATIC PRECIPITATOR**

Manufacturer's Name and Model: _____
Type: __ single stage, __ two stage, __ plate, __ tube
Total collecting area: _____ sq. ft. cleaning cycle _____ min
Gas Velocity: _____ ft./sec. corona power _____ kw
Bulk resistivity of Dust: _____ ohm-cm Moisture Content of gases _____ vol. %

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading Corr. To 7% O_2 (gn/cu. ft)

_____ **CYCLONE (dry gas only)**

Manufacturer's Name and Model: _____
Gas inlet: width _____ ft., height _____ ft.
Diameter: gas outlet _____ ft., cyclone cylinder (s) _____ ft.
Length of cyclone: _____ ft., no. of cylinder(s) _____ Pressure Drop _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading Corr. To 7% O_2 (gn/cu. ft)

PART VI - EMISSION CONTROLS (CONTINUED)

_____ **CONDENSER**

Manufacturer's Name and Model: _____

Type: surface _____ , contact _____

Heat transfer area: _____ sq. ft., Max process pressure _____ psia

Heat duty: _____ BTU/hr. Coolant temp: inlet _____ °F, outlet _____ °F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **WET COLLECTOR**

Manufacturer's Name and Model: _____

Type: __ venturi, __ cyclone, __ spray chamber, __ packed bed

Entrainment/separator: type _____ , bed depth: _____

Type & construction of chemicals added to the scrubbing liquid:

Pressure drop _____ "H_2O

Scrubbing liquid: flow rate _____ gpm, inlet temp. _____ °F, outlet temp. _____ °F

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

_____ **AFTERBURNER**

Manufacturer's Name and Model: _____

Type: __ direct flame, __ catalytic

If catalytic: inlet temp. _____ °F, outlet temp. _____ °F, catalyst life _____

If direct flame: internal volume _____ cu. ft., average temp. _____ °F

Residence time at average temp. _____ sec

Auxiliary fuel: max. rating _____ BTU/hr. set point _____ °F, _____ BTU/hr.

Size of Chamber _____ cu. ft. flow rate _____

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Grain Loading Corr. To 7% O_2 (gn/cu. ft)

_____ **ADSORPTION EQUIPMENT**

Manufacturer's Name and Model: _____

Type: __ continuous, __ fixed bed

Adsorbing material: _____ bed depth _____ in., flow area _____ sq. ft.

Breakthrough (breakpoint) time: _____ Pressure drop: _____ "H_2O

Pollutant	Efficiency (%)	Basis for Efficiency	Outlet Concentration (ppm)

PART VI - EMISSION CONTROLS (CONTINUED)

_____ **OTHER TYPES** Name and describe. Attach complete details.

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

FUGITIVE DUST CONTROLS: Describe below or attach a complete explanation of all controls of fugitive emissions not discussed in Form E - Roads or Form F - Storage Piles.

PART VII - STACK DATA

Stack data must be provided for each flue, duct, pipe, stack, chimney or conduit (stacks) at which collected emissions are vented to open air through a restricted opening.

Stack Identification: _____

UTM East _____ UTM North _____ or

Longitude _____ Latitude _____

Most important stacks have been located on topographic or air navigation charts. If you know the UTM coordinates or latitude and longitude, provide this information. If there is a number of stacks close together, a common location may be used

Stack Height: _____ Ft. Ground level elevation _____ Ft. Diameter _____ Ft.

Material Outer: _____ Lining: _____

Exit temperature (F): _____ Exit Velocity: _____ (f/s)

Exhaust Rate: _____ (ACFM) % Moisture: _____

Nearest building to stack:

distance _____ ft. height _____ ft. length _____ ft. width _____ Ft.

Processes Sharing Stack: If more than one process shares a stack, list them and estimate relative contribution of each.

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

Contribution to emissions from stack _____ %

Description _____

PART VIII - REMARKS

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual Emissions to this sheet. Reference all emission factors and efficiencies of control equipment.

PART IX - EMISSIONS

PART 9a: EMISSIONS -- SHORT TERM LB/HR (POUNDS PER HOUR) OR OTHER _____

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	
Allowable								
Maximum Potential								
Actual or Estimated								

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART 9b: EMISSIONS -- ANNUAL TPY (TONS PER YEAR)

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	
Allowable								
Maximum Potential								
Actual or Estimated								

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

PART IX - EMISSIONS (CONTINUED)

List all known pollutants, including, but not limited to those found under Article XXI section 2101.20 in the definition of Hazardous Air Pollutants.

Transfer this information to the summary emissions sheets.

PERMIT APPLICATION FORM D
STORAGE TANKS
Not Applicable

Tanks situated at a common location in the facility and storing the same materials, or vented through a common control device may be grouped together for reporting purposes if the emissions from individual tanks are small. A diagram should be attached showing the locations of grouped tanks. A separate listing should be provided for Part I for each tank. Part II and estimates of emissions should be for the group. Emissions from liquid or gas storage tanks that condense to form solids in ambient air should be included in emissions estimates as particulate TSP and/or PM10.

PART I - DESCRIPTION OF STORAGE TANKS (MAKE A COPY OF SCHEDULE E FOR EACH STORAGE TANK)

Company Identification or Description: _____

Installer: _____ Installation Date: _____

Prior Allegheny County Air Pollution Permit No. _____

Capacity _____ (specify units) Age: _____ (years)

Diameter _____ (ft) Height _____ (ft)

Paint Color _____ Loading Type _____

Materials Normally Used

Common Name _____ Chemical Name _____

Chemical Abstract Service # _____ Liquid Molecular Weight _____

Vapor Pressure _____ psia at _____ (temperature)

Type of tank (check appropriate spaces):

Underground _____ Pressure Tank _____ Surface _____

If the tank is a surface tank:

_____ No Roof

_____ Fixed Roof

Roof Paint Color _____ Shell Paint Color _____

Paint Condition _____ Average Vapor Space Height _____ (ft)

Pressure Relief Valve Setting: Pressure _____ psia

Vacuum _____

Vapor Recovery System (Description)

Control Efficiency _____ %

Gas Blanketing System Gas _____ Amt Used _____

_____ Floating Roof (specify internal or external floating roof.)

_____ External Floating Roof

Primary Seal Type _____

Secondary Seal Type _____

_____ Internal Floating Roof

Primary Seal Type _____

Deck Construction Type _____

Tank Construction Type _____

PART II - OPERATING SCHEDULE

Throughput (specify units):
Annual _____ Daily _____

Maximum turnovers per year: _____

Seasonal: Periods correspond to seasons instead of calendar quarters. The first season is split to include December, January, and February.

Seasonal Percentage of Total Throughput:

December, January, & February _____ % June, July, & August _____ %
March, April, & May _____ % September, October, & November _____ %

Dates tank is not normally in use: from _____ __ /__ /__ _____ TO _____ __ /__ /__ _____

PART III - CONTROL DEVICES

Describe any control devices, including any gas blanketing system noted above.

PART IV - EMISSIONS - ANNUAL TPY

Pollutant	PM	PM10	SO_2	CO	NO_X	VOC	LEAD	
Allowable								
Maximum Potential								
Actual or Estimated								

Pollutant								
Allowable								
Maximum Potential								
Actual or Estimated								

List all known pollutants, including, but not limited to those found under Article XXI section 2101.20 in the definition of Hazardous Air Pollutants.

Transfer this information to the summary emissions sheets.

PERMIT APPLICATION FORM E
DRY BULK MATERIALS STORAGE AND HANDLING

This form reports particulate emissions from wind erosion of bulk materials stockpiles, from additions and retrievals of material, and from stockpile maintenance. It includes materials stored under cover and in silos. Storage piles including hazardous materials such as lead compounds or asbestos should be reported here. A separate form should be prepared for each stockpile. Mining, excavation, crushing, and other materials processing should be treated as processes and reported on Form A.

PART I - DESCRIPTION OF STORAGE PILE (MAKE A COPY OF SCHEDULE E FOR EACH STORAGE PILE)

Open and enclosed stockpiles of raw materials, intermediate products, and finished products should be reported. Include silos in reporting types of stockpile covering.

Company Identification or Description: NOT APPLICABLE

UTM East: _____ UTM North: _____ (center of pile)

Type of Material Stored (Generic Name): _____

Major Chemical Components (list, with percentages of each):

Moisture Content: _____ % Silt Content: _____ %

Height of Pile (give units): _____

Uncovered: _____ acres or _____ square feet

If covered or enclosed:

Type of cover: _____

Estimated Control Efficiency: _____ %

PART II - STORAGE PILE TRANSFERS

For the purpose of this schedule, stockpile transfers include either adding material onto a pile and removal of material from a pile. This schedule does not include loading or unloading from barges, rail cars or other transport, or transportation and marketing of dry materials, which should be reported as processes on Form A.

Normal Inventory: _____ (Tons)

Estimated	Additions (tons)	Retrievals
December, January, and February		
March, April, and May		
June, July, and August		
September, October, and November		
Annual storage losses (tons)		

PART III - **EQUIPMENT**
Immobile equipment or equipment that is dedicated to the particular stockpile should be reported as fixed or dedicated units. Mobile equipment or equipment that may be moved to another area of the plant should be reported as transient or mobile units. This may include bulldozers, backhoes, or other large, mobile equipment that works on or around a stockpile. Percent utilization is the percentage of operating time (hours divided by annual hours) that equipment is in operation on the storage pile.

Fixed or Dedicated Units

	Name	Size (Capacity)	% Utilization
(1.)			
(2.)			
(3.)			
(4.)			
(5.)			
(6.)			

Transient or Mobile Units

	Name	Size (Capacity)	% Utilization
(1.)			
(2.)			
(3.)			
(4.)			
(5.)			
(6.)			

PART IV - **DUST CONTROL MEASURES (describe):**

PART V - **EMISSION ESTIMATES**

A. Wind Erosion

	PM10		TSP	
	Lb./hr.	TPY	Lb./hr.	TPY
Uncontrolled				
Controlled				

B. Stockpile Activity (Storage and Retrieval)

	PM10		TSP	
	Lb./hr.	TPY	Lb./hr.	TPY
Uncontrolled				
Controlled				

C. Stockpile Activity Maintenance

	PM10		TSP	
	Lb./hr.	TPY	Lb./hr.	TPY
Uncontrolled				
Controlled				

Attach calculations and reference all emission factors for Allowable, Potential to Emit, and Actual emissions for this sheet. Reference all emission factors and efficiencies of control equipment.

PERMIT APPLICATION FORM F
ROADS AND VEHICLES

This form covers fugitive emissions from vehicles and vehicle travel on paved and unpaved roads and parking lots within the plant property. Plants with only normal business traffic of light duty vehicles and paved parking lots with capacity less than one hundred cars are not required to submit Form F.

PART I – ROADS

Paved Roads: 0.71 (segment used by project) (miles) Unpaved Roads: 0.22 (segment used by project) (miles)

Parking Lots (area): None impacted by project (specify units)

PART II - VEHICLES

Light-Duty Gasoline Vehicles (LDGV) N/A (average weekly number)

Estimated Total Vehicle Miles Traveled

Seasonal Usage (%)	Paved Areas	Unpaved Areas
December, January, and February		
March, April, and May		
June, July, and August		
September, October, and November		
Annual Storage Losses (tons)		

Heavy-Duty Gasoline Vehicles (HDGV) Estimated Annual Fuel Consumption N/A (gal)

Estimated Total Vehicle Miles Traveled Ave. Wgt.

Seasonal Usage (%)	Paved Areas	Unpaved Areas
December, January, and February		
March, April, and May		
June, July, and August		
September, October, and November		
Annual Storage Losses (tons)		

Heavy-Duty Diesel Vehicles (HDDV) Estimated Annual Fuel Consumption Unknown (gal)

Estimated Total Vehicle Miles Traveled 5,820 (miles) Ave. Wgt. 27 tons

Seasonal Usage (%)	Paved Areas	Unpaved Areas
December, January, and February	25	25
March, April, and May	25	25
June, July, and August	25	25
September, October, and November	25	25
Annual Storage Losses (tons)		

Road Dust Emissions

	TSP	PM10
Uncontrolled Emissions	2.88 tpy	0.75 tpy
Control Efficiency	90%	90%
Controlled (Actual) Emissions	0.29 tpy	0.08 tpy

Dust Control Measures (Describe):

Roadway fugitive dust is controlled using a combination of periodic vacuum sweeping, use of water sprays and/or chemical dust suppressants and/or proper maintenance.

Transfer this information to the summary emissions sheets.

PERMIT APPLICATION FORM G
MISCELLANEOUS FUGITIVE EMISSIONS

This form is for reporting miscellaneous fugitive emissions which are not reported in forms A-F. Fugitives are emissions which escape into the plant air or outdoor air by means other than a flue or duct. Fugitives associated with a particular process should be reported on the form for that process. For example, fugitives from a paper coating line would be reported for that line. Fugitives from several segments may be grouped together. Fugitives not associated with any one process should be reported here as "Plant Fugitives." Examples are dust (TSP) and fine particulates (PM_{10}) from abrasive blasting or construction/demolition, VOC and/or air toxics from cleanup, painting or maintenance, or chemicals from laboratory experiments or hoods. A separate form G should be completed for each type or category of activity. Additional forms may be attached if there are more than four (4) pollutants for the activity.

Process Description or Miscellaneous Activity (describe):

Give a verbal description of the activity reported, such as construction projects, abrasive blasting, painting, cleaning, or other activity that has no relation to regular plant processes. State the type of abrasives, cleaners, or paints used, and other information that would be helpful in estimating dust or evaporative emissions.

GASES AND LIQUIDS NOT APPLICABLE

Common Name:				
Chemical Name:				
CAS #:				
Use:				
Quantity Purchased (units):				
Annually:				
Daily:				
Seasonal Use: (%)				
December, January, and February:				
March, April, and May:				
June, July, and August:				
September, October, and November:				
Volatiles Wgt % or lb./gal. OR				
Total Volatiles				
Amt Volatiles Recovered and Shipped Off Site				
Amount Emitted				

PARTICULATE EMISSIONS

	TSP	PM10
Estimated amount of particulates generated per unit of activity		
Estimated total amount of particulates		
Seasonal Distribution (%)		
December, January, and February:		
March, April, and May:		
June, July, and August:		
September, October, and November:		
Controls (describe):		
Efficiency (%)		
Net Emissions		

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant NOx CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	0.65	0.65	0.65
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	0.65	0.65	0.65
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	0.24	0.24	0.24
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	0.24	0.24	0.24
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	0.28	0.28	0.28
CT	CT	Cooling Tower	Not Applicable	N/A	N/A	N/A
Fugitive	Roads	Roadways	Not Applicable	N/A	N/A	N/A
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				2.05	2.05	2.05

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant CO CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	0.15	0.15	0.15
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	0.15	0.15	0.15
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	0.08	0.08	0.08
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	0.08	0.08	0.08
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	0.16	0.16	0.16
CT	CT	Cooling Tower	Not Applicable	N/A	N/A	N/A
Fugitive	Roads	Roadways	Not Applicable	N/A	N/A	N/A
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				0.61	0.61	0.61

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant SO_2 CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	1.28	1.28	1.28
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	1.28	1.28	1.28
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	0.14	0.14	0.14
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	0.14	0.14	0.14
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	1.48	1.48	1.48
CT	CT	Cooling Tower	Not Applicable	N/A	N/A	N/A
Fugitive	Roads	Roadways	Not Applicable	N/A	N/A	N/A
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				4.31	4.31	4.31

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant VOC CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	0.05	0.05	0.05
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	0.05	0.05	0.05
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	0.01	0.01	0.01
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	0.01	0.01	0.01
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	0.05	0.05	0.05
CT	CT	Cooling Tower	Not Applicable	N/A	N/A	N/A
Fugitive	Roads	Roadways	Not Applicable	N/A	N/A	N/A
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				0.15	0.15	0.15

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant PM_{10} CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	0.11	0.11	0.11
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	0.11	0.11	0.11
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	0.01	0.01	0.01
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	0.01	0.01	0.01
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	0.13	0.13	0.13
CT	CT	Cooling Tower	Not Applicable	2.41	2.41	2.41
Fugitive	Roads	Roadways	Not Applicable	0.07	0.07	0.07
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				2.86	2.86	2.86

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant $PM_{2.5}$ CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	0.09	0. 09	0. 09
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	0. 09	0. 09	0. 09
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	0.01	0.01	0.01
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	0.01	0.01	0.01
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	0.11	0.11	0.11
CT	CT	Cooling Tower	Not Applicable	0.01	0.01	0.01
Fugitive	Roads	Roadways	Not Applicable	0.01	0.01	0.01
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				0.33	0.33	0.33

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant NH_3 CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	0.03	0.03	0.03
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	0.03	0.03	0.03
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	<0.01	<0.01	<0.01
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	<0.01	<0.01	<0.01
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	0.03	0.03	0.03
CT	CT	Cooling Tower	Not Applicable	N/A	N/A	N/A
Fugitive	Roads	Roadways	Not Applicable	N/A	N/A	N/A
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				0.09	0.09	0.09

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

Copy this page to report additional pollutants

Allegheny County Health Department
Air Quality Program

PERMIT APPLICATION FORM K

SUMMARY OF EMISSIONS

Name of Owner/Operator U. S. Steel Mon Valley Works Plant Name Edgar Thomson Plant

Pollutant GHG CAS No. _____ Year for actual emissions _____ or X estimated

POINT	UNITS DISCHARGING TO THIS STACK	EMISSION SOURCE DESCRIPTION	ANNUAL THROUGHOUT UNITS	ALLOWABLE UNITS (tpy)	POTENTIAL (tpy)	ACTUAL (tpy)
TPS1	TPS1	Tundish Preheating Station 1	3,000,000 tons steel	906.8	906.8	906.8
TPS2	TPS2	Tundish Preheating Station 2	3,000,000 tons steel	906.8	906.8	906.8
SP1	SP1	SEN Preheating Station 1	3,000,000 tons steel	197.4	197.4	197.4
SP2	SP2	SEN Preheating Station 2	3,000,000 tons steel	197.4	197.4	197.4
TDS	TDS	Tundish Drying Station	3,000,000 tons steel	945.3	945.3	945.3
CT	CT	Cooling Tower	Not Applicable	N/A	N/A	N/A
Fugitive	Roads	Roadways	Not Applicable	N/A	N/A	N/A
TOTAL EMISSIONS FOR THIS SOURCE (FACILITY)				3153.6	3153.6	3153.6

If this is a NON-CRITERIA POLLUTANT, include the CAS number. For the fields "Point" and "Units discharging to this stack," use the identifying numbers from your plant drawing. For a more complete explanation of emissions, see definitions in Article XXI.

Allowable emissions are the maximum allowable by regulation. Calculate using the capacity of the unit unless restricted by operation limits, and the most strict regulation pertaining to that unit. Calculate for the shortest term regulated (one hour, one day….). Reflect the time period when defining the units.

Potential to emit (Potential on the chart) is the maximum capacity to emit contaminants, including fugitive emissions, under the physical and operational design of the unit. Include any permitted or regulated restrictions to operate. The Potential to Emit values should be less than or equal to the Allowable emissions.

Actual emissions are the best estimate of the latest year of emissions from each unit. For those that are new, actual emissions would be an estimate of a normal annual operation. Please note that sources will be required to submit an annual emissions report and may be required to pay an annual emissions fee. This report and fee payment will be made under a separate document.

PERMIT APPLICATION FORM M
SOURCE OUT OF COMPLIANCE

FORM M Sources Out of Compliance

There is no Form M included in this application form. Strategies for bringing non-complying sources into compliance will vary so widely from source to source that it would not be useful to provide a form for completion. Provide your own description and label it Form M. Include enough detail that it is clear what emission units are not in compliance and of what regulations they are not in compliance. Provide a detailed schedule of compliance. This would include an installation schedule, changes in operations, a leak detection program schedule -- whatever it will require to bring the emission unit into compliance. Make sure that the dates are manageable; they may be included in the permit, and become enforceable. Regular reports on the progress of reaching compliance are required every six months (they may be more frequent if desired).

PERMIT APPLICATION FORM N
ALTERNATIVE OPERATING SCENARIO

A: GENERAL INFORMATION NOT APPLICABLE

1. Alternative Scenario Number (Plan #): _____
2. Give a general description of the changes involved in this alternative scenario:

3. Please Identify the emissions units affected in the Table below:

Emission Unit #	Type of Emission Unit	Changes in the Process / Changes in the Project / Other Changes	SIC/SCC Associated with Scenario

4. Describe and cite all applicable requirements pertaining to this alternative scenario:

B: COMPLIANCE METHOD

Emission Unit #	Pollutant	Compliance Method	Reference Test Method	Monitoring Device	Frequency / Duration of Sampling

Attach any other related information which would further explain the method of compliance.

C: RECORDKEEPING AND REPORTING

1. List what parameter will be recorded and the frequency of recording:

2. Describe what is to be reported and the frequency of reporting? (Reports must be submitted at least every six (6) months

3. Beginning reporting date: __ /__ /__

APPENDIX B: COMPLIANCE REVIEW FORM

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

AIR POLLUTION CONTROL ACT COMPLIANCE REVIEW FORM

Fully and accurately provide the following information, as specified. Attach additional sheets as necessary.

Type of Compliance Review Form Submittal (check all that apply)

☐ Original Filing
☒ Amended Filing

Date of Last Compliance Review Form Filing: 3/29/2017

Type of Submittal

☐ New Plan Approval ☐ New Operating Permit ☐ Renewal of Operating Permit
☐ Extension of Plan Approval ☐ Change of Ownership ☐ Periodic Submission (@ 6 mos)
☒ Other: Minor permit application for Edgar Thomson Plant

SECTION A. GENERAL APPLICATION INFORMATION

Name of Applicant/Permittee/("applicant")
(non-corporations-attach documentation of legal name)
United States Steel Corporation (Mon Valley Works - Edgar Thomson Plant)

Address 13th Street and Braddock Avenue
Braddock, PA 15104
c/o Coleen Davis

Telephone (412) 273-4730 **Taxpayer ID#** 25-1897152

Permit, Plan Approval or Application ID# Operating Permit #0051

Identify the form of management under which the applicant conducts its business (check appropriate box)

☐ Individual ☐ Syndicate ☐ Government Agency
☐ Municipality ☐ Municipal Authority ☐ Joint Venture
☐ Proprietorship ☐ Fictitious Name ☐ Association
☒ Public Corporation ☐ Partnership ☐ Other Type of Business, specify below:
☐ Private Corporation ☐ Limited Partnership

Describe below the type(s) of business activities performed.

United States Steel Corporation, a publicly traded corporation, manufactures and sells a wide variety of steel sheet, tubular, and tin products; coke and taconite pellets; and coal chemicals. The Mon Valley Works - Edgar Thomson Plant manufactures steel.

SECTION B. GENERAL INFORMATION REGARDING "APPLICANT"

If applicant is a corporation or a division or other unit of a corporation, provide the names, principal places of business, state of incorporation, and taxpayer ID numbers of all domestic and foreign parent corporations (including the ultimate parent corporation), and all domestic and foreign subsidiary corporations of the ultimate parent corporation with operations in Pennsylvania. Please include all corporate divisions or units, (whether incorporated or unincorporated) and privately held corporations. (A diagram of corporate relationships may be provided to illustrate corporate relationships.) Attach additional sheets as necessary.

Unit Name	Principal Places of Business	State of Incorporation	Taxpayer ID	Relationship to Applicant
United States Steel Corporation (U. S. Steel)	USA	Delaware	25-1897152	Self
Transtar, Inc.	USA	Delaware	51-0313339	Subsidiary of U. S. Steel
Union Railroad Company	USA	Delaware	25-1589128	Subsidiary of Transtar, Inc.

SECTION C. SPECIFIC INFORMATION REGARDING APPLICANT AND ITS "RELATED PARTIES"

Pennsylvania Facilities. List the name and location (mailing address, municipality, county), telephone number, and relationship to applicant (parent, subsidiary or general partner) of applicant and all Related Parties' places of business, and facilities in Pennsylvania. Attach additional sheets as necessary.

Unit Name	Street Address	County and Municipality	Telephone No.	Relationship to Applicant
Clairton Plant	400 State Street	Allegheny/Clairton	(412) 233-1015	Self
Edgar Thomson Plant	1300 Braddock Avenue	Allegheny/Braddock	(412) 273-4730	Self
Irvin Plant	Camp Hollow Road	Allegheny/West Mifflin	(412) 675-7382	Self
Fairless Plant	Pennsylvania Avenue	Bucks/Fairless Hills	(412) 675-7382	Self
Transtar, Inc.	200 Penn Avenue, Suite 300	Allegheny/Pittsburgh	(412) 433-7090	Subsidiary of U. S. Steel
Union Railroad Company	200 Penn Avenue, Suite 300	Allegheny/Pittsburgh	(412) 433-7090	Subsidiary of Transtar, Inc.
			(	

Provide the names and business addresses of all general partners of the applicant and parent and subsidiary corporations, if any.

Name	Business Address
Not Applicable	

List the names and business address of persons with overall management responsibility for the process being permitted (i.e. plant manager).

Name	Business Address
Kurt Barshick	P. O. Box 878, Dravosburg, PA 15034

Plan Approvals or Operating Permits. List all plan approvals or operating permits issued by the Department or an approved local air pollution control agency under the APCA to the applicant or related parties that are currently in effect or have been in effect at any time 5 years prior to the date on which this form is notarized. This list shall include the plan approval and operating permit numbers, locations, issuance and expiration dates. Attach additional sheets as necessary.

Air Contamination Source	Plan Approval/ Operating Permit#	Location	Issuance Date	Expiration Date
Fairless Plant	09-00006	Fairless Plant, Fairless Hills, PA	11/19/2012; 12/22/2016	11/19/2017
Edgar Thomson Plant: See Attached List	See Attached List	Edgar Thomson Plant, Braddock, PA	See Attached List	See Attached List
Irvin Plant: See Attached List	See Attached List	Irvin Plant, West Mifflin, PA	See Attached List	See Attached List
Clairton Plant: See Attached List	See Attached List	Clairton Plant, Clairton, PA	See Attached List	See Attached List

Compliance Background. (Note: Copies of specific documents, if applicable, must be made available to the Department upon its request.) List all documented conduct of violations or enforcement actions identified by the Department pursuant to the APCA, regulations, terms and conditions of an operating permit or plan approval or order by applicant or any related party, using the following format grouped by source and location in reverse chronological order. Attach additional sheets as necessary. See the definition of "documented conduct" for further clarification. Unless specifically directed by the Department, deviations which have been previously reported to the Department in writing, relating to monitoring and reporting, need not be reported.

Date	Location	Plan Approval/ Operating Permit#	Nature of Documented Conduct	Type of Department Action	Status: Litigation Existing/Continuing or Corrected/Date	Dollar Amount Penalty
See Attached List						$
						$
						$
						$
						$
						$
						$
						$
						$
						$

List all incidents of deviations of the APCA, regulations, terms and conditions of an operating permit or plan approval or order by applicant or any related party, using the following format grouped by source and location in reverse chronological order. This list must include items both currently known and unknown to the Department. Attach additional sheets as necessary. See the definition of "deviations" for further clarification.

Date	Location	Plan Approval/ Operating Permit#	Nature of Deviation	Incident Status: Litigation Existing/Continuing Or Corrected/Date
See Attached List				

<u>CONTINUING OBLIGATION</u>. Applicant is under a continuing obligation to update this form using the Compliance Review Supplemental Form if any additional deviations occur between the date of submission and Department action on the application.

VERIFICATION STATEMENT
Subject to the penalties of Title 18 Pa.C.S. Section 4904 and 35 P.S. Section 4009(b)(2), I verify under penalty of law that I am authorized to make this verification on behalf of the Applicant/Permittee. I further verify that the information contained in this Compliance Review Form is true and complete to the best of my belief formed after reasonable inquiry. I further verify that reasonable procedures are in place to ensure that "documented conduct" and "deviations" as defined in 25 Pa Code Section 121.1 are identified and included in the information set forth in this Compliance Review Form.
Signature — Date: 4-26-2019
Kurt Barshick Name (Print or Type)
Mon Valley Works - General Manager Title

United States Steel Corporation
Allegheny County Health Department Permits

Clairton Works

7035003-010-26320	Coke Battery No. 1
7035003-010-26318	Coke Battery No. 2
7035003-010-26317	Coke Battery No. 3
7035003-010-26312	Coke Battery No. 7
7035003-010-26313	Coke Battery No. 8
7035003-010-26319	Coke Battery No. 9
7035003-010-26309	Coke Battery No. 13
7035003-010-26307	Coke Battery No. 14
7035003-010-25306	Coke Battery No. 15
7035003-010-26304	Coke Battery No. 19
7035003-010-53800	Coke Battery No. 20
78-I-0083-P	Coke Battery B and B Quench Tower
7035003-010-25101	Quench Tower #1
7035003-010-25102	Quench Tower #3
7035003-010-25104	Quench Tower #5
7035003-010-25106	Quench Tower #7
91-I-0021-P	Coke By-Products Recovery Plant
7035003-010-00801	Boiler No. 1
7035003-010-00800	Boiler No. 2
7035003-010-99100	Boiler Nos. 13 and 14
7035003-010-01300	Boiler Nos. R1 and R2
7035003-010-00600	Boiler Nos. T1 and T2
7035003-010-25001	Coke Screening No. 1
7035003-010-25002	Coke Screening No. 2
0052-I003	Coke Screening No. 3
0052-I006	Fan Upgrade 1-3 PEC
0052-I007	Fan Upgrade 7-9 PEC
0052-I008	Fan Upgrade 13-15 PEC
0052-I005a	Fan Upgrade 19/20 PEC
0052-I002b	Ammonia Flare
0052-I004	Methanol/MEA Tanks
73-O-01138-P	Coke Battery 1
73-O-01136-P	Coke Battery 2
73-I-1135-P	Coke Battery 3
73-O-1130-P	Coke Battery 7
73-O-1131-P	Coke Battery 8
73-O-1137-P	Coke Battery 9
73-O-1127-P	Coke Battery 13
78-I-009	Coke Batteries 13-15 Rebuild
73-O-1126-P	Coke Battery 14
93-I-0010-P	Coke Battery 15
77-I-0019-P	Coke Battery 20
87-I-0031-P	PEC for 1-3
87-I-0032-P	PEC for 7-9
87-I-0037-P	PEC for 13-15
87-I-0033-P	PEC for 19/20
78-I-0083-P	Coke Battery B and Quench Tower
90-I-0031-P	Igniters for 1-3, 7-9, and 13-15
90-I-0032-P	Igniters for 19/20
90-I-0033-P	Igniters for B
73-O-1139-P	Quench Tower #1

73-O-1140-P	Quench Tower #3
73-O-1142-P	Quench Tower #5
73-O-1144-P	Quench Tower #7
73-O-1148-P	Coke Screening #1
73-O-1149-P	Coke Screening #2
GC-80-62	COG Desulfurization
73-I-3784-P	COG Desulfurization
7035003-010-8400	Sulfur Production (Claus Carbonate)
73-O-1153-P	Sulfur Production (Claus Carbonate)
7035003-010-25600	Gas Processing
73-O-1155-P	Gas Processing
91-I-0021-P	Benzene NESHAP By-Product Plant Emission Control
73-O-1161-P	Coal Chemical Recovery #1 Unit
7035003-010-25501	Coal Chemical Recovery #1 Unit
73-I-4035-P	Tanks
73-O-1162-P	Coal Chemical Recovery #2 Unit
7035003-010-25502	Coal Chemical Recovery #2 Unit
73-I-4036-C	Tanks
94-I-0096-C	Boiler #1
75-I-0019-C	Boiler #1
94-I-0019-C	Boiler #2
75-I-0020-C	Boiler #2
94-I-0091-C	Boilers R1 and R2
74-O-6090-C	Boilers R1 and R2
94-I-0093-C	Boilers T1 and T2
89-I-0003-C	Boilers T1 and T2
76-I-0067-C	Boilers T1 and T2
73-I-4034-P	No. 1 Tar Acid Tanks
73-I-4030-P	Tar Refining Tanks V-100 & V-101
73-I-4029-P	Tar Refining Tanks 3-A & 4-A
73-I-4028-P	Tar Refining Tanks 10, 11, & V-113
73-I-4027-P	Tar Refining Tanks 3 to 8 & T
73-I-4026-P	Road Tar Terminal V-200 to V-208 inclusive
0052-I011	C Battery
0052-I011b	Revised C Battery
0052-I013	Coke Screening #4
0052-I014a	Quench Towers 5A and 7A
0052-I015	Truck/ Railcar Loading and Process Tanks
0052-I016	Light Oil Loading Facility
0052-I017	1-Hour SO2 NAAQS
0052	Title V Operating Permit

Edgar Thomson

7035003-002-93800	BOP
7035003-002-32300	BOP Slag Processing
92-I006-P	BOP Slag Processing
92-I0088-P	BOP Slag Processing
92-I066-P	BOP Slag Processing
7035003-002-90105	#1 Blast Furnace
7035003-002-31400	#1 Blast Furnace Hard Slag Pit
94-I-0026-P	#1 Blast Furnace Hard Slag Pit
4-1-0026-P	#1 Blast Furnace Hard Slag Pit
7035003-002-90107	#3 Blast Furnace
7035003-002-31401	#3 Blast Furnace Hard Slag Pit
94-I-0027-P	#3 Blast Furnace Hard Slag Pit

7035003-002-93900	Dual Slab Caster and Ladle Metallurgy Facility
90-I-003-P	Dual Slab Caster and Ladle Metallurgy Facility
95-I-006-P	RH Vacuum Degasser
94-I-006-P	RH Vacuum Degasser
7035003-004-99200	#2 Power House Riley Boilers #1, 2, & 3
7035003-002-99200	#2 Power House Riley Boilers #1, 2, & 3
0061559-000-73800	Waste Product Recycle & Briquetting Process
93-I-0039-P	Waste Product Recycle & Briquetting Process
0051-I004a	BOP Emission Control Upgrade
0051-I005	LMF Emission Control Upgrade
0051-I006	1-Hour SO2 NAAQS
0051	Title V Operating Permit

Irvin Plant

0050-I002a	Cold Reduction Mill
0050-I001b	64" Pickle Line
0050-I003	OCA Furnace #14
0050-I006	OCA Furnaces #15 and #16
0050-I007	Continuous Terne Line Molten Lead Pot Baghouse
0050-I008	1-Hour SO2 NAAQS
0050	Title V Operating Permit

U. S. Steel – Mon Valley Works – Edgar Thomson Plant
Compliance Background – May 2, 2019

Date	Location	Plan Approval/ Operating Permit#	Nature of Documented Conduct	Type of Department Action	Status: Litigation Existing/Continuing Or Corrected/Date	Dollar Amount Penalty
4/11/19	Fairless Plant	Permit #09-00006	Galv Line Tune-ups	Notice of Violation	In progress	NA
3/29/19	Clairton	Article XXI/ Permit #0052-I011b	Battery Emissions – 3Q and 4Q 2018	Enforcement Order #190305	Appealed	$707,568
3/25/19	Clairton	Article XXI/ Permit #0052-I017	B Battery Quench Tower stack test exceedance	Enforcement Order #190304	Final	$1.980
3/25/19	Clairton	Article XXI/ Permit #0052	Battery 13 Combustion Stack exceedance	Enforcement Order #190303	In progress	NA
3/6/19	Clairton	Article XXI	Coke Oven Regulations – Request for Reports and Info	Administrative Order	Final	NA
3/12/19	Clairton, Irvin, Edgar Thomson	Article XXI	SO2 Emissions – No. 2 Control Room Fire	Enforcement Order #190202A	In progress	NA
10/31/18	Clairton	Article XXI/ Permit #0052-I011b	Battery Emissions – 2Q 2018	Administrative Order #181002 Revised	Appealed	$613,716
7/25/18	Edgar Thomson	Article XXI	Visible Emissions during BF CH BH stack testing	Administrative Order #180706	Final	NA
6/28/18	Clairton	Article XXI/ Permit #0052-I011	Article XXI Exceedances, C Quench Tower, B Battery Door Standard, Compliance Rate Percentages	Enforcement Order #180601	Appealed/ Hearing Held	$1,091,950
6/13/18	Irvin	Article XXI	Asbestos Quarterly Reporting	Enforcement Order #180506	Appealed	NA
6/13/18	Edgar Thomson	Article XXI	Asbestos Quarterly Reporting	Enforcement Order #180505	Appealed	NA
6/13/18	Clairton	Article XXI	Asbestos Quarterly Reporting	Enforcement Order #180504	Appealed	NA
3/30/18	Clairton	Article XXI	2016 Asbestos Removal Project	Enforcement Order #180303A	Final	$198,625

3/6/18	Clairton	Article XXI/ Permit #0052-I011	Battery Emissions	Administrative Order #180301	Final	$392,100
2/27/18	Clairton	Article XXI/ Permit #0052-I011	C Battery Combustion Stack PM stack test exceedance	Administrative Order #180203	Final	$5,500
2/27/18	Clairton	Article XXI/ Permit #0052-I017	C Battery Quench Tower SO2 stack test exceedance	Administrative Order #180202	Final	NA
11/9/17	Edgar Thomson Plant	Article XXI	Visible Emissions at BOP scrubber stack, BOP shop, Blast Furnaces, and LMF	Notice of Violation/Notice of Noncompliance from ACHD and EPA	Awaiting EPA Response for Meeting in June 2019	NA
2/8/17	Edgar Thomson Plant	Article XXI	Visible Emissions, Operation and Maintenance Blast Furnace No.1	Notice of Violation/Settlement Offer #170201	Final	$13,350
1/25/17	Clairton Plant	Article XXI/ Permit No. 0052-I011	Battery Emissions	Notice of Violation/ Settlement Offer #170101	Final	$253,425
11/17/16	Clairton Plant	Article XXI/ Permit No. 0052-I011	Battery Emissions	Notice of Violation/ Settlement Offer #161003	Final	$142,950
8/31/16	Edgar Thomson Plant	Article XXI	Alleged violations of opacity from BOP Scrubber Stacks and Operations and Maintenance of Air Pollution Control Equipment	Notice of Violation #160802	Corrected	NA
7/18/16	Clairton Plant	Article XXI	Battery Emissions	Notice of Violation/ Settlement Offer #160701	Final	$1,575
4/22/16	Edgar Thomson Plant	Article XXI	Blast Furnace Emissions (Goggle Valve)	Notice of Violation	Final	NA
4/12/16	Edgar Thomson Plant	DEP Continuous Source Monitoring System (CSMS) Data Availability Requirements	Insufficient NOx CEMS data availability on Boiler 2	Letter	Final	NA
3/24/16	Clairton	Consent	Civil Complaint	Complaint Filed by	Existing/In Effect	$25,000

	Plant	Judgment	in Equity; and Consent Judgment	ACHD; and Consent Judgment entered by the Court of Common Pleas, Allegheny County		
10/30/15	Clairton Plant	Article XXI and Installation Permit #0052-I011	Battery Emissions	Statement of Violation	Final	$12,275
6/2/15	Fairless Plant	Permit #09-00006	Gasoline Storage Tank Pressure Relief Valve	Notice of Violation	NA	NA
5/11/15	Clairton Plant	Article XXI and Installation Permit #0052-I011	Battery Emissions	Statement of Violation	Final	$5,500
3/17/15	Clairton Plant	Article XXI and Installation Permit #0052-I011	Battery Emissions	Statement of Violation	Final	$4,575
11/18/14	Clairton Plant	Article XXI and Installation Permit #0052-I011	Battery Emissions	Statement of Violation	Final	$17,650
10/31/14	Clairton Plant	Article XXI and Installation Permit #0052-I011	Battery Emissions	Statement of Violation	Final	$7,125
8/7/14	Clairton Plant	Article XXI	Failure to complete testing/excessive emissions	Consent Order and Agreement between ACHD and USS	Superseded by Consent Judgment Entered on 3/24/2016	$300,000
5/8/14	Clairton Plant	Article XXI and Installation Permit #0052-I011	Battery Emissions	Statement of Violation	Final	$3,425

U. S. Steel Mon Valley Works – Edgar Thomson Plant
Incidents of Deviations – May 2, 2019

Date	Location	Plan Approval/ Operating Permit#	Nature of Deviation	Status: Litigation Existing/Continuing Or Corrected/Date
5/2014 –	Clairton	Article XXI &	Refer to semi-	NA

5/2019	Plant	Permit #0052	annual deviation reports/ annual certifications	
5/2014 – 5/2019	Fairless	Permit #09-00006	Refer to deviation reports	NA
5/2014 – 5/2019	Edgar Thomson	Article XXI & Permit #0051	Refer to semi-annual deviation report	NA
5/2014 – 5/2019	Irvin	Article XXI & Permit #0050	Refer to deviation reports	NA

APPENDIX C: EMISSION CALCULATIONS

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-1. Thin Slab Caster Project Emissions Summary

Pollutant[1]	PSD/NA NSR	Significant Emission Rate (tpy)	*Project Increase* Total Potential Emissions from New Equipment (tpy)	*Project Decrease* Baseline Actual Emissions (Shutdown Units)[2] (tpy)	Total Project Emissions Increase (tpy)	Increase > SER?[3]
PM (Filterable)	PSD	25	3.94	0.07	3.87	**NO**
$PM_{10\ (Filterable + Condesable)}$	PSD	15	2.86	0.18	2.68	**NO**
$PM_{2.5\ (Filterable + Condensable)}$	NA NSR	10	0.33	0.17	0.16	**NO**
NH_3	NA NSR (precursor)	40	0.09	0.06	0.03	**NO**
Lead	PSD	6.0E-01	0.00	0.00	0.00	**NO**
SO_2	NA NSR	40	4.31	0.48	3.84	**NO**
NO_x	NA NSR (precursor)	40	2.05	2.21	-0.15	**NO**
CO	PSD	100	0.61	1.61	-0.99	**NO**
VOC	NA NSR (precursor)	40	0.15	0.10	0.05	**NO**
CO_2e	PSD	75,000	3,153.61	2,490.04	663.57	**NO**

NOTES:

1. PSD also has established SERs for hydrogen sulfide, total reduced sulfur, fluorides, and sulfuric acid mist, which could be emitted from the sources being permitted in this action. However, current emissions inventories for the combustion of COG do not include these constituents and there are no published factors. Therefore, such emissions are not reasonable quantifiable or expected.

2. Baseline emissions are based on emissions reported by U. S. Steel as part of annual emissions inventories.

3. Per 40 CFR §52.21(b)(49)(iv), as an existing major stationary source, the pollutant GHGs (CO2e) is only subject to PSD if there is a significant emissions increase of a regulated NSR pollutant AND an emissions increase of 75,000 tpy CO_2e or more.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-2. Summary of Future Potential Emissions from Thin Slab Caster Project

Area	Emission Unit Description	CO		NO_X		PM		PM_{10}		$PM_{2.5}$		SO_2		VOC		Total HAPs		Lead		NH_3		CO_2e	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Caster	Tundish Preheating Station 1 (COG, FS1)	0.03	0.15	0.13	0.56	0.10	0.10	0.11	0.11	0.09	0.09	1.27	1.28	0.02	0.02	0.06	0.07	4.28E-07	4.29E-07	0.00	0.00	110.8	485.2
Caster	Tundish Preheating Station 1 (NG, FS2)	0.03	0.14	0.15	0.65	0.02	0.02	0.06	0.07	0.06	0.07	0.01	0.01	0.05	0.05	0.02	0.02	4.28E-06	4.29E-06	0.03	0.03	903.4	906.8
Caster	**Tundish Preheating Station 1 Max. Scenario**	**0.03**	**0.15**	**0.15**	**0.65**	**0.10**	**0.10**	**0.11**	**0.11**	**0.09**	**0.09**	**1.27**	**1.28**	**0.05**	**0.05**	**0.06**	**0.07**	**4.28E-06**	**4.29E-06**	**0.03**	**0.03**	**903.4**	**906.8**
Caster	Tundish Preheating Station 2 (COG, FS1)	0.03	0.15	0.13	0.56	0.10	0.10	0.11	0.11	0.09	0.09	1.27	1.28	0.02	0.02	0.06	0.07	4.28E-07	4.29E-07	0.00	0.00	110.8	485.2
Caster	Tundish Preheating Station 2 (NG, FS2)	0.03	0.14	0.15	0.65	0.02	0.02	0.06	0.07	0.06	0.07	0.01	0.01	0.05	0.05	0.02	0.02	4.28E-06	4.29E-06	0.03	0.03	903.4	906.8
Caster	**Tundish Preheating Station 2 Max. Scenario**	**0.03**	**0.15**	**0.15**	**0.65**	**0.10**	**0.10**	**0.11**	**0.11**	**0.09**	**0.09**	**1.27**	**1.28**	**0.05**	**0.05**	**0.06**	**0.07**	**4.28E-06**	**4.29E-06**	**0.03**	**0.03**	**903.4**	**906.8**
Caster	SEN Preheater 1 (COG, FS1)	0.00	0.01	0.02	0.09	0.01	0.01	0.01	0.01	0.01	0.01	0.14	0.14	0.00	0.00	0.01	0.01	4.66E-08	4.68E-08	0.00	0.00	26.6	116.6
Caster	SEN Preheater 1 (NG, FS2)	0.08	0.08	0.24	0.24	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	4.66E-07	4.68E-07	0.00	0.00	196.7	197.4
Caster	**SEN Preheater 1 Max. Scenario**	**0.08**	**0.08**	**0.24**	**0.24**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.14**	**0.14**	**0.01**	**0.01**	**0.01**	**0.01**	**4.66E-07**	**4.68E-07**	**0.00**	**0.00**	**196.7**	**197.4**
Caster	SEN Preheater 2 (COG, FS1)	0.00	0.01	0.02	0.09	0.01	0.01	0.01	0.01	0.01	0.01	0.14	0.14	0.00	0.00	0.01	0.01	4.66E-08	4.68E-08	0.00	0.00	26.6	116.6
Caster	SEN Preheater 2 (NG, FS2)	0.08	0.08	0.24	0.24	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	4.66E-07	4.68E-07	0.00	0.00	196.7	197.4
Caster	**SEN Preheater 2 Max. Scenario**	**0.08**	**0.08**	**0.24**	**0.24**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.14**	**0.14**	**0.01**	**0.01**	**0.01**	**0.01**	**4.66E-07**	**4.68E-07**	**0.00**	**0.00**	**196.7**	**197.4**
Caster	Tundish Drying Station (COG, FS1)	0.04	0.16	0.05	0.22	0.04	0.11	0.05	0.13	0.04	0.11	0.58	1.48	0.01	0.03	0.03	0.08	1.94E-07	4.97E-07	0.00	0.01	127.0	556.3
Caster	Tundish Drying Station (NG, FS2)	0.03	0.13	0.06	0.28	0.01	0.02	0.03	0.07	0.03	0.07	0.00	0.01	0.02	0.05	0.01	0.02	1.75E-06	4.47E-06	0.01	0.03	370.0	945.3
Caster	**Tundish Drying Station Max. Scenario**	**0.04**	**0.16**	**0.06**	**0.28**	**0.04**	**0.11**	**0.05**	**0.13**	**0.04**	**0.11**	**0.58**	**1.48**	**0.02**	**0.05**	**0.03**	**0.08**	**1.75E-06**	**4.47E-06**	**0.01**	**0.03**	**370.0**	**945.3**
Ancillary	**Cooling Towers**	--	--	--	--	**0.76**	**3.32**	**0.55**	**2.41**	**0.00**	**0.01**	--	--	--	--	--	--	--	--	--	--	--	--
Ancillary	**Unpaved Roads**	--	--	--	--	**0.06**	**0.27**	**0.02**	**0.07**	**0.00**	**0.01**	--	--	--	--	--	--	--	--	--	--	--	--
Ancillary	**Paved Roads**	--	--	--	--	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	--	--	--	--	--	--	--	--	--	--	--	--
Total		**0.3**	**0.61**	**0.84**	**2.05**	**1.09**	**3.94**	**0.86**	**2.86**	**0.25**	**0.33**	**3.40**	**4.31**	**0.12**	**0.15**	**0.17**	**0.22**	**0.00**	**0.00**	**0.07**	**0.09**	**2,570.1**	**3,153.6**

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-3a. Future Potential Air Toxics Emissions Summary (Project Equipment)

Source/Classification (tpy)	HAP Metals	Other Toxics	Mercury	POM	Dioxins	Furans	PCBs
Tundish Preheating Station 1 (COG, FS1)	6.9E-06	7.0E-02	2.2E-07	5.5E-07	0.0E+00	0.0E+00	0.0E+00
Tundish Preheating Station 1 (NG, FS2)	1.3E-04	4.4E-02	2.2E-06	5.5E-06	0.0E+00	0.0E+00	0.0E+00
Tundish Preheating Station 1 Max. Scenario	1.3E-04	7.0E-02	2.2E-06	5.5E-06	0.0E+00	0.0E+00	0.0E+00
Tundish Preheating Station 2 (COG, FS1)	6.9E-06	7.0E-02	2.2E-07	5.5E-07	0.0E+00	0.0E+00	0.0E+00
Tundish Preheating Station 2 (NG, FS2)	1.3E-04	4.4E-02	2.2E-06	5.5E-06	0.0E+00	0.0E+00	0.0E+00
Tundish Preheating Station 2 Max. Scenario	1.3E-04	7.0E-02	2.2E-06	5.5E-06	0.0E+00	0.0E+00	0.0E+00
SEN Preheater 1 (COG, FS1)	7.5E-07	7.6E-03	2.4E-08	6.0E-08	0.0E+00	0.0E+00	0.0E+00
SEN Preheater 1 (NG, FS2)	1.4E-05	4.8E-03	2.4E-07	6.0E-07	0.0E+00	0.0E+00	0.0E+00
SEN Preheater 1 Max. Scenario	1.4E-05	7.6E-03	2.4E-07	6.0E-07	0.0E+00	0.0E+00	0.0E+00
SEN Preheater 2 (COG, FS1)	7.5E-07	7.6E-03	2.4E-08	6.0E-08	0.0E+00	0.0E+00	0.0E+00
SEN Preheater 2 (NG, FS2)	1.4E-05	4.8E-03	2.4E-07	6.0E-07	0.0E+00	0.0E+00	0.0E+00
SEN Preheater 2 Max. Scenario	1.4E-05	7.6E-03	2.4E-07	6.0E-07	0.0E+00	0.0E+00	0.0E+00
Tundish Drying Station (COG, FS1)	6.6E-06	8.1E-02	2.6E-07	6.3E-07	0.0E+00	0.0E+00	0.0E+00
Tundish Drying Station (NG, FS2)	9.1E-05	4.5E-02	2.3E-06	5.7E-06	0.0E+00	0.0E+00	0.0E+00
Tundish Drying Station Max. Scenario	9.1E-05	8.1E-02	2.3E-06	5.7E-06	0.0E+00	0.0E+00	0.0E+00
Cooling Towers	--	--	--	--	--	--	--
Paved Roads	--	--	--	--	--	--	--
Unpaved Roads	--	--	--	--	--	--	--
Total (tpy)	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Total (lbs/yr)	0.7	472.2	0.01	0.04	0.0	0.0	0.0
Threshold (lbs/yr)	20	500	20	20	0.02	0.02	20
Exceedance	No	No	No	No	No	No	No

Table C-3b. Existing Air Toxics Emissions Summary

Classification	HAP Metals	Other Toxics	Mercury	POM	Dioxins	Furans	PCBs
Casters (COG)	0.0E+00	1.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Casters (NG)	1.3E-04	6.3E-02	3.2E-06	8.0E-06	0.0E+00	0.0E+00	0.0E+00
Caster Max. Scenario (tpy)	1.3E-04	1.2E-01	3.2E-06	8.0E-06	0.0E+00	0.0E+00	0.0E+00
Total (lbs/yr)	0.3	243.4	0.01	0.02	0.0	0.0	0.0

Table C-3c. Project Air Toxics Emissions Increase

Classification	HAP Metals	Other Toxics	Mercury	POM	Dioxins	Furans	PCBs
Change in Air Toxics Potential to Emit (lbs/yr)	0.5	229	0.01	0.02	0.00	0.00	0.00
Threshold (lbs/yr)	20	500	20	20	0.02	0.02	20
Exceedance	No	No	No	No	No	No	No

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-4a. Tundish Preheating Station 1 and 2 Firing Primarily COG (Fuel Scenario 1)

Process Section:	Caster Area	
Process Name:	Tundish Preheating Station 1 and 2	
Hours of Operation:	2,008	hrs/yr
Natural Gas Heat Content:	1,010	Btu/scf
COG Heat Content:	500	Btu/scf
Total Required Heat Input:	2,200.00	kW (input), per station
Conversion Factor:	2.93E-04	kW/Btu (AP-42, Appendix A, page A-12)
Required Heat Input:	7.51	MMBtu/hr
Maximum Fuel Usage:	15,079	MMBtu/yr, per station
# of Tundishes per Day:	4	
Fuel Scenario:		
COG (as % of fuel input):	90%	
Natural Gas (as % of fuel input):	10%	
Required Heat Input (COG):	6.76	MMBtu/hr
Required Heat Input (Natural Gas):	0.75	MMBtu/hr
Max. Fuel Usage (COG):	0.014	MMscf/hr, per station
Max. Fuel Usage (Natural Gas):	0.001	MMscf/hr, per station
Max. Fuel Usage (COG):	27	MMscf/yr, per station
Max. Fuel Usage (Natural Gas):	1	MMscf/yr, per station
No of Preheat Stations:	2	
Total Heat Input Capacity:	15.02	MMBtu/hr
Maximum Fuel Usage:	30,157	MMBtu/yr
Fuel Type:	Blend (COG and Natural Gas)	

Emissions Per Preheating Station (Natural Gas)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[2]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	1.62E-03	1.63E-03	2.2	lb/MMscf	AP-42 Table 1.4-2 (7/98), Filterable	N/A
Particulate Matter <10 microns (PM_{10})	0.01	0.01	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.01	0.01	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Ammonia	2.74E-03	2.75E-03	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Nitrogen Oxides (NO_X)	Accounted for in estimates listed below for COG combustion			g/tundish	Vendor Data	N/A
Volatile Organic Compounds (VOC)	4.70E-03	4.72E-03	6.3	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Sulfur Dioxide (SO_2)	5.13E-04	5.15E-04	0.7	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Carbon Monoxide (CO)	Accounted for in estimates listed below for COG combustion			g/tundish	Vendor Data	N/A
Lead (Pb)	4.28E-07	4.29E-07	5.75E-04	lb/MMscf	AP-42 Table 1.4-2 (7/98)	Accounted for below
Hazardous Air Pollutants:						
Total HAPs	1.62E-03	1.62E-03				
Organics						
2-Methylnaphthalene	2.05E-08	2.06E-08	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	1.37E-08	1.37E-08	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	2.05E-09	2.06E-09	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	1.80E-06	1.80E-06	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	1.03E-09	1.03E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	1.03E-09	1.03E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	1.03E-09	1.03E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	1.03E-06	1.03E-06	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	2.57E-09	2.58E-09	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	2.39E-09	2.40E-09	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	6.41E-05	6.44E-05	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	1.54E-03	1.55E-03	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	1.54E-09	1.55E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	5.22E-07	5.24E-07	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	1.45E-08	1.46E-08	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	4.28E-09	4.29E-09	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	2.91E-06	2.92E-06	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-4a. Tundish Preheating Station 1 and 2 Firing Primarily COG (Fuel Scenario 1)

Process Section: Caster Area
Process Name: Tundish Preheating Station 1 and 2

Metal HAPs						
Arsenic	1.71E-07	1.72E-07	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	1.03E-08	1.03E-08	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	9.41E-07	9.44E-07	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	1.20E-06	1.20E-06	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	7.18E-08	7.21E-08	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	4.28E-07	4.29E-07	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	3.25E-07	3.26E-07	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	2.22E-07	2.23E-07	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	1.80E-06	1.80E-06	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	2.05E-08	2.06E-08	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	1.89E-06	1.90E-06	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	Accounted for in estimates listed below for COG combustion			Nm^3/h	Vendor Data	N/A
Methane (CH_4)	1.90E-03	1.91E-03	1.15E-03	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	1.90E-04	1.91E-04	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	0.10	0.10	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
   CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)
2. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-4a. Tundish Preheating Station 1 and 2 Firing Primarily COG (Fuel Scenario 1)

Process Section: Caster Area
Process Name: Tundish Preheating Station 1 and 2

Emissions Per Preheating Station (COG)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	0.10	0.10	7.1	lb/MMscf	FIRE, Version 6.25	N/A
Particulate Matter <10 microns (PM_{10})	0.10	0.10	7.6	lb/MMscf	FIRE, Version 6.25 and AEI factor (condensable)	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.09	0.09	6.5	lb/MMscf	FIRE, Version 6.25 and AEI factor (condensable)	N/A
Ammonia	2.10E-03	2.10E-03	0.155	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Nitrogen Oxides (NO_X)	0.13	0.56	350	g/tundish	Vendor Data	N/A
Volatile Organic Compounds (VOC)	0.02	0.02	1.4	lb/MMscf	FIRE, Version 6.25	N/A
Sulfur Dioxide (SO_2)	1.27	1.28	35	grains H2S/100 scf	Factor = Existing Permit Limit	N/A
Carbon Monoxide (CO)	0.03	0.15	92	g/tundish	Vendor Data	N/A
Lead (Pb)			--	N/A	Not quantifiable	
Hazardous Air Pollutants:						
Total HAPs	0.06	0.06				
Organics						
Hydrogen Chloride	0.06	0.06	4.56	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Benzene	2.70E-04	2.71E-04	0.02	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Chlorine	8.79E-04	8.82E-04	0.07	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Carbon disulfide	4.46E-04	4.48E-04	0.03	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	483.25	485.06	119.00	Nm^3/h	Vendor Data	N/A
Methane (CH_4)	9.14E-04	9.17E-04	5.52E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	1.90E-04	1.91E-04	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	483.33	485.14	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-4b. Tundish Preheating Station 1 and 2 Firing Natural Gas (Fuel Scenario 2)

Process Section:	Caster Area		
Process Name:	Tundish Preheating Station 1 and 2		
Hours of Operation:	2,008	hrs/yr	
Natural Gas Heat Content:	1,010	Btu/scf	
Required Heat Input:	2,200.00	kW (input), per station	
Conversion Factor:	2.93E-04	kW/Btu	(AP-42, Appendix A, page A-12)
Required Heat Input:	7.51	MMBtu/hr	
Maximum Fuel Usage:	15,079	MMBtu/yr, per station	
Maximum Fuel Usage:	0.007	MMscf/hr, per station	
Maximum Fuel Usage:	14.929	MMscf/yr, per station	
# of Tundishes per Day:	4		
No of Preheat Stations:	2		
Total Heat Input Capacity:	15.02	MMBtu/hr	
Maximum Fuel Usage:	30,157	MMBtu/yr	
Maximum Fuel Usage:	0.015	MMscf/hr	
Maximum Fuel Usage:	30	MMscf/yr	
Fuel Type:	Natural Gas		

Emissions Per Preheating Station

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[2]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	0.02	0.02	2.2	lb/MMscf	AP-42 Table 1.4-2 (7/98), Filterable	N/A
Particulate Matter <10 microns (PM_{10})	0.06	0.07	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.06	0.07	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Ammonia	0.03	0.03	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Nitrogen Oxides (NO_x)	0.15	0.65	402	g/tundish	Vendor Data	N/A
Volatile Organic Compounds (VOC)	0.05	0.05	6.3	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Sulfur Dioxide (SO_2)	0.01	0.01	0.7	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Carbon Monoxide (CO)	0.03	0.14	85	g/tundish	Vendor Data	N/A
Lead (Pb)	4.28E-06	4.29E-06	5.75E-04	lb/MMscf	AP-42 Table 1.4-2 (7/98)	Accounted for below
Hazardous Air Pollutants:						
Total HAPs	0.02	0.02				
Organics						
2-Methylnaphthalene	2.05E-07	2.06E-07	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	1.37E-07	1.37E-07	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	2.05E-08	2.06E-08	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	1.80E-05	1.80E-05	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	1.03E-08	1.03E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	1.03E-08	1.03E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	1.03E-08	1.03E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	1.03E-05	1.03E-05	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	2.57E-08	2.58E-08	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	2.39E-08	2.40E-08	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	6.41E-04	6.44E-04	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	0.02	0.02	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	1.54E-08	1.55E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	5.22E-06	5.24E-06	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	1.45E-07	1.46E-07	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	4.28E-08	4.29E-08	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	2.91E-05	2.92E-05	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-4b. Tundish Preheating Station 1 and 2 Firing Natural Gas (Fuel Scenario 2)

Process Section: Caster Area
Process Name: Tundish Preheating Station 1 and 2

Metal HAPs						
Arsenic	1.71E-06	1.72E-06	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	1.03E-07	1.03E-07	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	9.41E-06	9.44E-06	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	1.20E-05	1.20E-05	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	7.18E-07	7.21E-07	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	4.28E-06	4.29E-06	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	3.25E-06	3.26E-06	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	2.22E-06	2.23E-06	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	1.80E-05	1.80E-05	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	2.05E-07	2.06E-07	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	7.53E-05	7.55E-05	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	902.34	905.72	222.20	Nm^3/h	Vendor Data	N/A
Methane (CH_4)	0.02	0.02	1.15E-03	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	1.90E-03	1.91E-03	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	903.38	906.77	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
   CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)
2. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-5a. SEN Preheaters 1 and 2 Firing Primarily COG (Fuel Scenario 1)

Process Section:	Caster Area	
Process Name:	SEN Preheating	
Hours of Operation:	2,008	hrs/yr
Natural Gas Heat Content:	1,010	Btu/scf
COG Heat Content:	500	Btu/scf
Total Required Heat Input:	240.00	kW (input), per station
Conversion Factor:	2.93E-04	kW/Btu (AP-42, Appendix A, page A-12)
Required Heat Input:	0.82	MMBtu/hr
Maximum Fuel Usage:	1,645	MMBtu/yr, per station
Fuel Scenario:		
COG (as % of fuel input):	90%	
Natural Gas (as % of fuel input):	10%	
Required Heat Input (COG):	0.74	MMBtu/hr
Required Heat Input (Natural Gas):	0.08	MMBtu/hr
Max. Fuel Usage (COG):	0.001	MMscf/hr, per station
Max. Fuel Usage (Natural Gas):	0.000	MMscf/hr, per station
Max. Fuel Usage (COG):	3	MMscf/yr, per station
Max. Fuel Usage (Natural Gas):	0	MMscf/yr, per station
No of Preheaters:	2	
Total Heat Input Capacity:	1.64	MMBtu/hr
Maximum Fuel Usage:	3,290	MMBtu/yr
Fuel Type:	Blend (COG and Natural Gas)	

Emissions Per Preheater (Natural Gas)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[2]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	1.77E-04	1.78E-04	2.2	lb/MMscf	AP-42 Table 1.4-2 (7/98), Filterable	N/A
Particulate Matter <10 microns (PM_{10})	7.09E-04	7.12E-04	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	7.09E-04	7.12E-04	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Ammonia	2.99E-04	3.00E-04	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Nitrogen Oxides (NO_x)	Accounted for in estimates listed below for COG combustion			g/hr	Vendor Data	N/A
Volatile Organic Compounds (VOC)	5.13E-04	5.15E-04	6.3	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Sulfur Dioxide (SO_2)	5.60E-05	5.62E-05	0.7	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Carbon Monoxide (CO)	Accounted for in estimates listed below for COG combustion			Nm^3/h	Vendor Data	N/A
Lead (Pb)	4.66E-08	4.68E-08	5.75E-04	lb/MMscf	AP-42 Table 1.4-2 (7/98)	Accounted for below
Hazardous Air Pollutants:						
Total HAPs	1.76E-04	1.77E-04				
Organics						
2-Methylnaphthalene	2.24E-09	2.25E-09	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	1.49E-09	1.50E-09	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	2.24E-10	2.25E-10	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	1.96E-07	1.97E-07	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	1.12E-10	1.12E-10	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	1.12E-10	1.12E-10	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	1.12E-10	1.12E-10	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	1.12E-07	1.12E-07	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	2.80E-10	2.81E-10	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	2.61E-10	2.62E-10	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	7.00E-06	7.02E-06	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	1.68E-04	1.69E-04	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	1.68E-10	1.69E-10	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	5.69E-08	5.71E-08	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	1.59E-09	1.59E-09	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	4.66E-10	4.68E-10	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	3.17E-07	3.18E-07	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics

Company Name: **U. S. Steel**
Facility Name: **Edgar Thomson Plant**
Project Description: **Thin Slab Caster**

Table C-5a. SEN Preheaters 1 and 2 Firing Primarily COG (Fuel Scenario 1)

Process Section: Caster Area
Process Name: SEN Preheating

Metal HAPs						
Arsenic	1.87E-08	1.87E-08	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	1.12E-09	1.12E-09	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	1.03E-07	1.03E-07	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	1.31E-07	1.31E-07	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	7.84E-09	7.87E-09	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	4.66E-08	4.68E-08	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	3.55E-08	3.56E-08	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	2.43E-08	2.43E-08	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	1.96E-07	1.97E-07	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	2.24E-09	2.25E-09	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	2.07E-07	2.07E-07	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	Accounted for in estimates listed below for COG combustion			Nm^3/h	Vendor Data	N/A
Methane (CH_4)	2.08E-04	2.09E-04	1.15E-03	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	2.08E-05	2.09E-05	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	0.01	0.01	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)
2. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-5a. SEN Preheaters 1 and 2 Firing Primarily COG (Fuel Scenario 1)

Process Section: Caster Area
Process Name: SEN Preheating

Emissions Per Preheater (COG)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	0.01	0.01	7.1	lb/MMscf	FIRE, Version 6.25	N/A
Particulate Matter <10 microns (PM_{10})	0.01	0.01	7.6	lb/MMscf	FIRE, Version 6.25 and AEI factor (condensable)	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.01	0.01	6.5	lb/MMscf	FIRE, Version 6.25 and AEI factor (condensable)	N/A
Ammonia	2.29E-04	2.29E-04	0.155	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Nitrogen Oxides (NO_x)	0.09	0.09	200.0	mg/m^3	Vendor Data	N/A
Volatile Organic Compounds (VOC)	2.04E-03	2.04E-03	1.4	lb/MMscf	FIRE, Version 6.25	N/A
Sulfur Dioxide (SO_2)	0.14	0.14	35	grains H2S/100 scf	Factor = Existing Permit Limit	N/A
Carbon Monoxide (CO)	0.01	0.01	25.0	mg/m^3	Vendor Data	N/A
Lead (Pb)			--	N/A	Not quantifiable consistent with AEI	
Hazardous Air Pollutants:						
Total HAPs	0.01	0.01				
Organics						
Hydrogen Chloride	0.01	0.01	4.56	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Benzene	2.95E-05	2.96E-05	0.02	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Chlorine	9.59E-05	9.62E-05	0.07	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Carbon disulfide	4.87E-05	4.89E-05	0.03	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	116.14	116.58	28.60	Nm^3/h	Vendor Data	N/A
Methane (CH_4)	9.97E-05	1.00E-04	5.52E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	2.08E-05	2.09E-05	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	116.15	116.59	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-5b. SEN Preheaters Firing Natural Gas (Fuel Scenario 2)

Process Section:	Caster Area	
Process Name:	SEN Preheating	
Hours of Operation:	2,008	hrs/yr
Natural Gas Heat Content:	1,010	Btu/scf
Required Heat Input:	240.00	kW (input), per station
Conversion Factor:	2.93E-04	kW/Btu (AP-42, Appendix A, page A-12)
Required Heat Input:	0.82	MMBtu/hr
Maximum Fuel Usage:	1,645	MMBtu/yr, per station
Maximum Fuel Usage:	0.001	MMscf/hr, per station
Maximum Fuel Usage:	1.629	MMscf/yr, per station
No of Preheater:	2	
Total Heat Input Capacity:	1.64	MMBtu/hr
Maximum Fuel Usage:	3,290	MMBtu/yr
Maximum Fuel Usage:	0.002	MMscf/hr
Maximum Fuel Usage:	3	MMscf/yr
Fuel Type:	Natural Gas	

Emissions Per Preheater

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[2]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	1.77E-03	1.78E-03	2.2	lb/MMscf	AP-42 Table 1.4-2 (7/98), Filterable	N/A
Particulate Matter <10 microns (PM_{10})	0.01	0.01	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.01	0.01	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Ammonia	2.99E-03	3.00E-03	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Nitrogen Oxides (NO_X)	0.24	0.24	1.08E+02	g/hr	Vendor Data	N/A
Volatile Organic Compounds (VOC)	0.01	0.01	6.3	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Sulfur Dioxide (SO_2)	5.60E-04	5.62E-04	0.7	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Carbon Monoxide (CO)	0.08	0.08	96.6	lb/MMscf	AP-42 Table 1.4-1 (7/98)	N/A
Lead (Pb)	4.66E-07	4.68E-07	5.75E-04	lb/MMscf	AP-42 Table 1.4-2 (7/98)	Accounted for below
Hazardous Air Pollutants:						
Total HAPs	1.76E-03	1.77E-03				
Organics						
2-Methylnaphthalene	2.24E-08	2.25E-08	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	1.49E-08	1.50E-08	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	2.24E-09	2.25E-09	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	1.96E-06	1.97E-06	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	1.12E-09	1.12E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	1.12E-09	1.12E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	1.12E-09	1.12E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	1.12E-06	1.12E-06	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	2.80E-09	2.81E-09	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	2.61E-09	2.62E-09	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	7.00E-05	7.02E-05	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	1.68E-03	1.69E-03	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	1.68E-09	1.69E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	5.69E-07	5.71E-07	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	1.59E-08	1.59E-08	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	4.66E-09	4.68E-09	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	3.17E-06	3.18E-06	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-5b. SEN Preheaters Firing Natural Gas (Fuel Scenario 2)

Process Section: Caster Area
Process Name: SEN Preheating

Metal HAPs						
Arsenic	1.87E-07	1.87E-07	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	1.12E-08	1.12E-08	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	1.03E-06	1.03E-06	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	1.31E-06	1.31E-06	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	7.84E-08	7.87E-08	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	4.66E-07	4.68E-07	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	3.55E-07	3.56E-07	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	2.43E-07	2.43E-07	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	1.96E-06	1.97E-06	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	2.24E-08	2.25E-08	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	8.21E-06	8.24E-06	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	196.55	197.29	48.40	Nm^3/h	Vendor Data	N/A
Methane (CH_4)	2.08E-03	2.09E-03	1.15E-03	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	2.08E-04	2.09E-04	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	196.66	197.40	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
   CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)
2. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-6a. Tundish Dryer Station Firing Primarily COG (Fuel Scenario 1)

Process Section:	Caster Area	
Process Name:	Tundish Drying Station	
Hours of Operation:	5,110	hrs/yr
Natural Gas Heat Content:	1,010	Btu/scf
COG Heat Content:	500	Btu/scf
Total Required Heat Input:	1,000.00	kW (input), per station
Conversion Factor:	2.93E-04	kW/Btu (AP-42, Appendix A, page A-12)
Required Heat Input:	3.41	MMBtu/hr
Maximum Fuel Usage:	17,446	MMBtu/yr, per station
# of Tundishes per Day:	4	
Fuel Scenario:		
COG (as % of fuel input):	90%	
Natural Gas (as % of fuel input):	10%	
Required Heat Input (COG):	3.07	MMBtu/hr
Required Heat Input (Natural Gas):	0.34	MMBtu/hr
Max. Fuel Usage (COG):	0.006	MMscf/hr, per station
Max. Fuel Usage (Natural Gas):	0.000	MMscf/hr, per station
Max. Fuel Usage (COG):	31	MMscf/yr, per station
Max. Fuel Usage (Natural Gas):	2	MMscf/yr, per station
No of Preheater:	1	
Total Heat Input Capacity:	3.41	MMBtu/hr
Maximum Fuel Usage:	17,446	MMBtu/yr
Fuel Type:	Blend (COG and Natural Gas)	

Emissions from Drying Station (Natural Gas)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[2]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	7.39E-04	1.89E-03	2.2	lb/MMscf	AP-42 Table 1.4-2 (7/98), Filterable	N/A
Particulate Matter <10 microns (PM_{10})	2.95E-03	0.01	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	2.95E-03	0.01	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Ammonia	1.24E-03	3.18E-03	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Nitrogen Oxides (NO_X)	Accounted for in estimates listed below for COG combustion			g/tundish dried	Vendor Data	N/A
Volatile Organic Compounds (VOC)	2.14E-03	0.01	6.3	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Sulfur Dioxide (SO_2)	2.33E-04	5.96E-04	0.7	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Carbon Monoxide (CO)	Accounted for in estimates listed below for COG combustion			g/tundish dried	Vendor Data	N/A
Lead (Pb)	1.94E-07	4.97E-07	5.75E-04	lb/MMscf	AP-42 Table 1.4-2 (7/98)	Accounted for below
Hazardous Air Pollutants:						
Total HAPs	7.34E-04	1.88E-03				
Organics						
2-Methylnaphthalene	9.33E-09	2.38E-08	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	6.22E-09	1.59E-08	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	9.33E-10	2.38E-09	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	8.16E-07	2.09E-06	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	4.66E-10	1.19E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	4.66E-10	1.19E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	4.66E-10	1.19E-09	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	4.66E-07	1.19E-06	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	1.17E-09	2.98E-09	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	1.09E-09	2.78E-09	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	2.92E-05	7.45E-05	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	7.00E-04	1.79E-03	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	7.00E-10	1.79E-09	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	2.37E-07	6.06E-07	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	6.61E-09	1.69E-08	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	1.94E-09	4.97E-09	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	1.32E-06	3.38E-06	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-6a. Tundish Dryer Station Firing Primarily COG (Fuel Scenario 1)

Process Section: Caster Area
Process Name: Tundish Drying Station

Metal HAPs						
Arsenic	7.77E-08	1.99E-07	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	4.66E-09	1.19E-08	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	4.28E-07	1.09E-06	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	5.44E-07	1.39E-06	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	3.27E-08	8.34E-08	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	1.94E-07	4.97E-07	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	1.48E-07	3.77E-07	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	1.01E-07	2.58E-07	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	8.16E-07	2.09E-06	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	9.33E-09	2.38E-08	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	3.38E-07	8.64E-07	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	Accounted for in estimates listed below for COG combustion			Nm^3/h	Vendor Data	N/A
Methane (CH_4)	8.66E-04	2.21E-03	1.15E-03	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	8.66E-05	2.21E-04	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	0.05	0.12	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
   CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)
2. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-6a. Tundish Dryer Station Firing Primarily COG (Fuel Scenario 1)

Process Section: Caster Area
Process Name: Tundish Drying Station

Emissions from Drying Station (COG)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	0.04	0.11	7.1	lb/MMscf	FIRE, Version 6.25	N/A
Particulate Matter <10 microns (PM_{10})	0.05	0.12	7.6	lb/MMscf	FIRE, Version 6.25 and AEI factor (condensable)	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.04	0.10	6.5	lb/MMscf	FIRE, Version 6.25 and AEI factor (condensable)	N/A
Ammonia	9.53E-04	2.43E-03	0.155	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Nitrogen Oxides (NO_X)	0.05	0.22	139	g/tundish dried	Vendor Data	N/A
Volatile Organic Compounds (VOC)	0.01	0.02	1.4	lb/MMscf	FIRE, Version 6.25	N/A
Sulfur Dioxide (SO_2)	0.58	1.48	35	grains H2S/100 scf	Factor = Existing Permit Limit	N/A
Carbon Monoxide (CO)	0.04	0.16	98	g/tundish dried	Vendor Data	N/A
Lead (Pb)			--	N/A	Not quantifiable consistent with AEI	
Hazardous Air Pollutants:						
Total HAPs	0.03	0.07				
Organics						
Hydrogen Chloride	0.03	0.07	4.56	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Benzene	1.23E-04	3.14E-04	0.02	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Chlorine	3.99E-04	1.02E-03	0.07	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Carbon disulfide	2.03E-04	5.18E-04	0.03	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	217.67	556.13	53.60	Nm^3/h	Vendor Data	N/A
Methane (CH_4)	4.15E-04	1.06E-03	5.52E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	8.66E-05	2.21E-04	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	217.70	556.23	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-6b. Tundish Drying Station Firing Natural Gas (Fuel Scenario 2)

Process Section:	Caster Area		
Process Name:	Tundish Drying Station		
Hours of Operation:	5,110	hrs/yr	
Natural Gas Heat Content:	1,010	Btu/scf	
Required Heat Input:	900.00	kW (input)	
Conversion Factor:	2.93E-04	kW/Btu	(AP-42, Appendix A, page A-12)
Required Heat Input:	3.07	MMBtu/hr	
Maximum Fuel Usage:	15,702	MMBtu/yr, per station	
Maximum Fuel Usage:	0.003	MMscf/hr, per station	
Maximum Fuel Usage:	15.546	MMscf/yr, per station	
# of Tundishes per Day:	4		
No of Preheat Stations:	1		
Total Heat Input Capacity:	3.07	MMBtu/hr	
Maximum Fuel Usage:	15,702	MMBtu/yr	
Maximum Fuel Usage:	0.003	MMscf/hr	
Maximum Fuel Usage:	16	MMscf/yr	
Fuel Type:	Natural Gas		

Emissions from Drying Station (Natural Gas)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[2]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Particulate Matter (PM)	0.01	0.02	2.2	lb/MMscf	AP-42 Table 1.4-2 (7/98), Filterable	N/A
Particulate Matter <10 microns (PM_{10})	0.03	0.07	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Particulate Matter < 2.5 microns ($PM_{2.5}$)	0.03	0.07	8.7	lb/MMscf	AP-42 Table 1.4-2 (7/98), Total PM	N/A
Ammonia	0.01	0.03	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Nitrogen Oxides (NO_X)	0.06	0.28	173	g/tundish dried	Vendor Data	N/A
Volatile Organic Compounds (VOC)	0.02	0.05	6.3	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Sulfur Dioxide (SO_2)	2.10E-03	0.01	0.7	lb/MMscf	AP-42 Table 1.4-2 (7/98)	N/A
Carbon Monoxide (CO)	0.03	0.13	82	g/tundish dried	Vendor Data	N/A
Lead (Pb)	1.75E-06	4.47E-06	5.75E-04	lb/MMscf	AP-42 Table 1.4-2 (7/98)	Accounted for below
Hazardous Air Pollutants:						
Total HAPs	0.01	0.02				
Organics						
2-Methylnaphthalene	8.40E-08	2.15E-07	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	5.60E-08	1.43E-07	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	8.40E-09	2.15E-08	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	7.35E-06	1.88E-05	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	4.20E-09	1.07E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	4.20E-09	1.07E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	4.20E-09	1.07E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	4.20E-06	1.07E-05	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	1.05E-08	2.68E-08	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	9.80E-09	2.50E-08	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	2.62E-04	6.70E-04	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	0.01	0.02	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	6.30E-09	1.61E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	2.13E-06	5.45E-06	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	5.95E-08	1.52E-07	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	1.75E-08	4.47E-08	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	1.19E-05	3.04E-05	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-6b. Tundish Drying Station Firing Natural Gas (Fuel Scenario 2)

Process Section: Caster Area
Process Name: Tundish Drying Station

Metal HAPs						
Arsenic	7.00E-07	1.79E-06	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	4.20E-08	1.07E-07	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	3.85E-06	9.83E-06	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	4.90E-06	1.25E-05	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	2.94E-07	7.51E-07	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	1.75E-06	4.47E-06	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	1.33E-06	3.40E-06	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	9.10E-07	2.32E-06	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	7.35E-06	1.88E-05	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	8.40E-08	2.15E-07	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	1.54E-05	3.93E-05	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Greenhouse Gas Pollutants:						
Carbon Dioxide (CO_2)	369.54	944.18	91.00	Nm^3/h	Vendor Data	N/A
Methane (CH_4)	0.01	0.02	1.15E-03	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Nitrous Oxides (N_2O)	7.79E-04	1.99E-03	1.15E-04	kg/MMBtu	40 CFR 98, Subpart C, Table C-2	N/A
Carbon Dioxide Equivalent (CO_2e)[1]	369.97	945.27	-	-	40 CFR 98, Subpart A, Table A-1	N/A

1. GHGs are calculated in CO_2e using Global Warming Potentials (GWP) from 40 CFR 98, Subpart A, Table A-1 and the following equation:
   CO_2e (tpy) = CO_2 (tpy) * CO_2 GWP (1) + CH_4 (tpy) * CH_4 GWP (25) + N_2O (tpy) * N_2O GWP (298)
2. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-7. Cooling Tower Emissions

Process Section: Ancillary
Process Name: Cooling Towers

Cooling Tower Reference Data

Unit	Water Circulation Rate		Annual Operating Hrs	Drift [1] (%)	TDS [2] (ppmw)	TDS Specific Gravity [3]
	gal/hr	lb/hr				
Indirect Cooling Water Cooling Tower	1,266,000	10,558,440	8,760	0.001%	1,500	2.2
Direct Cooling Water Cooling Tower	4,007,640	33,423,718	8,760	0.001%	1,500	2.2
Laminar Cooling Water Cooling Tower	792,540	6,609,784	8,760	0.001%	1,500	2.2

[1] Drift rate assumed based on design.

[2] Total dissolved solids (TDS) estimated maximum of 1500 ppm.

[3] TDS specific gravity corresponding to NaCl.

Calculations

Cooling Tower Particulate Emissions Size Distribution
(based on paper by Reisman and Frisbie, "Calculating Realistic PM10 Emissions from Cooling Tower")

Volume of drift droplet = $(4/3)\pi(D_d/2)^3$ [Eq. 1]

Mass of solids in drift droplet = $(TDS)(\rho_w)$(Volume of drift droplet) [Eq. 2]

Solid particle volume = (Particle mass of solids) / (ρ_{TDS}) [Eq. 3]

$D_p = D_d\,[(TDS)(\rho_w/\rho_{TDS})]^{1/3}$ [Eq. 4]

where:

D_p = diameter of solid particle (µm)
D_d = diameter of drift droplet (µm)
TDS = total dissolved solids content (ppmw)
ρ_w = density of water = 1E-6 µg/µm^3
ρ_{TDS} = density of solid particles (assume NaCl)

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-7. Cooling Tower Emissions

Process Section: Ancillary
Process Name: Cooling Towers

Size Distribution for Cooling Tower Particulate Emissions

EPRI Droplet Diameter [4] (µm)	Droplet Volume [5] (μm^3)	Particle Mass (Solids) [6] (µg)	Solid Particle Volume [7] (μm^3)	Solid Particle Diameter [8] (µm)	EPRI % Mass Smaller [4]
10	524	7.85.E-07	0.36	0.88	0.00
20	4189	6.28.E-06	2.86	1.76	0.20
30	14137	2.12.E-05	9.6	2.64	0.23
40	33510	5.03.E-05	22.8	3.52	0.51
50	65450	9.82.E-05	45	4.40	1.82
60	113097	1.70.E-04	77	5.28	5.70
70	179594	2.69.E-04	122	6.16	21.35
90	381704	5.73.E-04	260	7.9	49.81
110	696910	1.05.E-03	475	9.7	70.51
130	1150347	1.73.E-03	784	11.4	82.02
150	1767146	2.65.E-03	1,205	13.2	88.01
180	3053628	4.58.E-03	2,082	15.8	91.03
210	4849048	7.27.E-03	3,306	18.5	92.47
240	7238229	1.09.E-02	4,935	21.1	94.09
270	10305995	1.55.E-02	7,027	23.8	94.69
300	14137167	2.12.E-02	9,639	26.4	96.29
350	22449298	3.37.E-02	15,306	30.8	97.01
400	33510322	5.03.E-02	22,848	35.2	98.34
450	47712938	7.16.E-02	32,532	39.6	99.07
500	65449847	9.82.E-02	44,625	44.0	99.07
600	113097336	1.70.E-01	77,112	52.8	100.00

[4] Based on particle size distrubution test data in Reisman, J. and Frisbie, G., "Calculating Realistic PM10 Emissions from Cooling Towers".
[5] Calculated using Equation 1.
[6] Calculated using Equation 2.
[7] Calculated using Equation 3.
[8] Calculated using Equation 4.

PM_{10} and $PM_{2.5}$ Fractions Interpolated from Size Distribution

$PM_{2.5}$ Fraction of Total PM (%)	PM_{10} Fraction of Total PM (%)
0.22	72.6

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-7. Cooling Tower Emissions

Process Section: Ancillary
Process Name: Cooling Towers

Particulate Emission Rates

PM Emission Rate (lb/hr) = Water Circulation Rate (lb/hr) x Drift x TDS / 1,000,000

PM_{10} Emission Rate (lb/hr) = PM Emission Rate x PM_{10} Fraction

$PM_{2.5}$ Emission Rate (lb/hr) = PM Emission Rate x $PM_{2.5}$ Fraction

Annual Emission Rates (tons/yr) = Short-term Emission Rates (lbs/hr) x 8,760 hours/year / 2,000 lbs per ton

	PM		PM_{10}		$PM_{2.5}$	
Unit	**(lb/hr)**	**(tpy)**	**(lb/hr)**	**(tpy)**	**(lb/hr)**	**(tpy)**
Indirect Cooling Water Cooling Tower	0.16	0.69	0.11	0.50	0.000	0.002
Direct Cooling Water Cooling Tower	0.50	2.20	0.36	1.59	0.001	0.005
Laminar Cooling Water Cooling Tower	0.10	0.43	0.07	0.32	0.000	0.001
Total	**0.76**	**3.32**	**0.55**	**2.41**	**0.002**	**0.007**

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-8. Paved Haul Road Emissions

Process Section: Ancillary
Process Name: Paved Roadways
Emission Unit: Paved Roadways

AP-42 13.2.1.3 (January, 2011) - Eq 2
$E = [k(sL)^{0.91} \times (W)^{1.02}] \times (1-P/4N)$

			Reference
k (PM)	0.011	lb/VMT	Table 13.2.1-1 (January, 2011)
k (PM_{10})	0.0022	lb/VMT	Table 13.2.1-1 (January, 2011)
k ($PM_{2.5}$)	0.00054	lb/VMT	Table 13.2.1-1 (January, 2011)
P	150	days	Figure 13.2.1-2 (January, 2011)
sL	0.3	g/m^2	AP-42 background document (AEI practices)
W	27	tons	Average weight of vehicle
N	365	days/yr	Operating days per year
E (PM)	0.10	lb/VMT	AP-42 13.2.1.3 (January, 2011) - Eq 2
E (PM_{10})	0.02	lb/VMT	AP-42 13.2.1.3 (January, 2011) - Eq 2
E ($PM_{2.5}$)	0.00	lb/VMT	AP-42 13.2.1.3 (January, 2011) - Eq 2

Coils Sent by Road:	80,000	tons
Empty Truck:	15	tons
Coil Weight Added:	24	tons
Shipping Days/Month	21	
Tonnage per Day:	317	
Trips per Day:	13	
Trips per Year:	3,333	

Vehicle Miles Traveled (VMT):

Length of Roadway:	3,730	ft	0.71	miles
Round trip length:	7,460	ft	1.41	miles
VMT per day:	18.7	miles/day		
VMT per year:	4,710	miles/year		
Control Efficiency:	90	%		

	Emissions - Uncontrolled			Emissions - Controlled		
Pollutant	**lb/hr[1]**	**lb/yr**	**tpy**	**lb/hr[1]**	**lb/yr**	**tpy**
PM	0.07	448.19	0.22	0.01	44.82	0.02
PM_{10}	0.01	89.64	0.04	0.00	8.96	0.00
$PM_{2.5}$	0.00	22.00	0.01	0.00	2.20	0.00

Notes:
1. Short-term emissions are averaged based on daily average patterns.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-9. Unpaved Haul Road Emissions

Process Section: Ancillary
Process Name: Unpaved Roadways
Emission Unit: Unpaved Roadways

AP-42 13.2.2.3 (November 2006) Eq 1a
$E = k (s/12)^a (W/3)^b$

			Reference
k (PM)	4.9	lb/VMT	Table 13.2.2-2 (November 2006))
k (PM_{10})	1.5	lb/VMT	Table 13.2.2-2 (November 2006))
k ($PM_{2.5}$)	0.15	lb/VMT	Table 13.2.2-2 (November 2006))
a (PM)	0.7		
a (PM_{10})	0.9		
a ($PM_{2.5}$)	0.9		
b	0.45		
P	150	days	Figure 13.2.1-2 (January, 2011)
s	6	%	Table 13.2.2-1 (November 2006)
W	27	tons	Average weight of vehicle
N	365	days/yr	Operating days per year
E (PM)	4.78	lb/VMT	AP-42 13.2.1.3 (January, 2011) - Eq 2
E (PM_{10})	1.27	lb/VMT	AP-42 13.2.1.3 (January, 2011) - Eq 2
E ($PM_{2.5}$)	0.13	lb/VMT	AP-42 13.2.1.3 (January, 2011) - Eq 2

Vehicle Miles Traveled (VMT):

No. of trucks per year:	2,500			
Length of Roadway:	1,173	ft	0.22	miles
Round trip length:	2,346	ft	0.44	miles
VMT per day:	3.0	miles/day		
VMT per year:	1,111	miles/year		
Control Efficiency:	90	%		

	Emissions - Uncontrolled			Emissions - Controlled		
Pollutant	**lb/hr[1]**	**lb/yr**	**tpy**	**lb/hr[1]**	**lb/yr**	**tpy**
PM	0.61	5,304.74	2.65	0.06	530.47	0.27
PM_{10}	0.16	1,413.69	0.71	0.02	141.37	0.07
$PM_{2.5}$	0.02	141.37	0.07	0.00	14.14	0.01

Notes:
1. Short-term emissions are averaged based on 8760 hours of operation per year.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-10. Existing Potential to Emit Air Toxics - Caster

Process Section: Caster Area
Process Name: Dual Strand Caster
Emission Unit: P005

Hours of Operation:	8,760	hrs/yr
Natural Gas Heat Content:	1,010	Btu/scf
COG Heat Content:	500	Btu/scf
Design Heat Input:	2.50	MMBtu/hr (engineering estimate)
Maximum Fuel Usage:	21,900	MMBtu/yr

Fuel Scenario:

Required Heat Input (COG):	2.50	MMBtu/hr
Required Heat Input (Natural Gas):	2.50	MMBtu/hr
Max. Fuel Usage (COG):	0.005	MMBtu/yr
Max. Fuel Usage (Natural Gas):	0.002	MMBtu/yr
Max. Fuel Usage (COG):	44	MMBtu/yr
Max. Fuel Usage (Natural Gas):	22	MMBtu/yr

Fuel Type: COG and/or Natural Gas

Emissions Per Preheating Station (Natural Gas)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor[1]	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Ammonia	0.01	0.04	3.7	lb/MMscf	FIRE, Version 6.25	Other Toxics
Organics						
2-Methylnaphthalene	6.83E-08	2.99E-07	2.76E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
3-Methylchloranthrene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
7,12-Dimethylbenz(a)anthracene	4.55E-08	1.99E-07	1.84E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Acenaphthene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Acenaphthylene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Anthracene	6.83E-09	2.99E-08	2.76E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Benz(a)anthracene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzene	5.98E-06	2.62E-05	2.42E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Benzo(a)pyrene	3.42E-09	1.50E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(b)fluoranthene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(g,h,i)perylene	3.42E-09	1.50E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Benzo(k)fluoranthene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Chrysene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dibenzo(a,h)anthracene	3.42E-09	1.50E-08	1.38E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Dichlorobenzene	3.42E-06	1.50E-05	1.38E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Fluoranthene	8.54E-09	3.74E-08	3.45E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Fluorene	7.97E-09	3.49E-08	3.22E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Formaldehyde	2.13E-04	9.35E-04	8.63E-02	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
n-Hexane	0.01	0.02	2.07E+00	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Indeno(1,2,3-c,d)pyrene	5.12E-09	2.24E-08	2.07E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Naphthalene	1.74E-06	7.61E-06	7.02E-04	lb/MMscf	AP-42 Table 1.4-3, July 1998	POM
Phenanthrene	4.84E-08	2.12E-07	1.96E-05	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Pyrene	1.42E-08	6.23E-08	5.75E-06	lb/MMscf	AP-42 Table 1.4-3, July 1998	N/A
Toluene	9.68E-06	4.24E-05	3.91E-03	lb/MMscf	AP-42 Table 1.4-3, July 1998	Other Toxics
Metal HAPs						
Arsenic	5.69E-07	2.49E-06	2.30E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Beryllium	3.42E-08	1.50E-07	1.38E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cadmium	3.13E-06	1.37E-05	1.27E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Chromium	3.99E-06	1.75E-05	1.61E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Cobalt	2.39E-07	1.05E-06	9.66E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Lead	1.42E-06	6.23E-06	5.75E-04	lb/MMscf	AP-42 Table 1.4-2, July 1998	HAP Metals
Manganese	1.08E-06	4.74E-06	4.37E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Mercury	7.40E-07	3.24E-06	2.99E-04	lb/MMscf	AP-42 Table 1.4-4, July 1998	Mercury
Nickel	5.98E-06	2.62E-05	2.42E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals
Selenium	6.83E-08	2.99E-07	2.76E-05	lb/MMscf	AP-42 Table 1.4-4, July 1998	N/A
Additional Air Toxics						
Barium	1.25E-05	5.49E-05	5.06E-03	lb/MMscf	AP-42 Table 1.4-4, July 1998	HAP Metals

1. Published emission factors have an additional 15% added to them.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-10. Existing Potential to Emit Air Toxics - Caster

Process Section: Caster Area
Process Name: Dual Strand Caster
Emission Unit: P005

Emissions Per Preheating Station (COG)

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Emission Factor	Emission Factor Units	Emission Factor Source	Air Toxic? (Category)
Criteria Pollutants:						
Ammonia	8.91E-04	3.90E-03	0.178	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Organics						
Hydrogen Chloride	0.03	0.11	5.24	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Benzene	1.15E-04	5.04E-04	0.02	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Chlorine	3.74E-04	1.64E-03	0.07	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics
Carbon disulfide	1.90E-04	8.31E-04	0.04	lb/MMscf	2017 AEI method (weighted avg. factors from underfire stack testing)	Other Toxics

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-11. Past Actual Emissions Summary - PM (Filterable)

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.05
ET	Caster Misc. Fuel Combustion - COG	P005	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.04	0.04
ET Decreases	*Annual*		*0.07*	*0.07*	*0.06*	*0.07*	*0.07*	*0.06*	*0.05*	*0.06*	*0.08*
ET Decreases	*2-Yr Average*			*0.07*	*0.06*	*0.07*	**0.07**	*0.06*	*0.06*	*0.05*	*0.07*
	Baseline Years			*2010 / 2011*	*2011 / 2012*	*2012 / 2013*	*2013 / 2014*	*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-12a. Past Actual Emissions Summary - PM_{10} (Filterable)

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.05
ET	Caster Misc. Fuel Combustion - COG	P005	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.02
ET Decreases	*Annual*		*0.06*	*0.06*	*0.05*	*0.06*	*0.05*	*0.04*	*0.05*	*0.05*	*0.07*
ET Decreases	*2-Yr Average*			*0.06*	*0.05*	*0.05*	*0.05*	*0.05*	*0.04*	*0.05*	*0.06*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-12b. Past Actual Emissions Summary - PM_{10} (Condensable)

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.10	0.10	0.08	0.10	0.09	0.08	0.07	0.06	0.14
ET	Caster Misc. Fuel Combustion - COG	P005	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
ET Decreases	*Annual*		*0.12*	*0.12*	*0.10*	*0.12*	*0.11*	*0.09*	*0.08*	*0.08*	*0.15*
ET Decreases	*2-Yr Average*			*0.12*	*0.11*	*0.11*	*0.12*	*0.10*	*0.09*	*0.08*	*0.12*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-12c. Past Actual Emissions Summary - PM_{10} (Total)

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.14	0.14	0.11	0.13	0.12	0.10	0.09	0.08	0.18
ET	Caster Misc. Fuel Combustion - COG	P005	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04
ET Decreases	*Annual*		*0.18*	*0.18*	*0.15*	*0.18*	*0.16*	*0.14*	*0.13*	*0.13*	*0.22*
ET Decreases	*2-Yr Average*			**0.18**	*0.16*	*0.16*	*0.17*	*0.15*	*0.13*	*0.13*	*0.18*
	Baseline Years			*2010 / 2011*	*2011 / 2012*	*2012 / 2013*	*2013 / 2014*	*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-13a. Past Actual Emissions Summary - $PM_{2.5}$ (Filterable)

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.03	0.03	0.02	0.02	0.05
ET	Caster Misc. Fuel Combustion - COG	P005	0.02	0.02	0.02	0.02	0.02
ET Decreases	*Annual*		*0.05*	*0.04*	*0.04*	*0.04*	*0.06*
ET Decreases	*2-Yr Average*			*0.05*	*0.04*	*0.04*	*0.05*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-13b. Past Actual Emissions Summary - $PM_{2.5}$ (Condensable)

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.09	0.08	0.07	0.06	0.14
ET	Caster Misc. Fuel Combustion - COG	P005	0.02	0.02	0.02	0.02	0.02
ET Decreases	*Annual*		*0.11*	*0.09*	*0.08*	*0.08*	*0.15*
ET Decreases	*2-Yr Average*			*0.10*	*0.09*	*0.08*	*0.12*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-13c. Past Actual Emissions Summary - $PM_{2.5}$ (Total)

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.13	0.10	0.09	0.08	0.18
ET	Caster Misc. Fuel Combustion - COG	P005	0.04	0.03	0.03	0.04	0.04
ET Decreases	*Annual*		*0.16*	*0.14*	*0.12*	*0.12*	*0.22*
ET Decreases	*2-Yr Average*			*0.15*	*0.13*	*0.12*	**0.17**
	Baseline Years			*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-14. Past Actual Emissions Summary - VOC

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.09	0.07	0.06	0.06	0.13
ET	Caster Misc. Fuel Combustion - COG	P005	0.01	0.01	0.01	0.01	0.01
ET Decreases	*Annual*		*0.10*	*0.08*	*0.07*	*0.07*	*0.14*
ET Decreases	*2-Yr Average*			*0.09*	*0.08*	*0.07*	**0.10**
	Baseline Years			*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-15. Past Actual Emissions Summary - SO_2

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	0.01	0.01	0.01	0.01	0.01
ET	Caster Misc. Fuel Combustion - COG	P005	0.51	0.42	0.25	0.17	0.49
ET Decreases	*Annual*		*0.52*	*0.43*	*0.26*	*0.18*	*0.50*
ET Decreases	*2-Yr Average*			**0.48**	*0.35*	*0.22*	*0.34*
	Baseline Years			*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-16. Past Actual Emissions Summary - NOx

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	1.66	1.36	1.17	1.10	2.39
ET	Caster Misc. Fuel Combustion - COG	P005	0.48	0.43	0.38	0.46	0.45
ET Decreases	*Annual*		*2.14*	*1.78*	*1.56*	*1.57*	*2.84*
ET Decreases	*2-Yr Average*			*1.96*	*1.67*	*1.56*	**2.21**
	Baseline Years			*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-17. Past Actual Emissions Summary - CO

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	1.50	1.51	1.21	1.45	1.39	1.14	0.99	0.93	2.01
ET	Caster Misc. Fuel Combustion - COG	P005	0.10	0.10	0.10	0.11	0.11	0.10	0.09	0.11	0.10
ET Decreases	*Annual*		*1.60*	*1.61*	*1.31*	*1.56*	*1.50*	*1.24*	*1.07*	*1.03*	*2.11*
ET Decreases	*2-Yr Average*			**1.61**	*1.46*	*1.44*	*1.53*	*1.37*	*1.16*	*1.05*	*1.57*
	Baseline Years			*2010 / 2011*	*2011 / 2012*	*2012 / 2013*	*2013 / 2014*	*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-18. Past Actual Emissions Summary - CO_2e

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	2,151.40	2,155.47	1,777.15	2,137.11	2,030.04	1,494.69	1,428.16	1,335.25	2,630.17
ET	Caster Misc. Fuel Combustion - COG	P005	333.15	340.05	188.71	213.62	214.45	170.07	167.81	203.14	269.35
ET Decreases	*Annual*		*2,484.55*	*2,495.52*	*1,965.86*	*2,350.73*	*2,244.50*	*1,664.75*	*1,595.96*	*1,538.39*	*2,899.52*
ET Decreases	*2-Yr Average*			**2,490.04**	*2,230.69*	*2,158.30*	*2,297.61*	*1,954.62*	*1,630.36*	*1,567.18*	*2,218.96*
	Baseline Years			*2010 / 2011*	*2011 / 2012*	*2012 / 2013*	*2013 / 2014*	*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-19. Past Actual Emissions Summary - Lead

Plant	Unit Description	Emission Unit ID	2010	2011	2012	2013	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	9.0E-06	9.0E-06	7.2E-06	8.6E-06	8.3E-06	6.8E-06	5.9E-06	5.5E-06	1.20E-05
ET	Caster Misc. Fuel Combustion - COG	P005	--	--	--	--	--	--	--	--	--
ET Decreases	*Annual*		*8.95E-06*	*8.97E-06*	*7.23E-06*	*8.62E-06*	*8.28E-06*	*6.78E-06*	*5.87E-06*	*5.51E-06*	*1.20E-05*
ET Decreases	*2-Yr Average*			**8.96E-06**	*8.10E-06*	*7.92E-06*	*8.45E-06*	*7.53E-06*	*6.32E-06*	*5.69E-06*	*8.73E-06*
	Baseline Years			*2010 / 2011*	*2011 / 2012*	*2012 / 2013*	*2013 / 2014*	*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table C-20. Past Actual Emissions Summary - Ammonia

Plant	Unit Description	Emission Unit ID	2014	2015	2016	2017	2018
			tpy	tpy	tpy	tpy	tpy
ET	Caster Misc. Fuel Combustion - NG	P005	5.30E-02	4.34E-02	3.75E-02	3.53E-02	7.65E-02
ET	Caster Misc. Fuel Combustion - COG	P005	9.32E-04	8.23E-04	7.41E-04	8.99E-04	8.77E-04
ET Decreases	*Annual*		*5.39E-02*	*4.42E-02*	*3.83E-02*	*3.62E-02*	*7.74E-02*
ET Decreases	*2-Yr Average*			*4.91E-02*	*4.12E-02*	*3.72E-02*	**5.68E-02**
	Baseline Years			*2014 / 2015*	*2015 / 2016*	*2016 / 2017*	*2017 / 2018*

Company Name: **U. S. Steel**
Facility Name: **Edgar Thomson Plant**
Project Description: **Thin Slab Caster**

Table C-21. Aggregation of De Minimis Increases for NNSR Pollutants

Description	BOP Open Hood Water CT	BOP Gas Cleaning Water CT	Fire Pump Replacement
Permit	de minimus	de minimus	RFD
Site	ET	ET	ET
Pollutant	tpy	tpy	tpy
VOC	0	0	0.01
NOx	0	0	0.30
SO2	0	0	0.001

1. This data, which are potential emissions from these projects are used in the minor NNSR netting calculation.

Company Name: U. S. Steel
Facility Name: Edgar Thomson Plant
Project Description: Thin Slab Caster

Table 22. Sumary of Calculated Baseline GHG Emissions from Caster Miscellaneous Fuel Combustion

Pollutant	COG Emission Factor (kg/MMBtu)	NG Emission Factor (kg/MMBtu)	Emission Factor Source
CO2	46.85	53.06	Table C-1 of Subpart C of 40 CFR Part 98
CH4	4.80E-04	1.00E-03	Table C-2 of Subpart C of 40 CFR Part 98
N2O	1.00E-04	1.00E-04	Table C-2 of Subpart C of 40 CFR Part 98
CO2e	1 for CO2 25 for CH4 298 for N2O	1 for CO2 25 for CH4 298 for N2O	GWP for CO2, CH4, and N2O from Table A-1 of Subpart A of 40 CFR Part 98

Summary of Past Actual Caster/LMF Misc. Fuel Combustion

Fuel	Units	2010	2011
Natural Gas	MMCF	71.63	71.76
COG	MMCF	21.52	21.97

Summary of Past Actual Caster Misc. Fuel Combustion

Fuel	Units	2010	2011
Natural Gas	MMCF	35.81	35.88
COG	MMCF	10.76	10.98

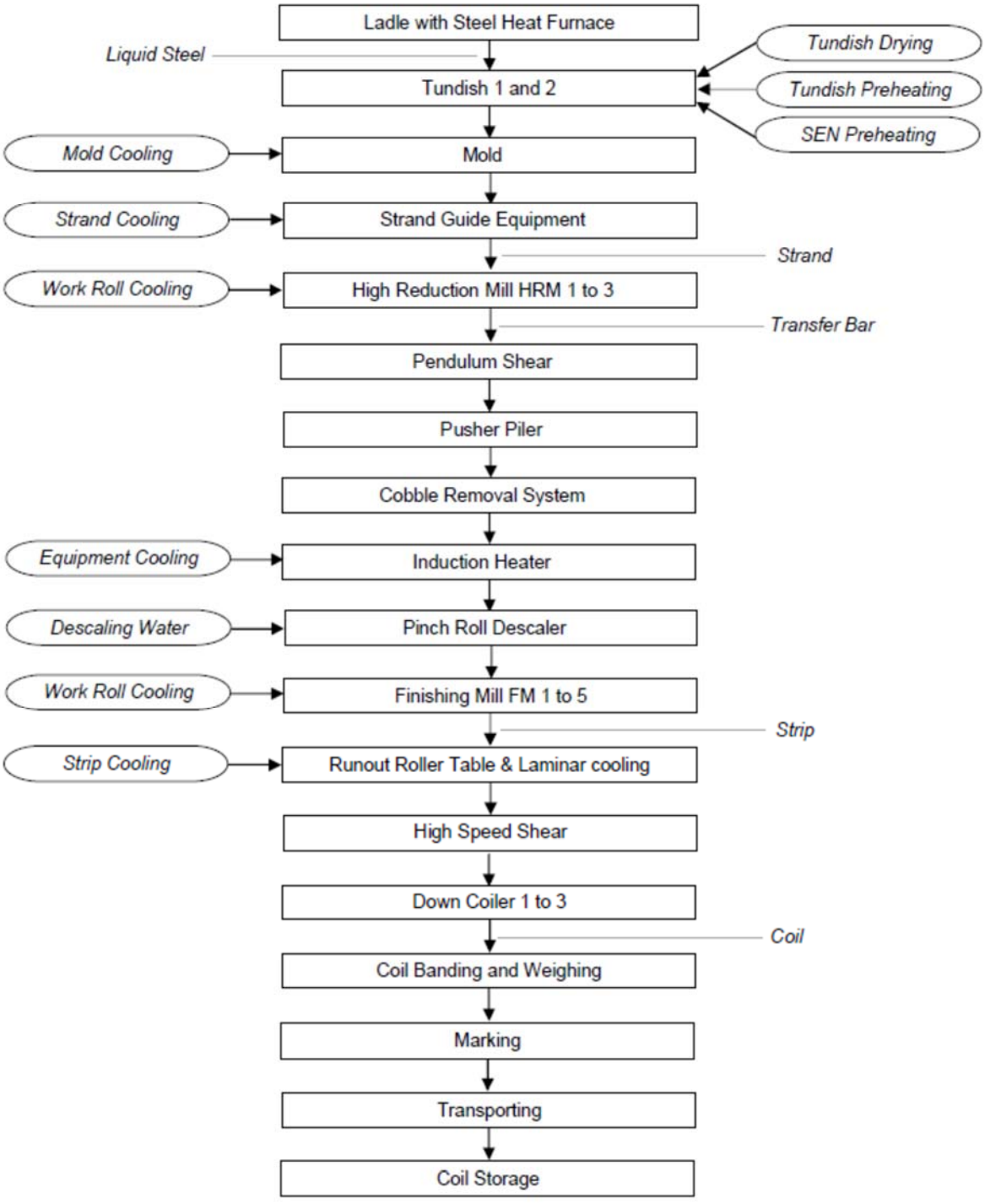
Summary of Estimated Actual GHG Emissions from Caster Misc. Fuel Combustion (tpy)

Pollutant	Fuel	2010	2011
CO2	Natural Gas	2149.18	2153.24
CH4	Natural Gas	0.04	0.04
N2O	Natural Gas	0.00	0.00
CO2e	Natural Gas	2151.40	2155.47
CO2	COG	332.85	339.75
CH4	COG	0.00	0.00
N2O	COG	0.00	0.00
CO2e	COG	333.15	340.05

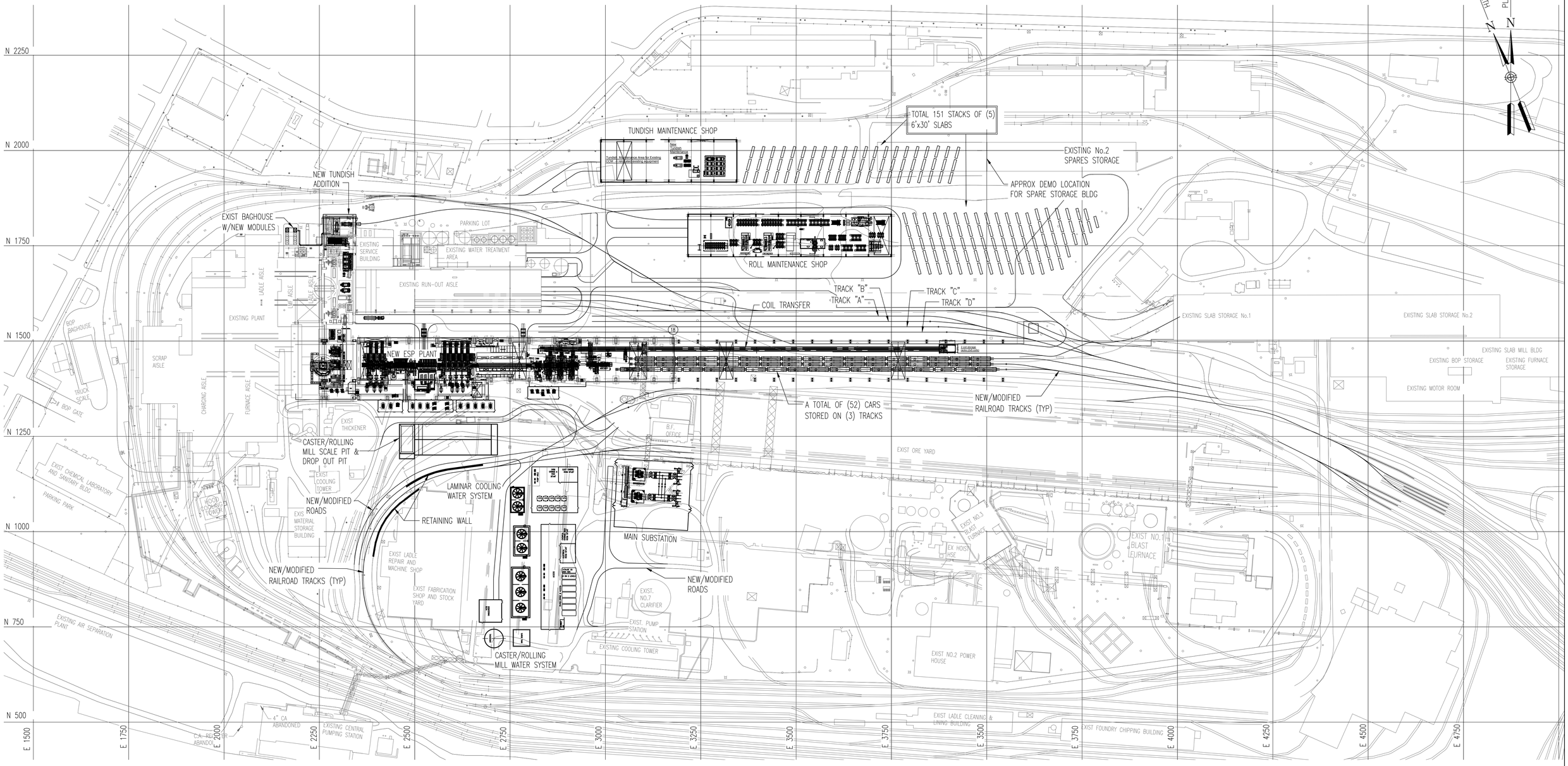
Heat Content

Natural Gas	1026	btu/scf	(40 CFR 98 Subpart C, default value)
Coke Oven Gas	599	btu/scf	(40 CFR 98 Subpart C, default value)

APPENDIX D: PROCESS FLOW DIAGRAM


Ladle with Steel Heat Furnace
Liquid Steel
Tundish Drying
Tundish 1 and 2
Tundish Preheating
SEN Preheating
Mold Cooling
Mold
Strand Cooling
Strand Guide Equipment
Strand
Work Roll Cooling
High Reduction Mill HRM 1 to 3
Transfer Bar
Pendulum Shear
Pusher Piler
Cobble Removal System
Equipment Cooling
Induction Heater
Descaling Water
Pinch Roll Descaler
Work Roll Cooling
Finishing Mill FM 1 to 5
Strip
Strip Cooling
Runout Roller Table & Laminar cooling
High Speed Shear
Down Coiler 1 to 3
Coil
Coil Banding and Weighing
Marking
Transporting
Coil Storage

APPENDIX E: SITE MAP



SITE LAYOUT

REVISION–G CHANGES

- SHORTENED & MOVED TUNDISH BUILDING
- ADDED SLAB LAYDOWN AREAS
- MODIFIED No.2 SPARES STORAGE BUILDING FOR SLAB YARD

ELEVATIONS

1. GROUND FLOOR ELEVATION IS 746'–0" [0.00]
2. MILL FLOOR ELEVATION IS 774'–3 1/8" [+8614]
3. PASSLINE ELEVATION IS 777'–0 5/8" [+9464]

TRACK INFORMATION:

1. TRACK "A" – END OF TRACK TO CP = 870'
2. TRACK "B" – END OF TRACK TO CP = 886'
3. TRACK "C" – END OF TRACK TO CP = 1049'
4. TRACK "D" – END OF TRACK TO CP = 1071' (TOTAL AVAILABLE STORAGE = 69 CARS)

APPROVALS

CLIENT	CV
STRUCTURAL:	STRUCTURAL: PK
MECHANICAL:	MECHANICAL: JC
ELECTRICAL:	ELECTRICAL: JP
PROJ. MGR.:	PROJ. MGR.: TK

REV.	DATE	DRW	CHK	REL	DESCRIPTION
G	4/16/19	JK		TK	ISSUED FOR REFERENCE
F	4/15/19	JK		TK	ISSUED FOR REFERENCE
E	3/29/19	JK		TK	ISSUED FOR REFERENCE
D	3/13/19	JK		TK	ISSUED FOR REFERENCE
C	3/12/19	JK		TK	ISSUED FOR REFERENCE
B	2/26/19	JK		TK	ISSUED FOR REFERENCE
A	2/12/19	JK		TK	ISSUED FOR REFERENCE

US STEEL
EDGAR THOMSON WORKS
BRADDOCK, PA

PROJECT: PROJECT ICON
DRAWING TITLE: ESP – DIRECT CASTING & ROLLING FACILTY
GENERAL ARRANGEMENT
SITE LAYOUT

PLOT DATE: | FILENAME: 18150-SITE LAYOUT | PLOT SIZE: 36x24 | UNITS: ENGLISH | SCALE FACTOR: 1

DRAWN: JK | DATE: 1/17/19
CHECKED: | DATE:
APP'D: | DATE:
SCALE: 1"=120'

CV Engineering
3400 McKnight East Drive
Pittsburgh, PA. 15237
Ph: 412-364-2180 Fax: 412-364-8922
Email: info@cvengineering.com
Website: www.cvengineering.com

DRAWING No.: 18150-SITE LAYOUT
REV.: G
SHT. No.: /

APPENDIX F: AIR TOXICS POLICY REVIEW

APPENDIX F - AIR TOXICS POLICY REVIEW

ACHD has county-specific guidelines for addressing toxic air contaminants. U. S. Steel completed an analysis of potential air toxics to be emitted from the proposed sources in the Installation Permit in accordance with ACHD's "Policy for Air Toxics Review of Installation Permit Applications", hereafter referred to as the "Policy". As shown in the following section, the project does not trigger the Air Toxics Program as there is a de minimis net increase in air toxics as a result of the Project.

The Policy was adopted on November 7, 2012 by the Allegheny County Board of Health and amended on January 9, 2013.[1] The Policy provides a definitive method of evaluating the potential impact of air emissions of toxic contaminants from projects that require the submittal of an Installation Permit application within Allegheny County. The Policy applies for an Installation Permit that are expected increase the net potential air toxics emissions from the facility into the ambient air and do not belong to any one of the following categories:

- Projects resulting in an emissions increase less than the *de minimis* levels;
- Projects that are solely for the installation or in-kind replacement of pollution control device;
- Exempt activities such as those in Article XXI 2102.04.a.5; or
- Projects that include equipment where EPA has published risk assessment guidance (e.g., Municipal Waste Combustors).

ACHD's 10-step Guide to the Policy for Air Toxics Review of Installation Permit Applications was followed to ensure fulfillment of all requirements outlined in the Policy. The step-wise procedure followed by U. S. Steel according to the guidance document is outlined below.

1.1. AIR TOXICS ANALYSIS PROCEDURE

1.1.1. Step 1 - Determination of Air Toxic Pollutants to be Emitted

Each emission source from the proposed Installation Permit was evaluated for the potential to emit air toxics. Pollutants were designated as an air toxic based on toxicity information found in EPA's Integrated Risk Information System (IRIS), EPA's Provisional Peer Reviewed Toxicity Values (PPRTVs), California EPA's Toxicity Criteria Database, the Agency for Toxic Substances and Disease Registry (ATSDR), and Health Effects Assessment Summary Table (HEAST), per the guidance set forth in the Policy. Under the Policy, air toxics does not include any criteria pollutant or carbon dioxide.

A detailed account of the air toxics pollutants with the potential to be emitted by each proposed source, or existing source being shutdown as a result of this project, is given in the accompanying Installation Permit application package. See the detailed emissions calculations included as Appendix C for a comprehensive list of the air toxics associated with this project.

1.1.2. Step 2 - Determination of Annual Potential Emissions

Potential annual emissions of air toxics were calculated for all point-sources associated with the Project. Emission rates were generally calculated using published emission factors and assuming maximum proposed operating schedules for each source. This procedure was done for new emissions sources as well as the existing

[1] https://alleghenycounty.us/uploadedFiles/Allegheny_Home/Health_Department/Programs/Air_Quality/ATG_final_2013-01-09_boh.pdf

emission sources being shutdown as a result of this project. Additional details regarding the calculations can be found in the Installation Permit application (see Appendix C Tables C-3a, C-3b and C-3c).

1.1.3. Step 3 - Comparison of Net Potential Air Toxics Emissions to De Minimis Levels

The air toxic pollutants identified in Step 1 were classified as either Polychlorobiphenols (PCB), Polycyclic Organic Matter (POM), Mercury, Dioxins, Furans, Hazardous Air Pollutant Metals (MHAP), or All Other air toxics (Other). The sum of the potential annual emissions for each project source (new equipment and equipment to be shutdown) was calculated for each air toxics category. These emissions increase (net potential air toxics emissions) totals were then compared to the de minimis thresholds provided in ACHD's Air Toxic Guidelines Implementation Document.

Based on the comparison of the change in annual potential emissions to ACHD's de minimis thresholds for each Air Toxic category, it was determined that proposed project did not exceed de minimis levels as summarized in Table F-1 and Table C-3c of Appendix C. Since the project does not result in a change in the potential to emit air toxics in excess of de minimis levels, no further analysis is required under the Policy.

Table F-1. Air Toxics Emissions Summary for Sources in Proposed Installation Permit

Classification	Air Toxic Potential Emissions from New Equipment (lb/yr)	Air Toxic Potential Emissions from Equipment to be Shutdown (lb/yr)	Net Potential Air Toxics Emissions Increase (lb/yr)	*De Minimis* Threshold (lbs/yr)	Exceedance?
Polychlorobiphenols (PCBs)	0	0	0	20	No
Polycyclic Organic Matter (POM)	0.04	0.02	0.02	20	No
Mercury	0.01	0.01	0.01	20	No
Dioxins	0	0	0	0.020	No
Furans	0	0	0	0.020	No
Hazardous Air Pollutant Metals (MHAP)	0.7	0.3	0.5	20	No
All Other Air Toxics	472	243	229	500	No

1.2. AIR TOXICS ANALYSIS CONCLUSIONS

As shown in Table F-1 above and Table C-3c of Appendix C, the emissions increase associated with the project is less than the de minimis levels. Since the project does not result in a change in the potential to emit air toxics in excess of de minimis levels, no further analysis under the Policy is required as the project is not predicted, per ACHD policy, to significantly affect public health.