

COMMONWEALTH OF PENNSYLVANIA  
Department of Environmental Protection  
Southwest Regional Office

TO AQ Case File TVOP-56-00167

FROM Noor Nahar  
Air Quality

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DATE December 22, 2014

RE Review of Title V Operating Permit Renewal Application  
North American Hoganas Inc.  
Stony Creek Plant  
Quemahoning Township, Somerset County

APS 531568 AUTH 564110 PF 251104

**Background**

North American Hoganas Inc. (NAH) has submitted a Title V permit application to renew their Title V Operating Permit (TVOP) for their Stony Creek Plant located in Quemahoning Township, Somerset County. NAH produces atomized iron powder, mixed iron and low alloy steel powders, and certified alloy ingots at the Stony Creek Plant. The facility is located in a rural area approximately 1 mile southwest of the town of Hollsopple.

FirstMiss Steel, Inc. originally owned and operated this facility as a steelmaking facility with two Electric Arc Furnaces (EAFs) and one Ladle Melt Furnace (LMF). One EAF was replaced by an oxygen converter controlled by a baghouse in 1998 authorized under plan approval 56-307-001F issued in 1996. FirstMiss Steel last operated the plant on September 23, 1999. FirstMiss Steel was purchased by NAH on March February 15, 2000. The name and tax ID number were not changed at the time. The initial TVOP was issued to FirstMiss Steel on February 29, 2000 and expired on February 28, 2005. Deactivation plans were submitted to the Department on March 15, 2000 for the EAF, LMF, Oxygen Converter, and their associated emission controls. A reactivation plan was submitted to the Department on March 20, 2001. A Plan Approval PA-56-00167A was issued to NAH on December 10, 2001 for the conversion of most of the Stony Creek Plant to an iron powder manufacturing facility. Conversion was completed on April 10, 2003. In this process the 45 ton EAF was powered by a new transformer from the existing 18.5 MVA to a 45MVA. NAH proposed a 210,000 tons production limit from EAF to keep the NO<sub>x</sub> & CO emissions below that would trigger PSD.

This Title V renewal application from NAH was received by the Department on August 27, 2004 and determined Administratively Complete on September 2, 2004. An amendment to Title V Operating Permit renewal application was received on August 9, 2010.

The next major change in the facility since the issuance of initial TVOP was the installation of the 500,000 acfm Dutex baghouse through RFD approval. It consists of ten compartments provides emission control for the Electric Arc Furnace (EAF) and Ladle Metallurgy Furnace (LMF). The Dutex unit replaced three baghouses. Table below summarizes the list of sources that have been exempted from Plan Approval/Operating Permit requirements under Pa Code §127.14 (a)(8) through Request for Determination (RFD):

Source	Date	Emissions change (tpy)
RFD Approval - Induction Electric Furnace	April 23, 2004	No emission increase
RFD Approval – Dustex Baghouse 500,000 acfm	October 14, 2004	No emission increase
RFD Approval - Induction Furnace	November 9, 2005	No emission increase
RFD Approval – Annealing Furnace	August 9, 2007	NOx 3.2; PM10 0.24 & VOC 0.1
RFD Approval - Oxyfuel Burner	December 17, 2007	No emission increase
RFD Approval - Pilot Atomization Plant	June 16, 2011	NOx .5; PM10 1.0; Sox .5; VOC .5 & HAP .2
RFD Approval – 4 Scavenger Ducts in Melt Shop	September 25, 2014	No emission increase

The following sources and controls (as listed in the initial TVOP) have been removed from the facility:

- Source ID #031 – Boiler 1
- Source ID #107 – Oxygen Converter W/Uni Lance System
- Source ID #108 – Vacuum Degassing System (VOD) 45/T Ladle
- Source ID #114 – East & West Torch Cutting (Caster)
- Source ID #115 – Ingot Teeming Operation
- Source ID #116 – Continuous Caster Operation 45/T Heats
- Source ID #117 – Ingot Grinding
- Source ID #118 – Ingot Torch Cutting
- Source ID #120 & 121 – N. & S. Car Bot Annealing Furnaces (LNB)
- Source ID #122 – Swing Furnace (Fixed Box)
- Source IDs #123-128 - #3 through #8 Annealing Furnaces
- Source ID #131 – Ingot Grinding Outside Building
- Source ID #132 – Oxygen Converter Dryer
- Source ID # 135 & 136 – Caster Tundish Heater & Dryer
- Control ID #C01 & C02 – West & East Carborundum Baghouses
- Control ID #C03 – Fuller Baghouse
- Control ID #C06 – Ladle Drying Unit Baghouse

- Control ID #C07 – S.W. Carborundum Baghouse
- Control ID #C08 – Oxygen Converter Baghouse
- Control ID #C09 – Inside Wheelabrator BH (on site but vents indoors)

### **Regulatory Analysis:**

Per Pa. Code Title 25 Section 127.402(a), a permit is required to operate a stationary air contamination source. The applicable emission limitations, monitoring, recordkeeping, reporting and work practice standard requirements of Pa. Code Title 25 Sections 123.1, 123.2, 123.13, 123.21, 123.22, 123.31, 123.41, 123.42, 123.43, 135.5, 127.441, 127.442, 127.511 and 127.513 have been included in this TVOP Renewal.

New Source Performance Standards (NSPS) from 40 CFR Part 60 Subpart AAa – Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983 apply to the EAF and associated dust-handling system at this facility. Applicability has been determined during review of a previous permit application and the appropriate regulatory requirements were included in the permit. 40 CFR Part 60 Subpart AAa has been amended on February 22, 2005 after the initial permit was issued.

National Emissions Standards for Hazardous Air Pollutants (NESHAPS) for Area Sources: Electric Arc Furnace Steelmaking Facilities from 40 CFR Part 63 Subpart YYYYY have been promulgated on December 28, 2007. Per 40 CFR 63.10680(a), “You are subject to this subpart if you own or operate an EAF steelmaking facility that is an area source of hazardous air pollutant (HAP) emissions. NAH operates an EAF as part of its iron powder production process and is an area source of HAP emissions, therefore Subpart YYYYY applies.

NESHAPS for Iron and Steel Foundries Area Sources, 40 CFR Part 63 Subpart ZZZZZ, has been promulgated on January 2, 2008. Per 40 CFR Section 63.10880(a), a person is subject to this subpart if they operate an iron and steel foundry that is an area source of hazardous air pollutant (HAP) emissions. Per 40 CFR Section 10880(b)(1), this subpart applies to new and existing affected sources and a source is an existing affected source if construction commenced before September 17, 2007. NAH operates an iron and steel foundry and will be subject to this subpart as an existing affected source. Applicable sections of 40 CFR Part 63 Subpart ZZZZZ have been added to the TVOP.

NAH has submitted a NESHAPS Subpart ZZZZZ compliance status certification report on January 25, 2010. In this report NAH identified their facility as a small foundry because its metal melt production in 2009 (2,756 tons) was less than 20,000 tons.

The applicability of 40 CFR 63, Subpart XXXXXX—National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories has been evaluated for this site. This rule applies to certain operations at facilities that fall under specific SIC and NAICS classifications. This facility is operating under NAICS Code is 331110, the SIC code is 3399. However, this Subpart appears to be applicable to facilities that perform metal fabrication and manufacture various component parts for a wide

variety of industries. Under the listing for the 9 source categories there is a category for Fabricated Metal Products, it states that *“Establishments primarily engaged in manufacturing fabricated metal products, such as fire or burglary resistive steel safes and vaults and similar fire or burglary resistive products; and collapsible tubes of thin flexible metal. Also, establishments primarily engaged in manufacturing power metallurgy products, metal boxes, metal ladders, metal household articles such as ice cream freezer and ironing boards, and other fabricated metal products not elsewhere classified”*. North American Hoganas is not a fabrication shop. Facility strictly manufacture powdered metals which then shipped to customers who, in turn, make various parts for automotive industries, gardening equipment, etc. Therefore, this facility is not subject to Subpart XXXXXX.

*Facility has three diesel fired emergency generators rated 1006 hp, 872 hp and 335 hp. The diesel engines in emergency generators are subject to NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE) 40 CFR Part 63 Subpart ZZZZ. Requirements have been included in this SOOP renewal.*

This facility is not subject to RACT or NSR requirements because potential emission rates for NOx or VOCs do not exceed major threshold. Title V Permitting of this facility is necessary because the potential emission rates for CO are above major source thresholds.

The Compliance Assurance Monitoring (CAM) provisions of 40 CFR 64 applies when all of the following are true:

1. The source is located at a Title V facility,
2. The source is subject to an emission standard,
3. The source uses a control device to achieve compliance with the emission standard, and
4. Emissions from the source, without the control device, exceed major source thresholds.

NAH facility has identified the following sources and associated control device to be subject to CAM:

Source ID 109 ELECTRIC ARC FURNACE  
Source ID 103 LADLE METALLURGY FURNACE

NAH facility has proposed the use of existing testing, monitoring and recordkeeping requirements as CAM. Appropriate conditions have been added to the TVOP.

Additional conditions included in this TVOP renewal are from PA-56-00167A and appropriate testing, emission reduction, work practice standards, monitoring, recordkeeping and reporting requirements.

**Process and Emissions:**

NAH melts scrap metal and heats it to a final temperature of about 1680°C in the EAF. The melted metal is transferred to the LMF where additives are added if necessary until the correct composition is reached. After being determined ready, the ladles are then transferred to a turret turntable which pours the melt into a runner that flows the molten metal into an atomizing vessel. High pressure water is sprayed at the stream of molten metal causing it to solidify into a rough granular product. The rough granular product and water slurry are pumped from the atomizing vessel to a conical high gradient magnetic filter and then a belt filter before entering one of two natural gas-fired rotary dryers. Screening is used to separate the rough powder before being temporarily stored. Most iron powder is then annealed between 930°C and 960°C in one of two natural gas-fired annealing furnaces before undergoing final crushing, grinding, and screening.

NAH also operates a small foundry at the Stony Creek Plant. Scrap metal and raw materials are first melted in one of three induction furnaces. Most often, the molten metal is then degassed by the vacuum degasser while still in the ladle. Molten metal is poured into ingot molds once within the needed chemical specifications. Ingots of stainless steel, tool steel, high alloy steel, carbon steel, and cobalt are cast by NAH. Ingots are annealed by two natural gas-fired annealing furnaces and then are then transferred with a front end loader to a Pangborn Shaker Separator to remove sand from the casts. A shot blast machine is used to further remove excess sand from the formed ingots.

Facility-wide emissions reported for the 2013 calendar year were approximately 85.87 tons of CO, 33.61 tons of NO<sub>x</sub>, 27.58 tons of SO<sub>x</sub>, 25.93 tons of PM<sub>10</sub>, 2.39 tons of VOCs, 7.95 tons of Chromium, 6.22 tons of Chlorine, and less than one ton for all other air contaminants.

#### **Conclusions and Recommendations:**

I have completed my review of North American Hoganas Title V renewal application for their Stony Creek plant in Somerset County. NAH has met the regulatory requirements associated with this application submittal. The attached proposed permit reflects terms and conditions as described in NAH's permit application. It is my recommendation to issue the proposed Title V Operating Permit renewal for this facility.