

COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection

March 12, 2007

SUBJECT: Review of Title V Operating Permit Renewal Application
Johnstown Specialty Castings, Inc.
Johnstown Foundry
Cambria County, Johnstown, PA.

TO: Air Quality Permit File: 11-00034

THRU: Barbara R. Hatch, P.E. *BRH 3/22/07*
Chief, Facilities Permitting
Air Quality

FROM: Donald R. Dodge *DRD 3/12/2007*
Facilities Permitting
Bureau of Air Quality

BACKGROUND

Johnstown Specialty Castings, Inc. (JSC) owns and operates a specialty steel foundry located in the City of Johnstown, Cambria County, PA. JSC is a fully integrated steel foundry with a potential melting capacity of 20 tons / hour. The company is a job shop manufacturer of steel and iron castings for various customers in a variety of industries. The facility, known collectively as the Johnstown Foundry (JF), occupies 54 acres and is comprised of two melting and casting process shops designated Electric Foundry (EF) #1 and Electric Foundry (EF) #2. Metal castings produced by the facility can range in size from 50 pounds to 55 tons each, with small casting sizes of 2.5 tons, or less, melted and poured from Electric Induction Furnaces (EIF) in EF #1, and larger castings melted and poured from Electric Arc Furnaces (EAF) in EF #2. Facility operations include pattern making, core and mold making, melting, pouring, shakeout, casting cleaning/grinding, and sand handling. Other facility operations consist of flame cutting, welding, heat treating, and machining of steel mill rolls, and other specialty casting items. The JF recovers, reclaims, and reuses sand used in mold and core making by mechanical processes. The facility has operated since approximately 1924; first under U.S. Steel Corporation ownership, and then under Johnstown Corporation ownership from 1984 until it was purchased by JSC on September 23, 2005.

Title V Permit No. 11-00034 was issued to the Johnstown Corporation on June 12, 2000, and incorporated all operating restrictions, and the NOx emission limit, set by RACT operating permit No: 11-000-34 that was issued on June 23, 1995. The Title V operating permit expired on June 11, 2005.

The Department received a Title V operating permit renewal application for this facility from Johnstown Corporation (JC) on February 4, 2005. The Department sent a response letter dated March 9, 2005 acknowledging receipt of the renewal application. Ownership of the company transferred from the JC to Johnstown Specialty Castings, Inc. (JSC), a subsidiary of WHEMCO, Inc., on September 23, 2005. The completed transfer of ownership forms and compliance review forms related to this ownership transfer were submitted to the Department by JSC letter dated September 29, 2005.

The last compliance inspection of the Johnstown Foundry facility was performed by the Department on January 11, 2006. The Department's report dated January 31, 2006 stated the facility was in full compliance with all requirements and restrictions of the Title V operating permit.

I visited the Johnstown Foundry facility on December 1, 2006. A plant tour and meeting with the responsible JSC officials disclosed that three emissions sources that were identified in the company's renewal application, and in the original Title V permit, had been inactivated. A JSC letter received on December 18, 2006 submitted corrections to the renewal application, and confirmed that Source # 034, a boiler that provided heat for plant buildings, had been inactivated along with Source # 144, a centrifugal caster, and Source #208, a thermal sand re-claimer. The JSC letter requested that the inactivated equipment be removed from the Sources Inventory List included in the operating permit renewal application. The JSC letter also responded to a Department letter issued to the previous owner, JC, on February 8, 2000. The Department's letter addressed the Compliance Assurance Monitoring (CAM) rule promulgated by 40 CFR, Part 64. The rule potentially affects all Title V facilities. JSC identified in their letter that the foundry's Source # 100, Electric Arc Furnace # 3J, had the potential for uncontrolled particulate emissions that exceeded major limits. Therefore, a CAM plan is required to assure that the bag house connected to the source is maintained such that the emissions limits set for the source will be met on a continuing basis.

On January 22, 2007, the Department received a JSC letter which delineated the company's estimate of emissions from the foundry as presently comprised. The company's CAM plan proposal was received by the Department on March 6, 2007.

JSC has provided sufficient information for me to complete review of their renewal application, and complete preparation of a renewed Title V Permit No: 11-00034 for the company's Johnstown Foundry.

SOURCES AND CONTROL EQUIPMENT

As noted above, JSC has inactivated three sources during the term of the original Title V permit that expired on June 11, 2005. On this basis, and as requested by JSC's letter dated December 18, 2006, I removed the Tri-Fuel Boiler (Source 034), the Centrifugal Caster (Source 144), and the Thermal Sand Re-claimer (Source 208) from the Site Inventory List of the Title V Permit. The remaining sources listed in the renewal permit remain as originally approved by the Department and as included in the Title V operating permit issued on June 12, 2000. In this regard, the miscellaneous section of the renewal permit lists as insignificant activities the seven

(7) Sand Storage Bins associated with the seven (7) Mold /Core Manufacturing Units (Source 224). These insignificant sources were also listed in the original Title V operating permit issued by the Department.

An RFD received by the Department in May, 2000 considered Source 160, the Ladle Blowing Station, and Source 161, the Roll Flask Blackening Station, to be sources of minor significance because the total NOx emissions associated with the Natural Gas burned at these sources were calculated at ~1 ton / year. A Department letter was never issued to respond to the RFD request submitted by Johnstown Corporation, the former owner of the foundry. The current foundry owner, JSC, has requested that, notwithstanding their low emissions, sources 160 and 161 should continue to be included in the operating permit. I have acceded to JSC's request.

The only control devices used at the facility are fabric filter bag houses. The devices control particulate emissions from the electric arc and electric induction furnaces used in the castings melting process as well as particulate emissions from shot blast stations, sand blast stations, and the various non-metallic materials processing and storage locations listed in the facility's site inventory. The bag houses used are considered BAT for the applications and operate with manufacturers' guaranteed control efficiencies of 99 + % for particulate emissions.

REGULATORY ANALYSIS

The facility is designated Major as defined by § 121.1 of the PA Code. The current facility has the potential to emit uncontrolled Volatile Organic Compounds (VOC), CO, and particulate matter (PM), in excess of the major limits specified in Subchapter E, § 127.201 and § 127.203 of the PA Code. As such, the facility is subject to the Title V operating permit requirements specified in Title 25, PA Code, Sub-chapter G. Other requirements:

RACT Requirements

Pursuant to the requirements of Title 25, Pa. Code, § 129.91, RACT Operating Permit No. 11-000-034 was issued to the Johnstown Foundry owner, Johnstown Corporation (JC), on June 23, 1995. At that time the JC facility was declared Major in terms of VOC emissions. To reduce NOx emissions, the RACT permit placed operational limitations on the foundry facility in terms of coal and natural gas usage. The permit also placed an annual metal production throughput restriction on the facility's Electric Arc Furnaces to further control NOx emissions. The permit then set a limit on annual NOx emissions from the facility; this action gave the facility Synthetic Minor status in terms of NOx. Based on economic and practical restraints, the RACT permit did nothing to restrict the level of VOC emissions from the foundry. The RACT permit was inactivated on July 31, 2000; all requirements of the RACT permit were incorporated in Title V Permit No. 11-00034 that was issued on June 12, 2000.

New Source Performance Standards

There are New Source Performance Standards (NSPS), 40 CFR, Part 60, Subparts AA and AAa that apply to Electric Arc Furnaces (EAF). The Department concluded in 2000 that NSPS do not apply because the two furnaces (i.e. EAF # 2J and # 3J) used at the Johnstown

Foundry to produce molten metal from scrap were constructed prior to the earliest effective date of October 21, 1974 noted in the Subparts. The Department also concluded in 2000 that NSPS requirements did not apply to a third EAF (EAF 4J) installed at the foundry because the unit is used strictly as a holding furnace to maintain metal at pouring temperature, and not for producing molten metal from scrap.

NESHAPS Requirements

The facility is not a major source of hazardous air pollutants (HAPs); therefore, it is not subject to any national emission standards for hazardous air pollutants (NESHAP).

Title 25, PA Code Requirements

The facility, and sources within the facility, are subject to requirements derived from the Title 25, Pa. Code. Chapter 123. Such limits and restrictions included in the renewal permit (attached) are the same as were included in the original Title V operating permit issued by the Department on June 12, 2000.

Compliance Assurance Monitoring

Since the estimated pre-control emissions potential for particulate matter, PM, from EAF # 3J exceeds the major source threshold of 100 tons / year, and the source is subject to a particulate matter emissions limit, the source is subject to the Compliance Assurance Monitoring (CAM) rule of 40 CFR, Part 64. In accordance with Title 25 PA Code § 123.13 the source is limited to 10.34 pounds / hour when melting iron, and 0.04 grain / dscf when melting steel. The CAM plan requires monitoring of the bag house pressure drop, and the appearance of emissions from the control device to the atmosphere. The CAM plan also requires inspection and maintenance of the control equipment in accordance with the requirements and recommendations of the manufacturer. Department experience indicates that control of such performance indicators will assure the control device performs at the efficiencies guaranteed for such equipment

Emissions

The applicant's letter dated January 22, 2007 estimates that the Johnstown Foundry facility's annual total emissions, after controls, are as follows for the pollutants noted:

<u>POLLUTANT</u>	<u>ACTUAL (TONS)*</u>	<u>Max-PTE (TONS)*</u>
PM	36.91	184.63
PM-10	33.59	161.01
SO ₂	1.96	6.83
VOC	12.88	101.52
CO	43.71	164.54
NO ₂	17.95	92.17

- Tons / year

The above emissions estimates tabulation submitted by JSC includes Maximum Potential To Emit (PTE). PTE estimates for Electric Foundry #2 were calculated based on the 62, 640 tons / year limit on metal production and 600 MM standard cubic feet (scf) / year limit on Natural Gas usage placed on that portion of the Johnstown Foundry by RACT Operating Permit No: 11-000-34 that was issued in 1995; these limits were carried over to the initial Title V Permit No: 11-00034 the expired in 2005. The contribution to the Maximum PTE estimates from Electric Foundry #1 were based on an assumed 8760 hours / year operation of the foundry and the maximum throughput potential or input rating of each of the sources comprising the foundry and listed in the operating permit. The Maximum PTE for NOx emissions of 92.17 tons / year is the RACT limit placed on the Johnstown Foundry in 1995 based on the metal production and gas usage restrictions noted.

The Actual emissions estimates tabulated are based on current melting operations of 20, 000 tons of metal from the Electric Foundry #2 facility and use of the same emission factors used to calculate the Maximum PTE input for this portion of the Johnstown Foundry. The contribution of Electric Foundry #1 to the Actual Emission estimate was based on 1570 annual hours of work in this foundry in 2006.

The applicant's Max PTE and Actual estimates were calculated using appropriate emission factors taken from the EPA's AP-42 tabulations, an emission factor for NOx emissions from Electric Arc Furnaces that was derived from stack tests performed at the foundry in 1994, and other factors accepted as standard castings industry practice. The emission factor for VOC in terms of pounds of VOC / ton of sand used in the mold and core making process, Source # 225 was provided by Ashland Specialty Chemical Company, the manufacturer of JSC's binder system.

The emission limits, and other restrictions in the renewal permit, are the same as those in the original Title V operating permit. The permit limits particulate, fugitive, visible, and sulfur oxide emissions in accordance with Chapter 123 of Pa Code.

In summary, the facility is major in PM, VOC, and CO. The facility is rated a Synthetic Minor in NOx as established in 1995 via the restrictions placed in RACT Operating Permit No. 11-000-34 in 1995. There are no significant HAP emissions from the facility. Emissions of PM/ PM10 are split among all process sources. The majority of VOC emissions are from the binder material associated with the mold and core making process.

RECOMMENDATIONS

I recommend that a renewed Title V Operating Permit be issued for this facility. Based on information presented above, I recommend the following changes between the original Title V operating permit and this renewal Title V Operating Permit:

- Removing the Tri- Fuel Boiler (source 034) from the site inventor
- Removing the Thermal Sand Reclaimer (source 208) from the site inventory;

- Removing the Centrifugal Caster (source 144) from the site inventory
- Adding the CAM Plan for an Electric Arc Furnace No. 3J (source100)