N6013
FY2018 Sched. Insp.
SM CMS MACT 3R

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N601344113

FACILITY: CONTINENTAL ALUMINUM		SRN / ID: N6013
LOCATION: 29201 MILFORD RD, NEW HUDSON		DISTRICT: Southeast Michigan
CITY: NEW HUDSON		COUNTY: OAKLAND
CONTACT: Mark Buchner , President		ACTIVITY DATE: 04/06/2018
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY 2018 SM CMS scheduled inspection of Continental Aluminum ("Continental")		
RESOLVED COMPLAINTS:		

Continental Aluminum (N6013)
29201 Milford Road
New Hudson, Michigan 48165-9741

NACIC Code: 331314

Consent Order AQD No. 52-1 (AQD Division Chief terminated CO on February 27, 2007)

VNs: Recently, AQD issued Violation Notices dated February 5, 2013 (for failure to comply with NESHAP / MACT RRR / MACT 3R, 40 CFR, Part 63, Subpart RRR [Secondary Aluminum Production NESHAP]), September 10, 2014 (for failure to operate Rotary Furnace [RO] lime feeder), July 27, 2015 (for routinely exceeding RV1 flux usage limit of 209.68 pounds of flux per ton of scrap charge (i.e. 10.48%) per NESHAP/MACT RRR, 40 CFR, Part 63, Subpart RRR and PTI No. 504-96F, FG-RV1, II.2).

Permit-to-Install (PTI) No. 504-96F dated September 27, 2013. Unlike the most recent permit, PTI No. 504-96F incorporated NESHAP / MACT 3R correctly.

PTI Application voids: PTI Nos. 504-96E (01/15/2009: This application of was for replacement of RV1 burners, which is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(2)(c)(iii)) and 504-96G (07/08/2015, withdrawn due to guaranteed denial).

PTI voids: PTI Nos. 504-96 (10/08/1997), 504-96A (12/20/2001), 504-96B (10/06/2003) 504-96C (10/27/2006) and 504-96D (09/27/2013).

PTI Revisions (recent): PTI No. 504-96D dated October 27, 2006 → PTI No. 504-96F dated September 27, 2013, as result of the February 05, 2013, NESHAP / MACT 3R violation notice (VN) and Continental's desire to change production limits. Further PTI revision was thought to be required to revise flux rate (x-hour block average & pounds of flux per ton of feed) for RV1 based upon additional stack testing for PTI and MACT 3R parameters because Continental was unable to comply with RV1 flux rate limits (PTI No. 504-96F, FG-RV1, II.2). AQD denied PTI modification (PTI No. 504-96F → PTI No. 504 -96G) to change flux rate averaging method (time and / or units) (3-hour maximum flux: pounds per ton of feed → pounds per hour without considering feed) and, consequently, Continental withdrew the PTI application (PTI No. 504-96G). Besides, as stated above, AQD issued July 27, 2015, VN. At any rate, Continental was able to develop a software solution that warns an operator an amount of flux that can be

added without violating flux limit (RV1: 10.48%) of the permit. While continuous process RV1 had flux exceedance issue, batch process RO had no such flux issue as operators could decide an amount of flux that was allowable in a batch in question. Obviously, continuous process RV1 flux is rate is dynamic (transient) unlike RO, which is a batch process (≈3-hour batch). Although materials addition amounts and their proportions (fractions or ratios) can be easily controlled in a batch process such as RO, Continental installed a similar software for RO that instructs an operator how much more flux can be added to the batch such that flux addition is in compliance with RO's 18.9% flux limit (379 pounds of flux per ton of RO feed or charge). The flux limits were established based upon Sep 2013 stack tests.

Subject to (Existing < Feb 11, 1999): Area Source NESHAP / MACT RRR, 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production; Final Rule (Page 15690, Federal Register / Vol. 65, No. 57 / Thursday, March 23, 2000 / Rules and Regulations / Final rule). Continental operates Group 1 furnaces (RV1, RV2 & RO) with dirty (paints, oils, etc.) charge & reactive fluxing and the furnaces are NOT Group 2 furnaces with only clean charge.

NESHAP / MACT RRR Amendments: National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production, Page 57513 Federal Register /Vol. 70, No. 190 /Monday, October 3, 2005 /Rules and Regulations /Direct final rule; amendments

NESHAP / MACT RRR Amendments: National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production, Page 56700 Federal Register / Vol. 80, No. 181 / Friday, September 18, 2015 / Rules and Regulations / Final rule. Effective date: September 18, 2015. NESHAP / MACT RRR Amendments: National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production, Page 38085, Federal Register /Vol. 81, No. 113 /Monday, June 13, 2016 /Rules and Regulations / Direct final rule.Effective on September 12, 2016.

Not subject to ROP: Exemption of Certain Area Sources (MACT RRR) From Title V Operating Permit Programs; Final Rule, Page 75320 Federal Register / Vol. 70, No. 242 / Monday, December 19, 2005 / Rules and Regulations / Final Rule. US EPA exempted permanently five (5) categories of non-major (aka area) NESHAP / MACT sources from Title V operating permit requirements. Consistent with Clean Air Act, US EPA determined that Title V operating permit requirements are infeasible, impractical, or unnecessarily burdensome on the five source categories (dry cleaners [NESHAP / MACT M], halogenated solvent degreasers [NESHAP / MACT T], chrome electroplaters [NESHAP / MACT N], ethylene oxide (EO) sterilizers [NESHAP / MACT O], and secondary aluminum smelters RRR). However, secondary lead smelting plants [NESHAP / MACT X] are not exempt.

Fee: Subject to Area Source NESHAP / MACT 3R Cat III fee. On February 25, 2011, Continental paid $4,756.50 (Invoice No. 674489) as Category I source as AQD misclassified Continental's fee category; AQD refunded Cat I fee keeping $250 for Cat III.

Recent stack tests: September 24-26, 2013 (RO [Baghouse under two conditions: Condiltion1 - max. flux and Conditon2 - max. temperature & minimum required lime] and RV1 (sidewell Baghouse)), and June 12-13, 2014 (natural gas fired RV1 combustion / hearth stack – uncontrolled, i.e., no baghouse) stack tests. 2013-14 performance tests were required by PTI No. 504-96F (PM, HCl, HF, D/F) and NESHAP /

MACT 3R (dioxin / furan or D/F). Aug 2003 D/F test was inadequate (as cited in Feb 05, 2013 VN) to satisfy MACT 3R. Both RO and RV1 were tested; RV2 on long-term idle requiring substantial repairs and hence not tested.

On March 13 & 27 and April 06 (accompanied by new AQD Engineers Forth & Bognar), 2018, I conducted an annual level-2 **FY 2018 SM CMS scheduled** inspection of Continental Aluminum ("Continental"), an aluminum scrap recycling and remelting facility, located at 29201 Milford Road, New Hudson, Michigan 48165-9741. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994, PA 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; Area Source NESHAP / MACT RRR; and the permit (PTI No. 504-96F).

During the inspection, Messrs. Mark Buchner (Phone: 248-437-1001-ext. 5102; Cell: 248-379-7290; Fax: 248-437-8885; E-mail: mBuchner@ContAlum.com or mBuchner@MetalExchangeCorp.com), President, and Tyler Cunningham (Phone: 248-437-1001-ext. 118; Cell: 248-921-7433; Fax: 248-437-8885; E-mail: tCunningham@ContAlum.com or tCunningham@MetalExchangeCorp.com), EHS Manager, assisted me

Mr. Bruce Bergeson (Phone: 248-437-1001; Fax: 248-437-8885; bBergeson@contalum.com), Continental Aluminum Environmental Support, also assisted during the recent stack tests (September 2013 and June 2014).

In addition, Messrs. Bruce Bergeson (Phone: 248-912-7165; Fax:248-347-1890; E-mail: Bruce.Bergeson@gmail.com), Bergeson Technology Services, LLC, of Novi, and David Kirby (Phone: 864-334-5085; Cell: 864-497-6802; Fax: 864-334-5143; E-mail: dlk@pIntegration.com), Project Integration, Inc. of South Greer, SC, are involved in helping Continental to comply with the permit and the NESHAP / MACT 3R. Both are consultants.

Messrs. J. David Rinehart (Phone: 248-437-1001-ext. 107; Cell: 248-939-2491; Fax: 248-437-8885; E-mail: drinehart@contalum.com), President (about January 2013), Jim O'Neil (Phone: 248-437-1001-ext. 102; Cell: 248-379-7290; E-mail: joneil@contalum.com), Director of Operations (about August 2012), Craig Goodis (Phone: 248-437-1001-ext. 111; Cell: 248-921 -3831; Fax: 248-437-8885; E-mail: cGoodis@contalum.com) (about April , 2013), Mr. Fred Lindsay (Phone: 248-437-1001-ext. 107; Cell: 248-939-2491; Fax: 248-437-8885; E-mail: fLindsay@contalum.com), President (about May 2015) all separated from Continental. Mr. Fred Lindsay replaced Mr. Rinehart about February 27, 2013 and Separated about May 2015. Mr. Buchner joined Continental in October 2012 as Director of Operations replacing Mr. O'Neil; and, also, replaced Fred Lindsay as President about May 2015.

Continental's New Hudson facility operates two reverberatory sidewell furnaces (RV1-Deox & RV2-Alloy; RV2 – long-term idled and in serious disrepair) and one rotary furnace (RO). While RV is a continuous process, RO is a batch process (about 3-4 hours per batch). A sidwell reverberatory furnace chamber (typically known as hearth) is an open sidewell. The configuration of the furnace is such that an arched passage connects the open sidewell and enclosed hearth. During normal operation molten aluminum fills hearth and sidewell at a level (liquid seal) that prevents any air or gas migration from the sidewell into the hearth. i.e., hearth's natural gas combustion products, which are practically free of PM, do not comingle with up to 100% opacity sidewell emissions. Hearth, where flame is directed towards the bricks, is heated using two natural fired burners. The hearth is principal source of heat for

melting aluminum scrap that is introduced into the sidewell. As metal cast from the furnace, scrap is charged in sidewell to maintain the molten aluminum level in the furnace and sidewell. Sidewell contains molten aluminum at temperature ≈1300 ºF and the scrap aluminum melts as it sinks into the molten metal producing visible emissions, which are captured by capture device and delivered to lime injected baghouse. Reactive fluxing (not cover flux) of aluminum is performed in the sidewell. It is considered reactive fluxing because molten metal is pumped (and hence agitated) to transfer heat to sidewell. Incorrect interpretation of reactive flux was used in the previous permit that also incorporated into the permit MACT 3R incorrectly. An interlock is present to prevent operation of the pump when liquid level is not adequate. Unlike earlier years (2000s), gaseous (elemental or Cl2) chlorine is not used as flux as current PTI prohibits its use. Instead, sodium aluminum tetra fluoride flux (or similar flux) is used. The scrap charge may be covered with a salt flux to reduce potential for oxidation especially when casting is interrupted. Pumping molten metal helps transfer heat from hearth, where natural gas furnace heats molten metal, to sidewell where scrap melts.

Aluminum Scrap Management

The facility operation consists of Aluminum Scrap Management (inspection, screening for radioactive materials), Raw Material Shredding, Rotary Furnace (RO) and Reverberatory Furnaces (RV1, which always runs and RV2, which is a backup furnace and is idled). Scrap inspection is to qualify, quantify, monitor, etc. level of non-aluminum contaminants in the scrap. Contaminants are also the cause of odor. Lab samples are taken for inspection and analysis. Ferrous metals are removed using magnets. Non-metallic fluffy material is removed using eddy currents. Various blends of Types 1, 2, etc. are used to limit volatiles. Scrap management is a part of odor control as well.

Centrifuges (2)

About February 2017, Continental installed two centrifuges to remove oil from turnings or chips, which contain oil due to machining. Due to centrifugal forces action, oil and water are separated from scrap. Oil and water are pumped to four (4: 2 installed in Feb 2017 plus 2 installed in Feb 2018) 1,000-gallon tanks. About 4,000 gallons of water and oil per week are collected and disposed of. Thus dewatered and de-oiled scrap is pneumatically conveyed to scrap bins (mostly RV1 feed / charge). Removal of oil has a potential to reduce odor and increase longevity of bags. Also, removal of water saves energy (sensible heat and latent heat of evaporation: nearly 1,000 BTU per pound of water = nearly 1 SCF of natural gas; ≈$5.00 per million BTU). Furthermore, small quantities (<< 1%) of ferrous materials are removed via magnetic separation.

Rotary furnace (RO) – Lime and carbon injected baghouse (RO-BH2)

Rotary furnace (RO) consists of a refractory lined steel cylinder. Heat energy is supplied to the furnace by firing natural gas in a packaged burner (14 MM BTU per hour). The rotary furnace operates as batch process (about 3-4 hours) unlike RV1 / RV2. Once a desired temperature is reached, sodium aluminum tetra fluoride flux (or similar flux) is used. Flux is to remove impurities from molten aluminum. RO processes both Continental (RV1) dross and toll (other aluminum scrap facilities) dross to recover aluminum. Use of toll dross, recently (FY 2018), has been substantially reduced. **Dross** is waste material that still contains economically recoverable aluminum (5-15%). RO dross, which hardly contains aluminum (not economical to recover), is known as **salt cake** or **oxide slag**. Salt cake is disposed of in a landfill. RO is also used to process more dirty (higher volatiles) scrap.

Rotary Furnace (RO): RO is 14 MMBTU / hour natural gas fired furnace heater with maximum materials (scrap, dross, flux, etc.) capacity as determined by stack test (RO limit = 26,139 pounds of charge per cycle / batch based upon September 24-26, 2013 {RO [Baghouse under two conditions: Condiltion1 - max. flux and Conditon2 - max. temperature & minimum required lime]} stack tests). RO visible emissions are captured by a capture device and delivered to a lime injected baghouse. When RO door is closed all visible emissions are efficiently ducted to the RO baghouse. RO emissions are controlled by 45,000 SCFM high temperature bagahouse (BH-2: Nomex bags, air-to cloth ratio = 3:1). RO bags are shaken at the end of ≈3-hour batch; prior to next batch. Lime and activated carbon are injected into the bags to control acid gases and odor, respectively. The injection starts before the batch begins. Thorough cleaning of bags ended in December 2010 as per my recommendation. I explained to the company that 50% clean-up via shaking bags may be sufficient. Carbon and lime retained on the bags would help control odor and acid gases during the beginning of next batch. Continental, about 2015, installed electronic systems to prevent excessive shaking. RO produces molten aluminum for RV1 if the material is owned by Continental or **sow** product for toll processing.

Based upon the inspection, all visible emissions are captured using a capture device and ducted RO baghouse. During scrap aluminum charging period, natural gas firing is not done. Towards the end of RO batch, molten aluminum is transferred to preheated crucibles, whose tear weight is known. From the crucibles, upon skimming dross, molten aluminum is poured into reverberatory furnace (RV1). RO enhances throughput of RV1 as it adds molten aluminum to it. In addition, RO enables the plant to process high volatile (combustibles) aluminum scrap. End of an operating cycle, for example RO, is known as **tap / pour**.

Based upon observed visible emissions (VE) near the RO capture device and high volatile content (RO up to 10% Vs RV1 up to 2%), RO may be predominant source of odor that is variable with time.

Deox / Alloy

Deox is deoxidant product for steel mills. Although RV1 is known as Deox furnace, RV1 can make both alloy and deox products depending upon market demands.

Reverberatory Furnace 1 (RV1- De-ox) - Lime and carbon injected baghouse (RV1-BH3)

RV1 is a continuous process (casting) unlike RO. RV1 consists of two (2) natural gas fired burners of capacity 10 MMBTU / hour, each burner; total heat input of 20 MMBTU / hour. All natural gas combustion takes place at hearth. Flame is directed towards bricks. RV1 melts aluminum scrap, dross, etc. at a charge rate (pounds per hour, all materials including flux, scrap, dross, etc.) determined by the stack test (47,148 lbs. / 3-hr = 15,716 lbs. / hr. based upon September 24-26, 2013 {RO [Baghouse under two conditions: Condiltion1 - max. flux and Conditon2 - max. temperature & minimum required lime] and RV1 [sidewell Baghouse], and June 12-13, 2014 [natural gas fired RV1 combustion / hearth stack – uncontrolled, i.e., no baghouse]} Stack Tests). Like RO, RV1 is controlled by 45,000 SCFM high temperature baghouse (RV1-BH-3: woven polyester bags, air-to cloth ratio = 3:1). Lime and carbon are injected into the bags to control acid gases and odor, respectivly. The bags are shaken to maintain pressure drop (ΔP) across the bags. Thorough cleaning of bags ended in December 2010 as per my recommendations. I explained to the company that 50% clean-up via shaking bags may be sufficient. Carbon and lime retained on the bags would help control odor and

acid gases. Continental installed electronic systems to prevent excessive bags shaking. Natural gas combustion emissions from hearth are uncontrolled; i.e. no baghouse.

Based upon the inspection, all visible emissions are captured using a capture device and ducted to RV1 baghouse.

Reverberatory Furnace 2 (RV2- Alloy – long-term idle) – BH1

Reverberatory Furnace 2 (RV2- Alloy) is long-term idled and in disrepair. Neither lime nor carbon injection is taking place at this time. As a matter of fact, RV2's lime injection system is converted carbon injection system for RV1 and RO. The injection may be necessary upon start up. RV2 consists of two (2) natural gas fired burners of capacity 10 MMBTU / hr, each burner. Total capacity is 20 MM BTU per hour. RV2 is controlled by 45,000 SCFM high temperature baghouse (RV2-BH-1: woven polyester bags, air-to cloth ratio = 3:1). Alloy (RV2) baghouse is equipped with Continuous Opacity Monitoring System (COMS / CEMS). COMS: Environmental Monitoring Service Model 1304 S/N 246. COMS meets Performance Spec 1, 40 CFR, Part 60, Appendix B. Continental must submit EER per PTI No. 504-96B, SC 36(g) / PTI No. 504-96D, SC 2.15; RV2 is now idled. Alloy baghouse (BH-1) is not operating at this time as the Alloy process (RV-2) is idled.

Upon restarting RV2, Continental is required to conduct PTI and MACT 3R stack testing and performance audit of COMS according to PS1.

Shredder – In series cyclone and baghouse

Shredder pulverizes large metal (Al) scrap into smaller pieces. Shredder is capable of processing 20,000 pounds of Al scrap per hour. One **magnetic separator** is present to take out ferrous metals. Garbage materials such as paper, plastic, etc. are taken out using eddy current separator. Shredder baghouse is only baghouse that uses pulse-jet mechanism for cleaning; rest use shaker mechanism for bag cleaning. These operations are a part of odor management and product quality. Large particles are captured by a cyclone which is operated in series with the shredder baghouse. The cyclone protects the bags from impact by large particles which have high momentum. Fine particles are, of course, captured by the baghouse. The shredder baghouse emissions are released to in-plant environment.

Bails are broken and containers / vessels are removed to prevent potential explosion. Non-conforming bails are separated by visual inspection. Bails are broken and placed on a conveyor to carry the materials to the shredder, which is equipped with cutters. After shredding, the material is conveyed to a **magnetic drum (magnetic separator)** to pull out ferrous materials. Ferrous and non-aluminum materials accounted for and refund is sought. The materials are transferred to a **shaker table** and large aluminum pieces are pulled out. The material is sent to a ring mill where more shredding takes place. Materials fall through grates resulting in separation of large pieces. Material is carried to a magnetic separator. **Eddy separator** is present to take out non-aluminum materials such as paper, plastics, etc. A **vibrating table** is used to separate fluff (loose dirt). In the end, scrap aluminum raw material that can be fed to the furnaces is obtained.

According to March 28, 2000, letter from Mr. William A. Wickers II to Ms. Lisa Scarpelli, Continental installed ring mill, eddy currents separator to remove non-metallic materials such as paper, plastics. In addition, one magnetic separator was installed.

In-plant emissions

Farr baghouse (cartridge filters), which was located near southeast corner of the building, used to control in-plant fugitive emissions until it was removed. The Farr baghouse was inadequate and did not have properly designed capture and ventilation system. It has been removed. Occasionally, visible emissions are observed from the building from salt cake handling; these visible emissions are confused with smoke. However, opacity readings are in compliance with 20 % opacity limit (6-minute average)

NESHAP / MACT RRR Group 1

Concerning the MACT RRR, Group 1 furnaces include RO, RV1 and RV2 (idle and in serious disrepair) because all furnaces process dirty charge with reactive fluxing. While Group 1 furnaces melt, hold, process dirty (paint, oil, lubricants, coatings, etc.) charge, also process clean charge with reactive fluxing. Group 2 furnaces process only clean charge with non-reactive fluxing or no fluxing.

Baghouses

In summary, four process baghouses are present: one for Rotary (RO) Furnace, two for Reverberatory (RV1 Deox / RV2 Alloy) Furnaces, one for Shredder. RV2 Alloy baghouse is equipped with Continuous Opacity Monitoring System (COMS / CEMS). COMS is required to be certified w.r.t. PS1 upon restarting RV2 Alloy process. While activated carbon is injected into Rotary and RV1 Deox baghouses to control odor, lime is injected into these baghouses to control acid gases. All baghouses are cleaned using shaker mechanism except Shredder baghouse, which uses pulse-jet mechanism. In addition, one Farr cartridge filter system for in-plant fugitive emissions was removed (2015).

Unlike RV1 baghouse, RV2 Alloy baghouse is idle and in disrepair as RV2 furnace is idled.

Lime and carbon injection

Into the baghouses (RO-BH2, RV1-BH3, RV2-BH1-idle) lime injection is continuous. According to Rinehart's letter dated July 27, 2009, during the fourth quarter of 2009 (4Q2009), Continental engaged Mr. Bruce Begeson of Begeson Technologies to develop a practice of activated carbon injection into RO (BH-2) and RV1 (BH-3) baghouse systems.

Two lime injection (one each for RO & RV1) and one common carbon injection systems are present. Based upon the inspection, carbon injection system uses a mixture consisting of 50% carbon and 50% lime. The carbon injection system serves both RO and RV1 baghouses. RV2 (idle) lime injection system has been converted to one common (RO & RV1) carbon injection system. Per the inspection, 30-40 pounds per hour lime & carbon mixture (1:1 by mass) is injected; one half mixture into RO-BH2 and rest into RV1-BH3.

Rotory Furnace Barrel is heated to about 1300 ºF using natural gas. Molten aluminum metal from RO is held in heated crucibles before being transferred to Deox furnace (RV1). Reverberatory furnace may act as Deox or Alloy furnace depending upon the product. Deox product is used in steel mills. RV1 is used as an Alloy furnace as well as Deox furnace.

Shredded aluminum is fed to either RO or RV1. While materials with less than 2% volatiles are fed to RV1, RO can handle up to 10% volatiles. Volatiles means combustibles in the scrap. As stated before, RO is a batch process running 6-7 batches per day (24 hours). Due

to higher volatile (non-metallic) content, RO is more likely to be a source of odor. Because RO is batch process (about 3 hours per batch), odors tend to be transient if properly operated; highest intensity odor in the beginning of the batch and tapering towards the end.

On January 21, 2011, I discussed lowering exhaust gas temperature to the baghouses to improve effectiveness of carbon adsorption as lower temperature favous carbon adsorption because it is an exothermic process with release of kinetic energy of the molecules being adsorbed as heat. As a result of these discussions, Continental was staying below 250 °F (PTI No. 504-96D, SC 3.9 limit: 400 °F) at the inlet of bags. This 400 °F temperature limit was incorrect per MACT 3R. The baghouse temperature limit must be based upon MACT 3R stack testing. September 24-26, 2013, stack tests (required per February 05, 2013 VN) established the maximum baghouse temperature limits for both RO (RO T < 216 °F) and RV1 (RV1 T < 182 °F) per MACT 3R. These lower temperatures are now (after Sep 2013 stack tests) maintained and monitored. The lower exhaust gas temperature is helping adsorption (adsorption isotherm) of odors onto activated carbon cake on bag surfaces. Unlike absorption, which gas-liquid contact mass transfer operation, adsorption is gas-solid contact mass transfer operation. In adsorption, solute (contaminant) is transferred from gas phase to solid resulting in release of heat (exothermic). Hence, lower temperature favors higher adsorption. Removing heat of adsorption and maintaining lower temperatures favors adsorption.

Carbon and lime injection is started before a RO batch is started. Unlike RO, both RV1 and RV2 (idled) are continuous processes. RV2-alloy is equipped with neither lime nor carbon injection system because it is on long-term idle and in serious disrepair. Each process (RO & RV1) has its own dedicated lime injection system; two systems in all. However, one common carbon injection system serves both RO and RV1; RV2 lime injection system is converted to this common carbon injection system.

On September 15, 2011, I discussed operating baghouses at higher ΔP but still within permit limits. RO bags (BH-2) are shaken at the end of the batch. I asked Messrs. Rinehart and O'Neil to minimize bag-shaking at the end of RO batch by trial-and-error such that ΔP (BH-2) is on higher side of the permit limit (PTI No. 504-96D, SC 3.7 limit: $3.0 \leq \Delta P \leq 10$ inches WG). Since RV1 is a continuous (not batch) process, one press for shake may be sufficient to clean bags so that RV1 (BH-3) is always operated at higher ΔP; but still within the permit limit (PTI No. 504-96D, SC 1.8 limit: $2.25 \leq \Delta P \leq 15.35$ inches WG). About 2015, Continental installed an electronic system for each baghouse (RO & RV1) that prevents excessive bag shaking.

Public Health Assessment Petition

Via Dec 26, 2001 letter, Charter Township of Lyon and State Environmental Advocacy Organization petitioned Dr. Henry Falk, Asst. Administrator, US EPA Agency for Toxic Substances and Disease Registry (ATSDR) for public health assessment. At New Hudson, Continental started operation in 1998; moved from Detroit.

Michigan Dept. of Community Health Report

Exposure Investigations Report (Contact T. J. Bucholz 517-241-2112) states that MDCH concludes that Continental Aluminum poses no apparent public health hazard. MDCH conducted exposure investigation concerning toxic pollutants emitting from Continental from March 1 through May 31, 2004.

MDCH conducted an investigation under cooperative agreement with US Dept. of Health and Human Services, Agency for Toxic Substances and Disease Registry. MDCH (US EPA ID: MI 0001941699) conducted exposure investigation using Air Monitoring. MDCH investigated presence of acid aerosols, concentrations of air-borne metal particles, elevated mercury (Hg), volatile organic compounds (VOC). MDCH concluded, based upon exposure investigation of 2004 that the concentrations of chemicals in the ambient air were below health based comparison values. Hence, there was no apparent current (2004) public health hazard. Meteorological parameters were considered.

The November 15, 2005, letter from Ms. Christina Bush, Toxicologist, MDCH, to Mr. G. Vinson Hellwig, AQD Chief, stated that Continental Aluminum was not a significant source of mercury (Hg).

Consent Order 52-2001

AQD issued a Violation Notice dated March 20, 2000, for failure to install and operate lime injection system for RV-2 baghouse as indicated by HCl and Cl2 emissions and for submitting inaccurate information (RV1 & RV2 Rule 303) in permit application #504-96, which was subsequently revised to 504-96A.

On April 11, 2000, AQD-SEMI DO (Pinga) referred the odor violations (Rule 336.1901, PTI No. 504-96A, SC 13 & 14) for an escalated enforcement action.

Consent Order No. 52-2001 was finalized on December 20, 2001. PTI No. 504-96B was issued and made part of the consent order. PTI modification PTI No. 504-96B → PTI No. 504-96C removed the required use of chlorine. The NESHAP / MACT RRR requirements were incorporated (March 23, 2000). During the permit review (PTI No. 504-96C), the MACT 3R requirements were not correctly incorporated.

AQD Chief G. Vinson Hellwig terminated on February 1, 2007, Consent Order No. 52-2001 based upon Mr. J. David Rinehart's (President of Continental) letter dated February 2, 2007. The letter stated that Continental paid $33,000.00 (settlement) on January 24, 2002, $15,000.00 (stipulated penalty) on August 11, 2005, and that Continental complied with Paragraphs 11 thru 17.

Stipulated penalty

October 17, 2002, letter from AQD's Ron Pollom to Bill Altgibers, President of Continental, stated that Continental failed HCl limit (PTI No. 504-96B) per June 2002 sampling. HCl limit failure subjects the company to $3,000.00 per day stipulated penalty (CO No. 52-2001)

PTI Modifications

As a result of inaccurate information (RV1 & RV2 and Rule 303) in permit application #504-96, PTI No. 504-96 was revised to PTI No. 504-96A.

Consent Order No. 52-2001 was finalized on December 20, 2001. PTI No. 504-96B was issued and made part of the consent order. PTI modification PTI No. 504-96B → PTI No. 504-96C removed the required use of chlorine as flux as a result of failure to meet Cl emission limit of PTI No. 504-96B during June 12, 2002 stack test. The NESHAP / MACT RRR requirements were incorporated into PTI No. 504-96C; but not correctly.

The modification PTI No. 504-96C → PTI No. 504-96D modified pressure drop (ΔP) for RV1 and RV2 from 3-10 inches WG to 2.25-15.35 inches WG based upon May 23-24, 2006, stack test (PM, HCl, HF). The PTI modification retained 3-10 inches pressure drop (ΔP) for Rotary Furnace (RO). All other conditions were retained during the PTI modification; i.e. only RV ΔP range was changed.

PTI Application No. 504-96E was voided on January 15, 2009.

The PTI modification PTI No. 504-96D dated October 27, 2006 → PTI No. 504-96F dated September 27, 2013, was done as result of the February 05, 2013, NESHAP / MACT 3R violation notice (VN) and Continental's desire to change production limits. Further PTI revision was thought to be required to revise flux rate (x-hour block average and pounds of flux per ton of feed) for RV1 based upon additional stack testing for PTI and MACT 3R parameters. AQD denied this modification (PTI No. 504-96F → PTI No. 504-96G) and Continental withdrew the application (PTI No. 504-96G).

As a result of February 05, 2013, VN and Continental's desire increase hourly and annual throughput for both RV1 and RO furnaces, Continental submitted this PTI mod application. Continental also proposed to build a holding furnace (Group 2 furnace under MACT RRR), which is referred to as EU-HOLDING (which is not installed as of this inspection). Continental requested numerous changes be made to the permit (PTI No. 504-96D), including changing/removing emission limits, changing material limits and operational limits, and adding the applicable MACT Subpart RRR requirements. Many of the requested operational changes such as baghouse inlet temperature, lime injection rate, feed rate, etc. would be determined by the required stack testing that was scheduled for the end of September 2013, and thereafter these parameters would be maintained in the facility OM&M plan. PTI No. 504-96F approved the production limits increases and clarified the meaning of charge (all materials charged to the furnace EXCEPT for molten aluminum). Neither the district nor the permit section accepted the removal of HCl and HF limits. The limits are in the permit to ensure compliance with MI air toxics rules (R 225). PTI mod removed condition prohibiting reactive flux (per MACT 3R, reactive flux [due to agitation / pumping to transfer heat] has always been used and there was misunderstanding in the previous permit); however, elemental chlorine (Cl) gas is still prohibited. PTI mod increased PM limit for FG-ROTARY from 0.3 pound per ton to 0.4 pound per ton, consistent with the MACT 3R limit.PTI mod removed 10,000 pounds per hour charge production limit for FG-RV1; the charge limit would be determined by the required stack test. PTI mod increased charge limit to 54,000 tpy from 48,000 tpy for both RV1 and RV2 (RV2 on long term idle). Since the MACT requires tracking ALL metal that is charged to the furnace (including molten metal), there would be 2 sets of recordkeeping. One counting all charge to the sidewell excluding molten metal (to show compliance with material limit of the permit), and another tracking all charge to the furnace (to show compliance with MACT RRR). AQD is allowing Continental to base emission calculations on just the "dirty" metal charged to the sidewell for several reasons. One, emissions from the melting process have already been counted for metal that was already melted in FG-ROTARY and is now being passed through FG-RV1 or FG-RV2. Secondly, AQD expects negligible emissions from clean molten charge that is added to FG-RV1 or FG-RV2, since the impurities in the scrap & flux have already been burned off in the rotary furnace. This should not result in any conflict with the MACT requirements. PTI mod removed 20,000 pounds per hour charge limit for FG-ROTARY; the charge limit would be determined by the required stack test.

PTI modification (PTI No. 504-96F → PTI No. 504-96G) to change flux rate averaging (pounds per ton of feed → pounds per hour) was denied as such averaging time must be

based upon stack test and NESHAP / MACT 3R and the PTI application (PTI Application No. 504-96G) was withdrawn.

RV2-BH1 Baghouse COMS

Mr. Bill Algilbers, President of Continental, stated in his letter dated December 2, 2002, to Mr. Tom Maza of AQD that Continuous Opacity Monitoring System (COMS) installed on the exhaust stack of Reverberatory Furnace No. 2 or RV2 baghouse complied with Performance Specification 1 (40 CFR, Part 60, Appendix B, PS1). The annual COMS audit was required by PTI No. 504-96B, SC 36(g). Mr. Tom Maza'a letter dated December 4, 2002, states that AQD determined that Environmental Monitoring Services Model 1304 S/N 246 meets Performance Spec 1, 40 CFR, Part 60, Appendix B. Continental must submit Excess Emissions Report (EER) according to SC 36 (g), PTI No. 504-96B (PTI No. 504-96D, SC 2.15).

Concerning COMS, Performance Spec 1 recertification and ongoing annual audits is required upon startup of RV2 (PTI No. 504-96F, FG-RV2, IV.3).

Stack Tests

February 2000 stack test

On Feb 23, 2000, Continental Aluminum conducted stack test for RV2 for PM, HCl, Cl, HF, F2. Each pollutant emissions was less than the limit in PTI No. 504-96A: 0.16 pound of PM per hour (limit: 2 lbs/hr), 0.28 pounds of HCl per hour (limit: 1.95 lbs/hr), 0.02 pounds of HF per hour (limit: 0.5 lbs/hr) and 0.02 pounds of Cl2 per hour (limit: 0.10 lbs/hr).

June 2002 stack test

AQD received the test plan dated May 10, 2002, from Air Compliance Testing, Inc. for PM, HCl, HF, Cl2 from RO, RV1 and RV2. On June 6, 2002, AQD (Maza) approved the stack test plan. Tom Maza observed stack tests during June 11-12, 2002, for PM, HCl, HF, Cl (RV1, RV2, RO). The average HCl from RV2 exceeded the permit limit (PTI No. 504-96B). AQD issued a Violation Notice dated September 11, 2002, for exceeding the permit limit for HCl. The stack test emissions of 3.58 pounds of total HCl per hour exceeded the permit limit of 1.95 pounds of total HCl per hour (RV2, PTI No. 504-96B, SC 23). RV1 and RO were in compliance for all pollutants. Air Compliance Testing, Inc. conducted June 11-12, 2002, sampling. The PTI modification PTI No. 504-96B → PTI No. 504-96C removed the required Cl2 flux.

August 2003, stack test

AQD received the test plan dated January 3, 2003, for Dioxins and Furans from Deox Furnace (RV1), Alloy Furnance (RV2) and Rotary Furnace (RO). On January 31, 2003, AQD (Maza) approved Dioxin / Furan (D/F) test method for RO and RV (to operate as alloy furnace) according to PTI No. 504-96B. Air Compliance Testing, Inc. of Cleveland, Ohio, conducted sampling on August 12 and 13, 2003. The purpose of the test was show compliance with Area Source NESHAP / MACT RRR (3R) for Secondary Aluminum Production. The sampling was performed for RV1, RV2 and RO. August 2003 stack test emissions of D/F TEQ in grains per ton of feed were 1.44E-04 for RV1, 9.8E-05 for RV2 and 1.95E-05 versus NESHAP / MACT RRR limit of 2.1E-04. The laboratory successfully analyzed dioxin-furan audit sample.

Because this 2003 stack test did not develop, MACT 3R operating parameters (e.g. flux rate, maximum baghouse temperature, etc.) the D/F stack test was repeated in September 2013 as a result of February 2013 Violation Notice (VN).

May 2006 stack test

On April 28, 2006, AQD approved the test plan for PM, HCl, HF to change baghouse pressure drop for RV1 (Deox) and RO (Rotary) from 3-10 inches to 1-15 inches of water. On May 23 and 24, 2006, sampling was performed to show compliance with PTI No. 504-96B permit limits. Jason Wolf of AQD observed the sampling. Per Mr. Wolf, US EPA Reference Methods 1, 2, 3, 4, 5 and 26A were properly followed and calculations were done correctly. HCl limit was not met for RO for both baghouse conditions (PTI No. 504-96B). PTI No. 504-96B → PTI No. 504-96C modification prohibited use of chlorine flux.

September 2013 and June 2014, stack test

September 24-26, 2013 (RO [Baghouse under two conditions: Condiltion1 - max. flux and Conditon2 - max. temperature & minimum required lime] and RV1 (sidewell Baghouse)), and June 12-13, 2014 (natural gas fired RV1 combustion / hearth stack – uncontrolled, i.e., no baghouse) stack tests.

The tests were conducted per Permit-to-Install (PTI) No. 504-96F dated September 27, 2013, and Area Source NESHAP / MACT 3R.

Performance test required by: PTI No. 504-96F (PM, HCl, HF, D/F) and NESHAP / MACT 3R (dioxin / furan or D/F).

AQD issued Violation Notice dated February 05, 2013 for failing to comply with NESHAP / MACT RRR / MACT 3R, 40 CFR, Part 63, Subpart RRR (Secondary Aluminum Production NESHAP). Continental needed to perform stack test to comply with the MACT 3R. Aug 2003 D/F test is inadequate (as cited in Feb 05, 2013 VN) to satisfy MACT 3R. In 2003, RO and RV1 were tested (RV2 idle requiring substantial repairs, not tested). Continental did not include all necessary parameters, for example, flux rate, maximum temperature, etc., in the previous MACT 3R test for D/F (August 2003).

On May 19, 2013, AQD received Performance Test Plan for both RO and RV1 (NESHAP / MACT 3R and PTI No. 504-96F) via e-mail. During September 24-26, 2013, Alliance Source Testing, LLC, of Decatur, AL 35603 (Phone: 256- 351-0121 Fax: 256-351- 0151) conducted sampling. On August 20, 2013, Mr. Tom Gasloli of TPU-AQD approved the NESHAP / MACT 3R and PTI No. 504-96F test plan. The stack tests: September 24-26, 2013 (RO [Baghouse under two conditions: Condiltion1 - max. flux and Conditon2 - max. temperature & minimum required lime] and RV1 (sidewell Baghouse)), and June 12-13, 2014 (natural gas fired RV1 combustion / hearth stack – uncontrolled, i.e., no baghouse) stack tests. AQD wrote two letters dated October 17, 2013 (need to test natural gas fired process heater or hearth, EU-RV1PROCHTR), and February 10, 2014 (allowed RV1 hearth stack tests under practically identical conditions by July 1, 2014 due to winter-related safety concerns), to Mr. Fred Lindsay, President, concerning shortcomings of September 2013 stack tests. The baghouse controls emissions from EU-RV1MELT. The emissions from the natural gas fired process heater or hearth (EU-RV1PROCHTR), which keeps aluminum in a molten state and provides heat for melting scrap feed in the sidewell, exhaust through a separate uncontrolled stack. Natural gas flame is directed to fire bricks and heat transferred, via predominantly radiation and convection mechanisms, to molten metal. A molten metal liquid level seal is present and

maintained to prevent sidewell (Baghouse) emissions to migrate to hearth (uncontrolled). Continuous molten metal recirculation using a pump transfers necessary heat for melting scrap feed in the sidewell. 30-100 percent opacity emissions at the sidewell due to scrap melting and combustibles burning are captured and ducted to the lime-injected baghouse. During the September 25, 2013 testing, only the emissions from the baghouse stack EU-RV1MELT were sampled. However, the permit requires sampling both process heater / hearth and baghouse stacks simultaneously. Based upon Mr. Bruce Bergeson's letter dated November 15, 2013, Continental Aluminum agreed to sample the Hearth stack. Besides, the January 24 e-mail from Mr. Bruce Beregson described safety issues (due to icy conditions in winter) pertaining to constructing and using the structures necessary for sampling. Hence, the RV1 (RV2 is idle and needs stack test upon start-up) hearth stack test was postponed to June 2014 so that safe weather-related conditions for building necessary structures exist.

AQD issued Permit-to-Install Modification (PTI No. 504-96D ➔ PTI No. 504-96F; PTI No. 504 -96E application was voided) as result of the February 05, 2013, NESHAP / MACT 3R violation notice (VN) and Continental's desire to change production limits. All baghouses (RO, RV1; RV2-idle and not tested) are required to be injected lime (minimum amount determined by the Sept 2013 stack test) to control acid gases and dioxins / furans. A mixture of lime and carbon is also injected into the baghouses to control neighborhood odor although required neither by PTI No. 504-96F nor NESHAP / MACT 3R. The baghouses must be operated properly such that a sufficient dust cake thickness of lime and carbon exist on the walls of the bags that contaminants in exhaust gases can come contact with. While lime injection into the baghouses is required both by PTI No. 504-96F (PM, HCl, HF, D/F) and NESHAP / MACT 3R (D/F), carbon (mixture of lime and carbon) injection is implemented as an odor control measure.

On December 18, 2013, AQD received September 24-26, 2013, test results. AQD also received along with the September 2013 test report, Notice of Compliance Status (NOCS) Report dated December 11, 2013 (signed by Fred Lindsay, President) per NESHAP / MACT 3R.

On May 13, 2014, AQD received Performance Test Plan for RV1 uncontrolled combustion stack (RV1 hearth) since this was overlooked during September 2013 stack test. On May 28, 2014, Mr. Tom Maza of TPU-AQD approved the test plan for RV1 combustion stack (uncontrolled natural gas fired hearth). During June 12-13, 2014, Alliance Source Testing, LLC, conducted sampling of RV1 combustion stack (hearth). RV2 is idle on a long-term basis and, hence, sampling was not conducted; stack test to be conducted upon start-up.

Mr. Tom Gasloli of TPU-AQD observed September 2013 stack tests (including D/F). Rotory furnace (RO) was tested under two scenarios: 100% dross & worst case flux (standard flux 48% NaCl, 4% KCl and Cryolite) and worst case scrap (highest temperatures). Mr. Gasloli wrote Sept. 2013 stack test observation report. Dross containing recoverable aluminum from RV1 is processed in RO; it may be mixed with scrap in the same batch. Toll dross is processed as 100% dross in RO for a client for a processing fee. On Sept 25, 2013, Run No. 1 was aborted because Mr. Bruce Bergeson wanted to feed dirtiest scrap possible.

Mr. Tom Gasloli of TPU-AQD reviewed September 24-26, 2013, stack test report. According to Mr. Gasloli all methods and procedures are acceptable. US EPA Reference Methods 5+202 (PM), 23 (dioxins / furans or D/F) and 26A (modified non-isokinetic HCl & HF). Rotary furnace (RO) was tested under two conditions:

1. **Condition 1:** 100% dross with maximum flux. Sets flux limit.

2. **Condition 2:** worst case scrap (dirtiest and hence maximum temperature), maximum scrap feed rate, maximum baghouse temperature, minimum lime injection rate. Sets temperate limit.

Independent AQD calculations are in agreement with Alliance Source Testing's calculations with an acceptable margin of error.

On June 11, 2014, RV1 test could not be performed due to burner problems. Parts required for repairs could not be obtained in few hours. June 2014 RV1 combustion stack test was performed to satisfy permit conditions (NESHAP / MACT 3R requires only D/F testing that was performed in Sept 2013) using US EPA Reference Methods 5+202 (PM) and 26 (non-isokinetic HCl & HF). Mr. Maza wrote test observation and review (08/27/14) reports. AQD will use Alliance Source Testing's results since they are acceptable with a margin of error in order to avoid confusion. Mr. Tom Maza of TPU-AQD observed the June 2014 combustion stack (uncontrolled natural gas fired hearth to keep aluminum in molten state and to provide heat for melting scrap in sidewell via molten metal recirculation).

On July 22, 2014, AQD received June 12-13, 2014, test results (RV1 Hearth – natural gas fired combustion stack that is uncontrolled). The September 2013 and June 2014 stack test results are summarized below:

FG-RV1 (EU-RV1PROCHTR, EU-RV1MELT, EU-RV1POUR): Reverberatory Furnace #1 produces De-Ox products. FG-RV1 consists of two natural gas-fired burners each with a heat input of 10 MMBtu (total 20 MMBtu capacity) per hour, raw material charging and melting, and a pouring operation. Combustion products from the burners and hearth chamber emissions are exhausted to the atmosphere uncontrolled through SVHTRRVRB#1. The pouring (in-plant molten metal from RO) operation has two uncontrolled tapping line stacks (SVTL1 and SVTL2).

Raw material charging and melting is hooded and emissions are vented to a 45,000 SCFM high temp lime-injected baghouse (RV1-BH-3) and exit through SVBHRVRB#1.

Pollutant	Limit	Sept 24-26,2013, RV1-BH3 baghouse stack test		June 12-13, 2014, RV1 NG fired furnace hearth stack No baghouse	Total RV1 = RV1-BH3 + Hearth
1. PM	0.40 lb/ton[1] of feed to sidewell	0.024 lbs./ton (0.18 lb./hr.; 6% limit)		0.15 lbs./ton (1.14 lbs./hr.)	0.174 lbs./ton (43.5% limit)
2. PM	4.8 tpy [1]				To be calculated based upon 0.174/ton emission factor
3. PM 10	2.0 lb/hr	0.29 (14% limit)			
4. PM 2.5	1.4 lb/hr	0.29 (21% limit)			
5. PM 2.5	4.8 tpy [1]				
6. HCl	0.40 lb/ton[1] of feed to sidewell	0.10 lbs./ton (25% limit)		0.012 lbs./ton	0.112 lbs./ton (28% limit)
7. HCl	1.95 lb/hr	0.81 lbs./hr. (41% limit)		0.092 lbs./hr.	0.902 lbs./hr. (46% limit)

Pollutant	Limit	Sept 24-26,2013, RV1-BH3 baghouse stack test		June 12-13, 2014, RV1 NG fired furnace hearth stack No baghouse	Total RV1 = RV1-BH3 + Hearth
8. HCl	4.68 tpy [1]				To be calculated based upon 0.112 lbs./ton emission factor
9. VOC	0.30 lb/ton[1] of feed to sidewell	Not tested			
10. VOC	1.5 lb/hr	Not tested			
11. VOC	3.6 tpy [1]	Not tested			
12. HF	1.0 tpy [1]	0.010 lbs. / hr. 0.0014 lbs./ton		4.9 E-03 or 0.0049 lbs./ton 0.036 lbs./hr.	0.0063 lbs./ton (0.046 lbs./hr.) Annual emissions to be calculated based upon 0.0063/ton emission factor

FG-RV2: IDLE – Requires lot of parts. RV2 is cannibalized. Stack test required upon start-up

FG- ROTARY (EU-ROTMELT, EU-ROTARYPOUR): Rotary Furnace (RO) produces aluminum sow and molten metal for transfer to other in-plant furnaces. FG-ROTARY consists of a 14 MMBtu/hr natural gas-fired burner, raw material charging and hot dross processing, sow pouring and molten metal transfer operations. Both melting and combustion emissions are vented to a lime-injected baghouse (BH-2) and exit through SV-BH-ROTARY.

Unlike RV1, both melting and combustion emissions are vented to a 45,000 SCFM high temp lime-injected baghouse (BH-2) and exit through SV-BH-ROTARY.

Pollutant	Limit	Sept. 2013 test RO condition 1: dross & worst case flux Sets flux limit	Equipment	Sept. 2013 test RO condition 2: high BH temperature & worst case scrap Sets temperature limit
1. PM	0.40 lb/ton of feed/charge[1]	0.088 (0.26 lbs/ hr, 22% limit)	EUROTMELT	0.12 (0.43 lbs/hr 29% limit)
2. PM	5.7 tpy		EUROTMELT	Annual emissions to be calculated based upon worst case scrap emission factor 0.12 lbs PM per ton of feed.
3. PM 10	1.7 lb/hr	0.41(24% limit)	EUROTMELT	1.6 ((94% limit)
4. PM 2.5	1.7 lb/hr		EUROTMELT	
5. PM 2.5	5.7 tpy		EUROTMELT	
6. HCl	1.5 lb/hr	0.047 (0.016 lbs/ton, 3% limit)	EUROTMELT	0.97 (0.26 lbs/ton, 65% limit)
7. HCl	5.0 tpy		EUROTMELT	Annual emissions to be calculated based upon worst case scrap emission factor 0.26 lbs. of HCl per ton of feed.

Pollutant	Limit	Sept. 2013 test RO condition 1: dross & worst case flux Sets flux limit	Equipment	Sept. 2013 test RO condition 2: high BH temperature & worst case scrap Sets temperature limit
8. VOC	0.30 lb/ton of feed/charge[1]	Not tested	EUROTMELT	Not tested
9. VOC	1.5 lb/hr	Not tested	EUROTMELT	Not tested
10. VOC	2.7 tpy	Not tested	EUROTMELT	Not tested
11. HF	1.0 lb/hr	0.0088 (0.0029 lbs/ ton, 1% limit)	EUROTMELT	0.023 (0.0063 lbs/ ton, 2% limit)
12. HF	1.5 tpy		EUROTMELT	Annual emissions to be calculated based upon worst case scrap emission factor 0.0063 lbs. of HF per ton of feed.

FG-MACT-RRR (EU-RV1MELT, EU-RV2MELT, EU-ROTMELT)

An existing secondary aluminum processing facility that is (or is part of) an area source of HAPs.

Three 45,000 SCFM high temperature lime-injected baghouses (RV2-BH-1 (idle), RO-BH-2, and RV1-BH-3)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Dioxins and Furans (D/F)	2.1×10^{-4} gr of D/F TEQ per ton of feed/charge[1, 2]	Test protocol *	EURV1MELT EURV2MELT EUROTMELT	SC V.1	40 CFR 63.1505 (i)(3)

[1] *feed/charge* refers to the total weight of material, including molten aluminum, clean charge, scrap, dross, flux, and alloying agents that enter the furnace, as defined by 40 CFR 63.1503.
[2] The D/F emission limit (SC I.1) applies to each affected emission unit (EURV1MELT, EURV2MELT, and EUROTMELT) separately.
*Test protocol shall specify averaging time.

1 pound = 7,000 grains. 1 grain = 64.799 milligrams = 0.06479891 grams.

2.1 E-04 grains per ton = (2.1 E-04 grains per ton) * (1 pound / 7000 grains) = 3×10^{-8} pounds of D/F TEQ per ton of feed/charge

Feed: molten Al, scrap, clean charge, dross, flux, alloying agents, etc. (MACT feed all materials including molten aluminum)

D/F emissions based upon Sept 24-26, 2013 stack test

RV1 → 4.9 E-06 grains per ton (2% limit)

RO → 9.4 E-06 grain per ton (4% limit) worst case flux with dross

RO ➔ 1.5 E-04 grain per ton (70% limit) worst case scrap with high baghouse temperature

RV1 (De-ox) operating parameters

RV1 -Sep 2013 stack test material charge (excluding molten Al from RO): 47,148 lbs. / 3-hr = 15,716 lbs. / hr.
Limit: maximum 47,148 lbs. / 3-hr = **15,716** lbs. / hr.

Max flux: 209.68 pounds per ton of charge or **10.48**% of charge

Min. lime injection: **34** lbs. / hr.

Max RV1 BH3 MACT temperature = 157 + 25 = **182** °F. This is also permit limit.

RO (Alloy) operating parameters

Maximum charge: 26,139 pounds of charge materials per 3-hr. worst case scrap with high BH temperature

Max charge = 22,977 lbs of charge per 3-hr cycle worst case flux with dross
RO limit = **26,139** pounds of charge per cycle / batch

Flux limit: 4,350 lbs. / batch worst case flux with dross, 3,040 lbs. / batch worst case scrap, high BH temp

Limit: (4,350 lbs / batch worst case flux) / (22,977 lbs. / batch charge worst case flux) = 379 lbs. of flux per ton of feed **18.9** %

Min. lime injection: 37 lbs./hr. worst case scrap with high BH temperature, 39 lbs. / hr. worst case flux with dross
Limit = **39** lbs. lime / hour.

Max RO BH2 MACT temperature = 191 + 25 = **216** °F. This is also permit limit.

2011 Fee Invoice

On February 25, 2011, Continental paid $4,756.50 (Invoice No. 674489) as Category I source. $4,506.50 was refunded keeping $250.00 as fee for Category III source. Per Ms. Lynn Fiedler's (Asst. AQD Chief) letter dated June 16, 2011, of $4,756.50 (Cat I: $4,485 facility fee plus $135.75 [3 * 45.25] NOx fee plus $135.75 [3 * 45.25] VOC fee) full payment, $4,506.50 is to be refunded. i.e., Continental is dropped from Category I ($4,756.50) to Category III ($250.00).

Based upon my recommendation, RO bags and RV1 bags are shaken enough to reduce pressure drop and maintain sufficient lime and carbon cake for acid and odor gases control.

PTI No. 504-96F Compliance (both RO & RV1 operating and RV2 on long-term idle)

EMISSION UNIT SUMMARY

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EUHOLDING	30,000 lb capacity Group 2 holding furnace. Holds only clean charge and performs fluxing using only nonreactive, non-HAP-containing/non-HAP-generating gases or agents. 4 natural gas-fired burners; 8 MMBtu/hr total heat input capacity	FGFACILITY
EURV1PROCHTR	Reverberatory Furnace #1 (De-Ox) Hearth Chamber and Process Heater; 2 natural gas-fired burners each at 10 MMBtu/hr (20 MMBtu/hr total); 23,500 ACFM	FGRV1 FGFACILITY
EURV1MELT	Reverberatory Furnace #1 (De-Ox) Raw Material Charging and Melting. 45,000 SCFM High Temp lime-injected Baghouse (BH-3)	FGRV1 FGMACTRRR FGFACILITY
EURV1POUR	Reverberatory Furnace #1 Pouring. 2 uncontrolled tapping line stacks	FGRV1 FGFACILITY
EURV2PROCHTR	Reverberatory Furnace #2 (Alloy) Hearth Chamber and Process Heater. 2 natural gas-fired burners each at 10 MMBtu/hr (20 MMBtu/hr total). 23,500 ACFM	FGRV2 FGFACILITY
EURV2MELT	Reverberatory Furnace #2 (Alloy) Raw Material Charging and Melting. 45,000 SCFM High Temp lime-injected Baghouse (BH-1)	FGRV2 FGMACTRRR FGFACILITY
EURV2POUR	Reverberatory Furnace #2 Pouring. One uncontrolled tapping line stack	FGRV2 FGFACILITY
EUROTMELT	45,000 SCFM High Temp lime-injected Baghouse BH-2	FGROTARY FGMACTRRR FGFACILITY
EUROTARYPOUR	Rotary Furnace sow pouring or molten metal transfer. Some emissions from launder chutes to hood for BH-2. Also, in-plant emissions	FGROTARY FGFACILITY
EUSCRAPSHREDDER	Scrap shredder loading, shredding and preparation by sizing, and scrap transfer by conveyor to storage bins. 20,000 pounds per hour capacity. Emissions controlled by cyclone and baghouse in series, and vent inside the building.	FGFACILITY

FLEXIBLE GROUP SUMMARY

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGRV1	Reverberatory Furnace #1 produces De-Ox products. FGRV1 consists of two natural gas-fired burners, raw material charging and melting, and a pouring operation. Combustion products from the burners and hearth chamber emissions are exhausted to the atmosphere through SVHTRRVRB#1. Raw material charging and melting is hooded and emissions are vented to a lime-injected baghouse (BH-3) and exit through SVBHRVRB#1. The pouring operation has two uncontrolled tapping line stacks (SVTL1 and SVTL2).	EURV1PROCHTR EURV1MELT EURV1POUR
FGRV2	Reverberatory Furnace #2 produces Alloy products. FGRV2 consists of two natural gas-fired burners, raw material charging and melting, and a pouring operation. Combustion products from the burners and hearth chamber emissions are exhausted to the atmosphere through SVHTRRVRB#2. Raw material charging and melting is hooded and emissions are vented to a lime-injected baghouse (BH-1) and exit through SVBHRVRB#2. The pouring operation has one uncontrolled tapping line stack (SVTL3).	EURV2PROCHTR EURV2MELT EURV2POUR
FGROTARY	Rotary Furnace produces aluminum sow, and molten metal for transfer to other in-plant furnaces. FGROTARY consists of a natural gas-fired burner, raw material charging and hot dross processing, sow pouring and molten metal transfer operations. Both melting and combustion emissions are vented to a lime-injected baghouse (BH-2) and exit through SVBHROTARY.	EUROTMELT EUROTARYPOUR
FGMACTRRR	An existing secondary aluminum processing facility that is (or is part of) an area source of HAPs	EURV1MELT EURV2MELT EUROTMELT
FGFACILITY	All equipment at the facility including equipment covered by other permits, grand-fathered equipment and exempt equipment.	

FG-RV1, Deox, BH-3

DESCRIPTION: Reverberatory Furnace #1 produces De-Ox products. FGRV1 consists of two natural gas-fired burners each with a heat input of 10 MMBtu (total 20 MMBtu capacity), raw material charging and melting, and a pouring operation. Combustion products from the burners and hearth chamber emissions are exhausted to the atmosphere through SVHTRRVRB#1. The pouring operation has two uncontrolled tapping line stacks (SVTL1 and SVTL2).

Emission Units: EURV1PROCHTR, EURV1MELT, EURV1POUR

POLLUTION CONTROL EQUIPMENT: Raw material charging and melting is hooded and emissions are vented to a 45,000 SCFM high temp lime-injected baghouse (BH-3) and exit through SVBHRVRB#1.

PTI No. 504-96F, FG-RV1, I. Emission Limits (RV1, Deox, BH-3)

Pollutant	Limit	Sept 24-26,2013, RV1 BH3 baghouse stack test	June 12-13, 2014, RV1 NG fired furnace hearth stack No baghouse	Total RV1 = BH3 + Hearth
1. PM	0.40 lb/ton[1] of feed to sidewell	0.024 lbs./ton (0.18 lb./hr.; 6% limit)	0.15 lbs./ton (1.14 lbs./hr.)	0.174 lbs./ton (43.5% limit)
2. PM	4.8 tpy [1]	**Based upon CY 2017, data, 0.50 tons / 12-mo emitted (10.4% limit)**		To be calculated based upon 0.174/ton emission factor
3. PM 10	2.0 lb/hr	0.29 (14% limit)		
4. PM 2.5	1.4 lb/hr	0.29 (21% limit)		
5. PM 2.5	4.8 tpy [1]			
6. HCl	0.40 lb/ton[1] of feed to sidewell	0.10 lbs./ton (25% limit)	0.012 lbs./ton	0.112 lbs./ton (28% limit)
7. HCl	1.95 lb/hr	0.81 lbs./hr. (41% limit)	0.092 lbs./hr.	0.902 lbs./hr. (46% limit)
8. HCl	4.68 tpy [1]	**Based upon CY 2017 data, 2.09 tons / 12-mo emitted (40% limit)**		To be calculated based upon 0.112 lbs./ton emission factor
9. VOC	0.30 lb/ton[1] of feed to sidewell	Not tested		
10. VOC	1.5 lb/hr	Not tested		
11. VOC	3.6 tpy [1]	Not tested		
12. HF	1.0 tpy [1]	0.010 lbs. / hr. 0.0014 lbs./ton **Based upon CY 2017 data, 0.0297 tons / 12-mo emitted (3% limit)**	4.9 E-03 or 0.0049 lbs./ton 0.036 lbs./hr.	0.0063 lbs./ton (0.046 lbs./hr.) Annual emissions to be calculated based upon 0.0063/ton emission factor

PTI No. 504-96F, FG-RV1, II. Material Limits (RV1, Deox, BH-3)

FG-RV1,II.1: Total charge of materials excluding molten aluminum

RV1 BH3-Sep 2013 stack test material charge (excluding molten Al): 47,148 lbs. / 3-hr = 15,716 lbs. / hr.

Limit: maximum **47,148 lbs. / 3-hr = 15,716 lbs. / hr.**

Note: Molten aluminum does not need be counted as charge because emissions associated with it are already accounted for in RO batch. Normally, molten aluminum metal is charged directly to hearth but there may be cases (e.g., equipment problem) molten metal could be charged to the sidewell

Operator gets system warnings if charged more than 47,148 lbs. / 3-hr: **"This will cause furnace limit to exceed..."** Software is used to keep track of charging.

RV1 charge (lbs./3-hr): **maximum charge** = 47,132 (Jan-June 2016) = 47,134 (Jul-Dec 2016); **average (mean) charge** = 27,975 (Jan-June 2016) = 28,284 (Jul-Dec 2016); **median charge** = 28,639 (Jan-June 2016) = 28,716 (Jul-Dec 2016); **charge Std. Deviation** = 9,814 (Jan-June 2016) = 10,653 (Jul-Dec 2016).

CY 2016: **% time charge exceedance** = 0% time exceeded charge limit (47,148 lbs. / 3-hr)

RV1 charge (lbs./3-hr): **maximum charge** = 47,050 (Jan-June 2017) = 47,131 (Jul-Dec 2017); **average (mean) charge** = 30,749 (Jan-June 2017) = 34,397 (Jul-Dec 2017); **median charge** = 32,249 (Jan-June 2017) = 36,033 (Jul-Dec 2017); **charge Std. Deviation** = 10,298 (Jan-June 2017) = 9,694 (Jul-Dec 2017).

CY 2017: **% time charge exceedance** = 0% time exceeded charge limit (47,148 lbs. / 3-hr)

FG-RV1,II.2: Maximum flux usage

Sep 2013 stack test flux charge: 4,943 lbs. / 3-hr.
(4,943/47,148) * 2000 lbs./ ton = 2 09.68 lbs. flux per ton of scrap charge = **10.48% ≈ 10.5%** of charge is flux

Limit: maximum 209.68 pounds of flux per ton of scrap charge = max **10.48% ≈ 10.5%**
Feed = all materials except molten metal.

Maximum limit of **10.48**% flux rate (210 lbs. of flux limit per ton of scrap charge) routinely exceeded in CY 2015. Often up to 20% flux was used based upon 3-hour block averaging. AQD issued July 25, 2015, Notice of Violation (VN) for routinely exceeding the flux limit. After implementing a software solution, in CY 2016, RV1 never exceeded the flux limit (10.48%). On the computer screen, an operator gets warning of flux exceedance and also suggestion as to how much more flux can be added within the permit limit.

RV1 flux (%): **maximum flux** = 10.48% (Jan-June 2016) = 10.5% (Jul-Dec 2016); **average (mean) flux** = 5.35% (Jan-June 2016) = 7.17% (Jul-Dec 2016); **median flux** = 5.35% (Jan-June 2016) = 8.04% (Jul-Dec 2016); **flux Std. Deviation** = 3.05 (Jan-June 2016) = 3.28 (Jul-Dec 2016).

CY 2016 **%-time flux exceedance** = 0% time exceeded flux limit (RV1 limit: 10.5%)

RV1 flux (%): **maximum flux** = 10.48% (Jan-June 2017) = 10.48% (Jul-Dec 2017); **average (mean) flux** = 7.34% (Jan-June 2017) = 7.22% (Jul-Dec 2017); **median flux** = 8.27% (Jan-June 2017) = 7.59% (Jul-Dec 2017); **flux Std. Deviation** = 3.31 (Jan-June 2017) = 2.68 (Jul-Dec 2017).

CY 2017 **%-time flux exceedance** = 0% time exceeded flux limit (RV1 limit: 10.5%)

FG-RV1,II.3: Gaseous chlorine prohibition

Continental does not use gaseous chlorine in FG-RV1. The permit prohibits its use.

PTI No. 504-96F, FG-RV1, III. Process / Operational Restrictions (RV1, Deox, BH-3)

FG-RV1,III.1: SSMP work-practice

Work practice/pollution prevention measures documented in the System Startup, Shutdown, and Malfunction Plan (SSMP). AQD received an updated plan on December 18, 2013, along with Notification of Compliance Status (NCS). Continental operates the plant according to SSMP and OM&M plan submitted with NCS. The updated plan was required as a result of Feb 2013 VN and Sep 2013 stack tests.

FG-RV1,III.2: Damper

Damper closes automatically when hearth door is opened. This closure happens with mechanical assistance.

FG-RV1,III.3: Minimum 34 lbs. of lime / hour lime injection.

RV1 BH3 lime limit: minimum **34 lbs. of lime / hr**.

Weekly logs of lime addition (both RV1 & RO) are present. 40-50 lbs. per hour lime is injected into RV1-BH3. Additional 15-20 lbs. / hour mixture of 50% carbon and 50% lime is injected (one half of carbon injection system feed rate 30-40 lbs. / hour). 8 bags (8 bags * 50 pounds / bag = 400 pounds) of lime is added to RV1 lime feeder. i.e., additional 7-10 pounds per hour lime is injected via carbon feeder.

FG-RV1,III.4: Max. RV1 BH3 inlet temperature - **182** °F MACT 3R limit

Limit: max. RV1 BH3 inlet temperature = 157 °F Sep 2013 stack test ➔ 157 + 25 = **182** °F MACT 3R limit.

The temperature can be monitored on NESHAP system. Usual baghouse inlet temperature is 100-150 °F. Dilution air is added to both RV1 and RO exhaust gases using damper control based upon baghouse inlet temperature.

About February 2017, Continental installed a centrifuge to remove oil from turnings. This removal oil from scrap should help control temperature exceedances (182 °F). It expected to help control odor.

RV1 Temperature T (°F): **maximum** T = 199 (Jan-June 2016) = 199 (Jul-Dec 2016); **average (mean)** T = 117 (Jan-June 2016) = 127 (Jul-Dec 2016); **median** T = 115 (Jan-June 2016) = 131 (Jul-Dec 2016); T **Std. Deviation** = 30 (Jan-June 2016) = 26 (Jul-Dec 2016).

0.35% time (Jan-June 2016) and 0.49% time (Jul-Dec 2016) exceeded T limit (182 °F)

RV1 Temperature T (°F): **maximum** T = 222 (Jan-June 2017) = 190 (Jul-Dec 2017); **average (mean)** T = 122 (Jan-June 2017) = 133 (Jul-Dec 2017); **median** T = 134 (Jan-June 2017) = 135 (Jul-Dec 2017); T **Std. Deviation** = 37 (Jan-June 2017) = 31 (Jul-Dec 2017).

2.9% time (Jan-June 2017) and 0.35% time (Jul-Dec 2017) exceeded T limit (182 °F)

FG-RV1,III.5: Scrap Inspection

Scrap Inspection: A lab sample is taken and scrap is rejected if scrap is unacceptable. Visual inspection is also conducted. Also, scrap is inspected for radioactive materials.

FG-RV1,III.6: Molten metal level (liquid seal)

Molten metal level is maintained above 18 inches using a laser level gauge. Usual level is 20-30 inches. Flux is added only in sidewell. Molten metal is pumped (reactive flux and not cover flux) to maintain uniform temperature and transfer heat. Molten metal liquid level seal prevents sidewell emissions mixing into the hearth, which is uncontrolled (i.e. no baghouse). Laser gauge is present to detect molten liquid level. Molten metal liquid seal prevents pollutants laden gas from migrating to hearth.

Higher amount of molten metal can store more heat ($Q = m C_p \Delta T$) that can prevent freezing. Hence, best operating practices require Continental to maintain molten metal at highest level. All laser measurements are from the top (overflow level); lower reading means more molten metal in the pump well. Continental must maintain higher level for quality reasons.

FG-RV1,III.7: Only molten metal to hearth

Molten aluminum from RO (not toll product sow) is charged only to hearth of RV1. Hence, RO augments RV1 production capacity. Toll products may be added to RV1 as well depending upon customer requests.

FG-RV1,III.8: Sidewell capture device

Continental inspects capture and ventilation system once per month. In addition Industrial Accessories Company (IAC) inspects the entire system (baghouse leak detection [Triboguard II model 4002 Bag Leak Detectors], lime & carbon feeders, alarm systems, ducts, hoods, ventilation, emission capture, fans and blowers, belts, structural integrity of components, corrosion, dye check on bags, thermocouples [replace if necessary], baghouse shaker mechanisms, fans, electrical systems, magnehelic pressure gauges [calibrated using a monometer], lime and carbon injection, vibration to detect equipment problems / maintenance issues, etc.) once per year.

Continental's electrician tests thermocouples every month and replaces them if out of calibration.

PTI No. 504-96F, FG-RV1, IV. Design / Equipment Parameters (RV1, Deox, BH-3)

FG-RV1,IV.1: Baghouse is operated properly.

RV1 BH3: Sep 2013 stk tst ΔP = 2 – 4 inches of water. RV1 BH3 lime limit: minimum 34 lbs. lime / hr.

Normally bags are operated at 2-4 inches of water pressure drop (ΔP). 40-50 pounds per hour lime injected using RV1 lime feeder. Additional lime comes from carbon feeder (7-10 pounds per hour). Bag-shaking is limited to about 30 seconds (15 sec for summer and 30 sec for winter) and an operator cannot exceed this limit as it is automated. Winter months bags are shaken for longer time.

FG-RV1,IV.2: A temperature monitoring system is installed and operated properly.

Limit: max. RV1 BH3 inlet temperature = 157 °F Sep 2013 stk test ? 157 + 25 = **182** °F MACT 3R limit.

RV1 BH3 Temperature is monitored continuously using NESHAP system. Thermocouples are calibrated monthly and replaced if necessary.

See above for temperature data (FG-RV1,III.4).

FG-RV1,IV.3: RV1 BH3 high temperature alarm (**MACT limit 182 °F**).

RV1 BH3 high temperature alarm (MACT limit 182 °F). Alarm system is present. Monthly PM performed on thermocouple. Alarm set point is 182 °F.

FG-RV1,IV.4: ΔP indicators

RV1 BH3: Sep 2013 stack test ΔP = 2 – 4 inches of water. Magnehelic pressure gauge is present. Monthly PM performed on Magnehelic.

FG-RV1,IV.5: Free flowing lime

Lime and carbon feeders are inspected at least once per 2-hour by an operator for flow as a result of September 10, 2014, Violation Notice. MACT 3R requires inspection once per 8-hour when operating without problem(s). In addition, maintenance staff inspects once every 12 hours.

FG-RV1,IV.6: RV1 BH3 baghouse leak detection system

RV1 BH3 baghouse leak detection system is installed and operating properly. Monthly PM performed.

RV1 BH3: Triboguard II Model 4002, Auburn Systems, LLC of Danvers, MA 1-800-255-5008. triboflow@auburnsys.com

FG-RV1,IV.7: Weighing scale for materials to sidewell

Loader drives on to the scale to determine weight of the materials. Scale is calibrated once per month by Grand Rapids Metrology (616-538-7080). Outside truck scale is also calibrated. The scale calibrations may be regulated by State of Michigan, Dept. of Agriculture when used for commerce. The scale used for commerce was calibrated by State of Michigan (Dept. of Agri) about June 2016.

PTI No. 504-96F, FG-RV1, V. Testing / Sampling (RV1, Deox, BH-3)

FG-RV1,V.1: Continental completed PTI and MACT 3R required testing.

Sep 24-26, 2013 (sidewell RV1 BH3, MACT) and June 12-13, 2014 (hearth NG combustion, no BH, non-MACT) stack tests.

PTI No. 504-96F, FG-RV1, VI. Monitoring / Recordkeeping (RV1, Deox, BH-3)

FG-RV1,VI.1: Monthly calculations

Using MS Excel and other tools, the required monthly calculations are performed. The reports are kept. In addition, per AQD requests and advice, statistical analysis is performed all monitoring parameters.

FG-RV1,VI.2: PM, PM2.3, HCl & HF calculations

Using Sep 2013 and June 2014 stack test emission factors, materials usage and process information, the required emission rates (PM, PM2.5, HCl & HF) are calculated.

FG-RV1,VI.3: Materials description

Materials description (scrap, flux, etc.) and usage records are kept.

FG-RV1,VI.4: Minimum RV1 BH3 lime: **34** lbs. / hr.

Minimum RV1 BH3 lime: 34 lbs. / hr. Lime usage records are kept. Lime flow rate is calibrated using a bucket and a stop watch.

FG-RV1,VI.5: RV1 BH3 alarm

RV1 BH3 MACT max temperature = 157 + 25 = **182** °F. Alarm records are kept. The temperate records are submitted with Semi-annual Reports.

FG-RV1,VI.6: Reactive flux injection rate

Flux: max **209.68** lbs flux / ton scrap = max **10.48**% ≈ 10.50% 3-hr block average. Reactive flux usage rate records are kept. Continental exceeded 10.48% limit in CY 2015 and AQD issued July 2015 VN. Continental implemented a software solution that warns an operator of flux exceedance if added more than a calculated amount. No flux rate (10.48%) exceedance in CY 2016 & 2017.

See above FG-RV1, II.2 RV1 BH3 Leak detection system

FG-RV1,VI.7 & 8: Leak detection system is installed, and alarm incidents are recorded. Most dust alarms are false alarms.

RV1 BH3: Triboguard II Model 4002, Auburn Systems, LLC of Danvers, MA 1-800-255-5008. triboflow@auburnsys.com

FG-RV1,VI.9: BH maintenance

All baghouses are maintained properly. Dye tests were performed on December 14, 2017. Mr. Tyler Cunningham is one and only one US EPA Reference Method 9 certified Visible Emissions (VE) observer on site (PTI No. 504-96F, Appendix B, 5).

All bags in all baghouses (RO & RV1; not RV2-idle) are replaced about once per year. About November 2011, both RO and RV1 bags were replaced.

In 2015, all bags were replaced: RV1 bags about April 28 and RO bags about June 5, 2015. In 2017, all bags were replaced: RV1 bags about Jan 23 and RO bags about March 2017. In 2018, all bags were replaced: RV1 bags about February 2018 and RO bags about January 2018.

FG-RV1,VI.10: Molten liquid level

Molten liquid level is monitored using a laser gauge. Normal level is 20-30 inches. Molten metal seal (above the minimum level) prevents pollutants migration to hearth, which is uncontrolled (i.e., no baghouse).

Molten metal level is maintained close to 30 inches in order to have sufficient heat (m C_p ΔT) to melt scrap in sidewell. Molten metal is pumped to sidewell.

FG-RV1,VI.11: Hearth cleaning records

Hearth cleaning records are kept. Once in 4 hours, hearth is skimmed to reduce odor. Furnace skim logs are maintained.

FG-ROTARY, RO-BH-2

DESCRIPTION: Rotary Furnace produces aluminum sow and molten metal for transfer to other in-plant furnaces. FGROTARY consists of a 14 MMBtu/hr natural gas-fired burner, raw material charging and hot dross processing, sow pouring and molten metal transfer operations. Both melting and combustion emissions are vented to a lime-injected baghouse (BH-2) and exit through SVBHROTARY.

Emission Units: EUROTMELT, EUROTARYPOUR

POLLUTION CONTROL EQUIPMENT: Both melting and combustion emissions are vented to a 45,000 SCFM high temp lime-injected baghouse (BH-2) and exit through SVBHROTARY.

PTI No. 504-96F, FG-ROTORY, I. Emission Limits (RO, BH-2)

Pollutant	Limit	Sept. 2013 test RO condition 1: dross & worst case flux Sets flux limit	Equipment	Sept. 2013 test RO condition 2: high BH temperature & worst case scrap Sets temperature limit
1. PM	0.40 lb/ton of feed/charge[1]	0.088 (0.26 lbs/ hr, 22% limit)	EUROTMELT	0.12 (0.43 lbs/hr 29% limit)
2. PM	5.7 tpy	**Based upon CY 2017 records, 1.33 tons per 12-mo (23% limit)**	EUROTMELT	Annual emissions to be calculated based upon worst case scrap emission factor 0.12 lbs PM per ton of feed.
3. PM 10	1.7 lb/hr	0.41(24% limit)	EUROTMELT	1.6 (94% limit)
4. PM 2.5	1.7 lb/hr		EUROTMELT	
5. PM 2.5	5.7 tpy		EUROTMELT	
6. HCl	1.5 lb/hr	0.047 (0.016 lbs/ton, 3% limit)	EUROTMELT	0.97 (0.26 lbs/ton, 65% limit)
7. HCl	5.0 tpy	**Based upon CY 2017 records, 2.9 tons per 12-mo (58% limit)**	EUROTMELT	Annual emissions to be calculated based upon worst case scrap emission factor 0.26 lbs. of HCl per ton of feed.
8. VOC	0.30 lb/ton of feed/charge[1]	Not tested	EUROTMELT	Not tested
9. VOC	1.5 lb/hr	Not tested	EUROTMELT	Not tested
10. VOC	2.7 tpy	Not tested	EUROTMELT	Not tested
11. HF	1.0 lb/hr	0.0088 (0.0029 lbs/ ton, 1% limit)	EUROTMELT	0.023 (0.0063 lbs/ ton, 2% limit)

Pollutant	Limit	Sept. 2013 test RO condition 1: dross & worst case flux Sets flux limit	Equipment	Sept. 2013 test RO condition 2: high BH temperature & worst case scrap Sets temperature limit
12. HF	1.5 tpy	**Based upon CY 2017 records, 0.07 tons per 12-mo (4.7% limit)**	EUROTMELT	Annual emissions to be calculated based upon worst case scrap emission factor 0.0063 lbs. of HF per ton of feed.

PTI No. 504-96F, FG-ROTORY, II. Material Limits (RO, BH-2)

FG-ROTARY,II.1: RO charging limit (maximum): **26,139 lbs. / batch**.

RO charging limit (maximum): 26,139 lbs. / batch worst case scrap. Charge: 22,977 lbs. / batch worst case flux with dross.

Charge limit: **26,139 lbs. / batch** worst case scrap with high RO BH2 Temp (**limit**)

3-4 hours per batch. Normal batch size is about 22,000 pounds of scrap per batch not including other materials such as flux. Never exceed the limit of 26,139 lbs. / batch (Jan-Dec 2016). Highest amount of materials can be charged when RO is cleaned of scale build-up as its capacity is highest then. Salt wash is performed abut once in a couple of months to remove scale from inside walls of RO.

RO charge (per batch): **maximum charge** = 26,216 (Jan-June 2016) = 26,026 (Jul-Dec 2016); **average (mean) charge** = 21,794 (Jan-June 2016) = 22,196 (Jul-Dec 2016); **median charge** = 22,312 (Jan-June 2016) = 22,590, (Jul-Dec 2016); **charge Std. Deviation** = 2,735 (Jan-June 2016) = 2,974 (Jul-Dec 2016).

CY 2016: **%-time** exceedance: 0% time exceeded charge limit (26,139 lbs. / batch)

RO charge (per batch): **maximum charge** = 26,136 (Jan-June 2017) = 26,072 (Jul-Dec 2017); **average (mean) charge** = 21,659 (Jan-June 2017) = 17,594 (Jul-Dec 2017); **median charge** = 22,136 (Jan-June 2017) = 17,577, (Jul-Dec 2017); **charge Std. Deviation** = 2,375 (Jan-June 2017) = 2,586 (Jul-Dec 2017).

CY 2017: **%-time** exceedance: 0% time exceeded charge limit (26,139 lbs. / batch)

The same software as RV1 is installed to warn an operator of material charges and the limits.

FG-ROTARY,II.2: Feed limit 42,000 tons per year.

22,315 tons of scrap per 12-mo per CY 2017 records. This material does not include flux. Feed (includes all materials) limit is 42,000 tons per year. See also flux feed (FG-ROTARY,II.3).

FG-ROTARY,II.3: Max. flux 378.64 (≈**379**) lbs. of flux / ton of feed (**18.9** %)

Flux limit: 4,350 lbs. / batch worst case flux with dross, 3,040 lbs. / batch worst case scrap, high BH temp.

Limit: (4,350 lbs. flux / batch worst case flux) / (22,977 lbs. feed / batch worst case flux) = **max. 378.64 (≈379) lbs. of flux / ton of feed (18.9 %)**

RO flux (%): **maximum flux** = 18.897% (Jan-June 2016) = 18.898% (Jul-Dec 2016); **average (mean)** flux = 9.25% (Jan-June 2016) = 11.36% (Jul-Dec 2016); **median flux** = 9.10% (Jan-June 2016) = 9.87% (Jul-Dec 2016); **flux Std. Deviation** = 3.37% (Jan-June 2016) = 4.91 (Jul-Dec 2016).

CY 2016 **%-time** exceedance: 0% time exceeded flux limit (18.9% flux)

RO flux (%): **maximum flux** = 18.8% (Jan-June 2017) = 18.0% (Jul-Dec 2017); **average (mean)** flux = 11.59% (Jan-June 2017) = 10.87% (Jul-Dec 2017); **median flux** = 10.85% (Jan -June 2017) = 10.97% (Jul-Dec 2017); **flux Std. Deviation** = 3.69% (Jan-June 2017) = 3.11 (Jul-Dec 2017).

CY 2017 **%-time** exceedance: 0% time exceeded flux limit (18.9% flux)

FG-ROTARY,II.4: Gaseous chlorine is prohibited

Gaseous chlorine is not used.

PTI No. 504-96F, FG-ROTORY, III. Process / Operational Restrictions (RO, BH-2)

FG-ROTORY, III.1: SSMP & OM&M plans and stack test parameters.

Continental operates RO according work practice/pollution prevention measures documented in the System Startup, Shutdown, and Malfunction Plan (SSMP),facility OM&M plan and parameter values or ranges established by September 2013 and June 2014 stack tests.

FG-ROTORY, III.2: RO BH2 lime injection rate **minimum 39 lbs. lime / hr.**

RO BH2 lime injection rate (lbs. / batch) limit: minimum 37 lbs. / hr. worst case scrap and 39 lbs. /hr. worst case flux. RO BH2 limit: **minimum 39 lbs. lime / hr.**

40-50 pounds per hour lime is injected using the RO lime feeder. Additional amount of lime is injected using carbon feeder. Carbon feeder injects 30-40 pounds per hour mixture of lime (50%) and carbon (50%) into RV1 and RO baghouses (equal amounts). Hence, 15-20 pounds / hour of mixture is injected into RO baghouse; i.e. 7-10 lbs. / hour lime and 7-10 lbs. / hour carbon into RO baghouse. Carbon injection is required neither by PTI nor MACT 3R.

FG-ROTORY, III.3: RO BH2 MACT 3R temperature limit: **216 °F (max).**

RO BH2 MACT 3R temperature limit: **216 °F (max).**
155+25 = 180 °F worst case flux.
191+25 = 216 °F worst case scrap

Normally, RO is operated below 180 °F. Dilution air is added to both RV1 and RO exhaust gases using damper control based upon baghouse inlet temperature.

RO Temperature T (°F): **maximum T** = 227 (Jan-June 2016) = 235 (Jul-Dec 2016); **average (mean) T** = 177 (Jan-June 2016) = 166 (Jul-Dec 2016); **median T** = 185 (Jan-June 2016) = 178 (Jul-Dec 2016); **T Std. Deviation** = 34 (Jan-June 2016) = 38 (Jul-Dec 2016).

CY2016 **%-time** exceedance: 0.14% time (Jan-June 2016) and 0.70% time (Jul-Dec 2016) exceeded T limit (**216 °F.**)

RO Temperature T (°F): **maximum T** = 227 (Jan-June 2017) = 218 (Jul-Dec 2017); **average (mean) T** = 170 (Jan-June 2017) = 164 (Jul-Dec 2017); **median T** = 177 (Jan-June 2017) = 178 (Jul-Dec 2017); **T Std. Deviation** = 31 (Jan-June 2017) = 33 (Jul-Dec 2017).

CY2017 **%-time** exceedance:0.63% time (Jan-June 2017) and 0.07% time (Jul-Dec 2017) exceeded T limit (**216 °F.**)

FG-ROTORY, III.4:The facility Scrap Inspection Plan to meet applicable VOC requirements.

Continental operates both RO and RV1 according to the Scrap Inspection Plan. A lab sample of the batch is obtained for analysis.

FG-ROTORY, III.5: Capture device

RO furnace is equipped with a door that contains emissions during heating. At other times when door is open, a capture system captures pollutants emissions based upon visible emissions observations.

Continental inspects capture and ventilation system once per month. In addition Industrial Accessories Company (IAC) inspects the entire system (baghouse leak detection [Triboguard II model 4002 Bag Leak Detectors], lime & carbon feeders, alarm systems, ducts, hoods, ventilation, emission capture, fans and blowers, belts, structural integrity of components, corrosion, dye check on bags, thermocouples [replace if necessary], baghouse shaker mechanisms, fans, electrical systems, magnehelic pressure gauges [calibrated using a monometer], lime and carbon injection, vibration to detect equipment problems / maintenance issues, etc.) once per year.

PTI No. 504-96F, FG-ROTORY, IV. Design / Equipment Parameters (RO-BH-2)

FG-ROTORY, IV.1: install and operate RO-BH-2 properly

RO BH2 minimum lime: 39 lbs. lime/ hr. Maximum MACT 3R Temperature **216 °F**

RO Baghouse (BH2) is operated properly with required minimum lime injection and below 216 °F. RO-BH2 temperature exceedances occurred as stated above (FG-ROTORY, III.3).

Carbon: Although not required, carbon is injected for odor control (one half of 30-40 pounds / hour of mixture of carbon (50%) and lime (50%).

FG-ROTORY, IV.2: Continuously monitor and record temperature T

RO-BH2 - Maximum MACT Temperature **216 °F**. Temperature records

Temperature is continuously monitored. Thermocouples are calibrated or replaced if necessary. Monthly PM performed.

FG-ROTORY, IV.3: High temperature alarm

RO BH2 - Maximum MACT Temperature 216 °F. Alarm incidents.

High temperature alarm system is present (limit: **216 °F)**. RO temperature exceedances occurred as stated above (FG-ROTORY, III.3).

FG-ROTORY, IV.4:RO BH2 ΔP

Continental has equipped RO-BH2 with a Magneheilic pressure gauge (calibrated once per year using a manometer by a contractor) to measure pressure drop across the bags. Monthly PM performed.

FG-ROTORY, IV.5: verify free-flowing lime

If no ongoing problem (s), MACT 3R requires inspection of each feed hopper or silo at least once each 8-hour period and recording the results of each inspection.

Lime feeder is inspected at least once per 2-hour as a result of September 10, 2014, Violation Notice. MACT 3R requires inspection once per 8-hour.

FG-ROTORY, IV.6: RO BH2 - leak detection.

RO BH2 baghouse leak detection system is installed and operating properly.

RO BH2: Triboguard II Model 4002, Auburn Systems, LLC of Danvers, MA 1-800-255-5008. triboflow@auburnsys.com

FG-ROTORY, IV.7: Scale calibration

Loader drives on to the scale to determine weight of the materials. Scale is calibrated once per month by Grand Rapids Metrology (Dave Warner: 616-538-7080). If used for commerce, scale calibration may be regulated by State of Michigan, Dept. of Agri.

PTI No. 504-96F, FG-ROTORY, V. Testing / Sampling (RO-BH-2)

FG-ROTORY, V.1: Continental completed PTI and MACT 3R required testing.

September 24-26, 2013 (RO [Baghouse under two conditions: Condiltion1 - max. flux and Conditon2 - max. temperature & minimum required lime] and RV1 (sidewell Baghouse)), and June 12-13, 2014 (natural gas fired RV1 combustion / hearth stack – uncontrolled, i.e., no baghouse) stack tests.

Rotary furnace (RO) was tested under two conditions:

1. **Condition 1:** 100% dross with maximum flux. Sets flux limit.

2. **Condition 2:** worst case scrap (dirtiest and hence maximum temperature), maximum scrap feed rate, maximum baghouse temperature, minimum lime injection rate. Sets temperate limit.

PTI No. 504-96F, FG-ROTORY, VI. Monitoring / Recordkeeping (RO, BH-2)

FG-ROTORY, VI.1: Monthly calculations.

Using MS Excel and other tools, the required monthly calculations are performed.

FG-ROTORY, VI.2: Monthly calculations and emissions records (PM, PM2.5, HCl & HF).

Using Sep 2013 and June 2014 stack test emission factors, materials usage and process information, the emission rates are calculated.

FG-ROTORY, VI.3:

Charge: 22,977 lbs. / batch worst case flux with dross
Charge: 26,139 lbs. / batch worst case scrap with high BH2 Temp (limit)
Charge limit: **26,139 lbs. / batch**

RO BH2 minimum lime: 39 lbs. / hr. Max 378.64 (≈379) lbs. of flux / ton of feed (18.9 %)

For each batch, materials description (scrap, flux, dross etc.) and usage records are kept. All materials limits are met.

FG-ROTORY, VI.4: Lime usage

RO BH2 minimum lime: 39 lbs. / hr. Max 378.64 (≈379) lbs. of flux / ton of feed (18.9 %)

Lime usage records are kept. Lime flow rate is calibrated using a bucket and a stop watch.

40-50 pounds per hour lime is injected using the RO lime feeder. Additional amount of lime is injected using carbon feeder. Carbon feeder injects 30-40 pounds per hour mixture of lime (50%) and carbon (50%) into RV1 and RO baghouses (equal amounts). Hence, 15-20 pounds / hour of mixture is injected into RO baghouse; i.e. 7-10 lbs. / hour lime and 7-10 lbs. / hour carbon into RO baghouse. Carbon injection is required neither by PTI nor MACT 3R.

FG-ROTORY, VI.5: Baghouse temperature alarms.

RO BH2 MACT temp limit: 216 °F maximum. Alarm incidents.

Alarm records are kept. RO temperature exceedances occurred as stated above (FG-ROTORY, III.3)..

FG-ROTORY, VI.6: Reactive flux feed rate.

Limit: max. 378.64 (≈379) lbs. of flux / ton of feed (18.9 %) for each batch.

On a per batch basis reactive flux usage rate records are kept. No flux rate exceedance in CY 2016 and 2017. See above FG-ROTARY,II.3:

FG-ROTORY, VI.7 & 8: RO BH2 –leak detection system. Alarm system.

Leak detection system is installed and alarm incidents are recorded.

RO BH2 Triboguard II Model 4002, Auburn Systems, LLC of Danvers, MA
1-800-255-5008. triboflow@auburnsys.com

FG-ROTORY, VI.9: Appendix B RO – BH2 maintenance

Baghouses are maintained properly. Dye tests were performed on December 14, 2017. Mr. Tyler Cunningham is one and only one US EPA Reference Method 9 certified Visible Emissions (VE) observer on site (PTI No. 504-96F, Appendix B, 5).

All bags in all baghouses (RO & RV1; not RV2-idle) are replaced about once per year. About November 2011, both RO and RV1 bags were replaced.

In 2015, all bags were replaced: RV1 bags about April 28 and RO bags about June 5, 2015. In 2017, all bags were replaced: RV1 bags about Jan 23 and RO bags about March 2017. In 2018, all bags were replaced: RV1 bags about February 2018 and RO bags about January 2018.

PTI No. 504-96F, FG-ROTORY, VIII. Stack / Vent Restrictions (RO, BH-2)

Stack height is 85 feet (limit: min 80 ft.).

FG-MACTRRR, RV1-BH3, RO-BH-2 (RV2 – Idle and in disrepair)

DESCRIPTION: An existing secondary aluminum processing facility that is (or is part of) an area source of HAPs.

Emission Units: EURV1MELT, EURV2MELT, EUROTMELT

POLLUTION CONTROL EQUIPMENT: Three 45,000 SCFM high temp lime-injected baghouses (BH-1, BH-2, and BH-3)

PTI No. 504-96F, FG-MACTRRR, I. Emission Limits (RV1-BH3, RO-BH-2)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Dioxins and Furans (D/F)	2.1×10^{-4} gr of D/F TEQ per ton of feed/charge[1, 2]	Test protocol *	EURV1MELT EURV2MELT EUROTMELT	SC V.1	40 CFR 63.1505 (i)(3)
[1] *feed/charge* refers to the total weight of material, including molten aluminum, clean charge, scrap, dross, flux, and alloying agents that enter the furnace, as defined by 40 CFR 63.1503. [2] The D/F emission limit (SC I.1) applies to each affected emission unit (EURV1MELT, EURV2MELT, and EUROTMELT) separately. *Test protocol shall specify averaging time.					

Feed: molten Al, scrap, clean charge, dross, flux, alloying agents, etc. (MACT feed all materials)

D/F emissions based upon Sept 24-26, 2013 stack test

RV1 ➔ 4.9 E-06 grains per ton (2% limit)

RO ➔ 9.4 E-06 grain per ton (4% limit) worst case flux with dross

RO ➔ 1.5 E-04 grain per ton (70% limit) worst case scrap with high baghouse temperature

RV1 (De-ox) operating parameters

RV1 -Sep 2013 stack test material charge (excluding molten Al): 47,148 lbs. / 3-hr = 15,716 lbs. / hr.
Limit: maximum 47,148 lbs. / 3-hr = 15,716 lbs. / hr.

Min. lime injection: 34 lbs. / hr.

Max RV1 BH3 MACT temperature = 157 + 25 = **182 °F.** This is also permit limit.

RO (Alloy) operating parameters

Maximum charge: 26,139 pounds of charge materials per 3-hr. worst case scrap with high BH temperature
Max charge = 22,977 lbs of charge per 3-hr cycle worst case flux with dross
RO limit = 26,139 pounds of charge per cycle / batch

Flux limit: 4,350 lbs. / batch worst case flux with dross, 3,040 lbs. / batch worst case scrap, high BH temp

Limit: (4,350 lbs / batch worst case flux) / (22,977 lbs. / batch charge worst case flux) = 379 lbs of flux per ton of feed **18.9** %

Min. lime injection: 37 lbs/hr worst case scrap with high BH temperature, 39 lbs / hr worst case flux with dross
Limit = 39 lbs. lime / hour.

Max RO BH2 MACT temperature = 191 + 25 = **216** °F. This is also permit limit.

PTI No. 504-96F, FG-MACTRRR, II. Material Limits (RV1-BH3, RO-BH-2, RV-Idle and in disrepair)

No material limits.

PTI No. 504-96F, FG-MACTRRR, III. Process Operational Restrictions (RV1-BH3, RO-BH-2, RV-Idle and in disrepair)

FG-MACTRRR, III.1: Operating, Maintenance and Monitoring plan (OM&M) for each unit (RV1 and RO; RV2-idle)

Both RO and RV1 are operated according to OM&M plans.

FG-MACTRRR, III.2: Labels.

Labels are installed and inspected once per month. Both RO and RV1 are Group1 MACT 3R furnaces.

FG-MACTRRR, III.3: Capture systems

Capture systems for RV1 and RO are installed and operated properly.

Continental inspects capture and ventilation system once per month. In addition Industrial Accessories Company (IAC) inspects the entire system (baghouse leak detection [Triboguard II model 4002 Bag Leak Detectors], lime & carbon feeders, alarm systems, ducts, hoods,

ventilation, emission capture, fans and blowers, belts, structural integrity of components, corrosion, dye check on bags, thermocouples [replace if necessary], baghouse shaker mechanisms, fans, electrical systems, magnehelic pressure gauges [calibrated using a monometer], lime and carbon injection, vibration to detect equipment problems / maintenance issues, etc.) once per year.

FG-MACTRRR, III.4: Weight scale

Weight scale is installed and operating properly.

Loader drives on to the scale to determine weight of the materials. Scale is calibrated once per month by Grand Rapids Metrology (Dave Warner: 616-538-7080).

FG-MACTRRR, III.5: Bag leak detection systems

Bag leak detection systems are installed and operating properly. About less than 1% of operating time (excluding false alarms) alarm system sounds.

Triboguard II Model 4002, Auburn Systems, LLC of Danvers, MA
1-800-255-5008. triboflow@auburnsys.com

PTI No. 504-96F, FG-MACTRRR, IV. Design / Equipment Parameters (RV1-BH3, RO-BH-2, RV-Idle and in disrepair)

FG-MACTRRR, IV.1: Scale and calibration

Loader drives on to the scale to determine weight of the materials. Scale is calibrated once per month by Grand Rapids Metrology (Dave Warner: 616-538-7080). Outside truck scale is also calibrated. If used for commerce, scale calibrations may be regulated by State of Michigan, Dept. of Agri.

PTI No. 504-96F, FG-MACTRRR, V. Testing / Sampling (RV1-BH3, RO-BH-2, RV-Idle and in disrepair)

FG-MACTRRR, V.1 & 2: dioxin / furan (D/F)

September 24-26, 2013 stack tests for D/F (RV1 & RO; RV2 – idle and not tested)

Sep 2013 stack tests established operating parameters for both RO and RV1: maximum production rates, maximum fluxing rates, maximum baghouse temperatures, baghouse pressure drop ranges, minimum lime injection rates, etc.

PTI No. 504-96F, FG-MACTRRR, VI. Monitoring / Recordkeeping (RV1-BH3, RO-BH-2, RV-Idle and in disrepair)

FG-MACTRRR, VI.1 Emissions and operating information

Continental is monitoring and recording NESHAP / MACT 3R parameters, operating information. Emissions calculations are performed.

FG-MACTRRR, VI.2 Corrective actions

Prompt corrective actions are taken and deviations and attendant corrective actions are recorded.

FG-MACTRRR, VI.3 OM&M plan

OM&M plan is present.

Once per year all bags are replaced and once per quarter bags are inspected.

See above for bag replacement (FG-ROTORY, VI.9)

Continental inspects capture and ventilation system once per month. In addition Industrial Accessories Company (IAC) inspects the entire system (baghouse leak detection [Triboguard II model 4002 Bag Leak Detectors], lime & carbon feeders, alarm systems, ducts, hoods, ventilation, emission capture, fans and blowers, belts, structural integrity of components, corrosion, dye check on bags, thermocouples [replace if necessary], baghouse shaker mechanisms, fans, electrical systems, magnehelic pressure gauges [calibrated using a monometer], lime and carbon injection, vibration to detect equipment problems / maintenance issues, etc.) once per year.

FG-MACTRRR, VI.4 capture system

RV1 sidewell is equipped with a capture system. It is operating properly based upon visible emissions observations. RV1 hearth is uncontrolled; i.e. no baghouse.

RO furnace is equipped with a door that contains emissions during heating. At other times when door is open, a capture system captures pollutants. It is operating properly based upon visible emissions observations.

FG-MACTRRR, VI.5 Weight scale

Loader drives on to the scale to determine weight of the materials. Scale is calibrated once per month by Grand Rapids Metrology (Dave Warner: 616-538-7080). If used for commerce, scale calibration may be regulated by State of Michigan, Dept. of Agri.

NESHAP / MACT 3R required accuracy is ±1%.

FG-MACTRRR, VII. Reporting 1-6

NESHAP / MACT 3R required records are maintained and available for inspection. Also, copies of such records are provided upon request. Notification of Compliance Status Report submitted after completing September 2013 stack tests. Start-up, shutdown and malfunction plan is present. Semi-annual (Jan-June and July-Dec) reports are submitted. All required records and reports are maintained.

FG-FACILITY

DESCRIPTION: All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment

POLLUTION CONTROL EQUIPMENT: N/A

PTI No. 504-96F, FG-FACILITY, I. Emission Limits

1. Each Individual HAP: Less than 9.0 tpy

2. Aggregate HAPs: Less than 22.5 tpy

4.42 tons of HAPs per year (CY 2016). 4.87 tons of HAPs per year (CY 2017)

HAP emission factors used are:

1. RO HF = 0.0063 pounds per ton of scrap
2. RO HCl = 0.26 pounds per ton of scrap
3. RV1 HF = 0.0014 pounds per ton of scrap
4. RV1 HCl = 0.1 pounds per ton of scrap

PTI No. 504-96F, FG-FACILITY, II. Material Limits

FG-FACILITY,II. 1 & 2:

Sidewells (RV1 & RV2) material limit: 54,000 tons per year

Based upon CY 2016 records, RO processed 19,998 and RV1 processed 38,025 tons of materials per year (CY2016).

Based upon CY 2017 records, RO processed 22,315 and RV1 processed 41,837 tons of materials per year (CY2017). CY2017 Total = 64,154 tons of materials per year.

PTI No. 504-96F, FG-FACILITY, III. Process / Operational Restrictions

FG-FACILITY,III. 1 & 2:

System Startup, Shutdown, and Malfunction (SSMP), Operation, Maintenance, and Monitoring (OM&M P) and Scrap Inspection (SIP) plans are implemented for all processes: RO, RV1, scrap process.

Redefining operating parameters requires PTI and NESHAP / MACT 3R testing.

PTI No. 504-96F, FG-FACILITY, VI. Monitoring / Recordkeeping

FG-FACILITY, VI. 1, 2 & 3:

The required HAP calculations are performed and records are maintained. The scrap is used according to the inspection plan.

4.42 tons of HAPs per year (CY 2016). 4.87 tons of HAPs per year (CY 2017).

PTI No. 504-96F, FG-FACILITY, VII. Reporting

FG-FACILITY, VII. 1:

AQD reserves its right to require emissions calculations and records in a format acceptable to AQD for all process such RO, RV1, etc. AQD may require monthly summary reports using MS Excel.

All summary calculations are performed using MS Excel statistical functions per AQD advice.

Conclusion

AQD issued violation notices (VNs): February 5, 2013 (for failure to comply with NESHAP / MACT RRR / MACT 3R, 40 CFR, Part 63, Subpart RRR [Secondary Aluminum Production NESHAP]), September 10, 2014 (for failure to operate RO lime feeder), July 27, 2015 (for routinely exceeding flux usage limit of 209.68 pounds of flux per ton of scrap charge (i.e. 10.5%)). All VNs are resolved. Odor problems have substantially reduced and Continental is making good faith efforts to control odor in consultation with AQD. Continental is in compliance with the permit and NESHAP / MACT 3R.

NAME D Marshall DATE 04/16/2018 SUPERVISOR Joyce