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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-1977D
Plant ID No.: 035-00006
Applicant: AL REC, LLC (AL REC)
Facility Name: Millwood Facility
Location: Millwood, Jackson County
SIC Code: 3341
NAICS Code: 331314
Application Type: Modification
Received Date: May 9, 2012
Engineer Assigned: Joe R. Kessler
Fee Amount: \$3,500
Date Received: \$2,000 (May 11, 2012)
\$1,500 (June 21, 2012)
Complete Date: June 21, 2012
Due Date: September 19, 2012
Applicant Ad Date: May 17, 2012
Newspaper: *The Jackson Herald*
UTM's: Easting: 427.24 km Northing: 4,306.18 km Zone: 17
Description: Modification submitted as a result of Consent Order CO-R34-E-2012-04 to primarily increase annual aggregate throughput of the RTF's. AL REC has also included updates/clarifications on facility equipment and plant layout.

The Millwood Facility was built in 1990 by First Mississippi Corporation and operated under the name of Plasma Processing Incorporated (PPI). The plant was permitted under R13-1235 and began operation in February 1991. The facility consisted of two (2) rotary dross furnaces, an aluminum scrap storage area, a dross storage building, a gas-fired sidewell melter/holder, and a sowing out area. A baghouse controlled the two rotary furnaces, the dross storage building, and the sidewell melter/holder. The following details the substantive permitting history of the facility:

- On May 26, 1992 PPI was issued a modification permit (R13-1446) to add a baghouse on the NMP cooler and subsequently lower emissions. This permit superceded and replaced R13-1235.
- On July 10, 1992 PPI was issued a modification permit (R13-1490) to add a crusher. This permit was issued to be applicable concurrently with R13-1446.

- On September 17, 1993 PPI was issued a modification permit (R13-1624) to add a rotary kiln, cooler, and screener. This permit consolidated the requirements under the two active permits and, therefore, superceded and replaced R13-1446 and R13-1490.
- On July 11, 1996 PPI was issued a modification permit (R13-1977) to incorporate revised emission limits from Consent Order CO-R7-96-13. This permit superceded and replaced R13-1624.
- PPI closed the facility in September 1996 and sold the plant to Philips Metals Services (Philips) in 1997. Philips never restarted production but did, however, periodically perform maintenance on equipment at the facility to ensure its operational capacity. They also maintained the plant's Certificate to Operate (CTO).
- On December 19, 2003 Central Industrial Maintenance, Inc. (dba as AL REC, LLC) purchased the facility and began limited operation in 2005 under the authority of R13-1977.
- On December 13, 2007, AL REC was issued R13-1977A to: (1) switch the fuel source for the Rotary Tilting Furnaces (RTF) from plasma/air to natural gas/pure oxygen, (2) remove the PGP kiln, PGP screen, and NMP crusher/screen, (3) allow the NMP Cooler or RTF to be controlled by either baghouse, (4) allow the NMP Cooler to be operated simultaneously with the RTF, and (5) decrease the aluminum production from 84,000,000 pounds per year to 50,000,000 pounds per year.
- On June 24, 2008, AL REC was issued Class I Administrative Update R13-1977B to remove prohibition on firing furnaces concurrently.
- On January 20, 2009, AL REC was issued Class II Administrative Update R13-1977C to allow a simultaneous per-furnace charge rate of 30,000 pounds per cycle and reducing the annual charge rate to the furnaces to 47,000,000 pounds.
- On March 7, 2012, AL REC entered into Consent Order CO-R34-E-2012-04 to address several violations relating to compliance with 40 CFR 63, Subpart RRR and Permit R13-1977C.

DESCRIPTION OF PROCESS/MODIFICATIONS

Existing Facility

The Millwood Facility is a secondary aluminum production facility. Secondary aluminum producers recycle aluminum from aluminum-containing scrap (in contrast, primary aluminum plants produce aluminum from bauxite ore). Secondary aluminum production involves two general categories of operations: scrap pretreatment and smelting/refining. Scrap pretreatment consists of sorting, processing, and cleaning scrap. Smelting/refining consists of cleaning, melting, refining, and pouring aluminum.

At the Millwood Facility, aluminum dross (aluminum bearing residual material) skimmed off molten aluminum during smelting operations) and scrap is transported to the facility via tractor-trailer and/or railcar. Fork trucks and tractor-trailers deposit the aluminum scrap and dross in the

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raw material storage area (Transfer Points TP-1 and TP-2). Dross and flux are stored in an enclosed storage building to prevent contact with moisture and solid aluminum bearing materials are stored outside. A front endloader is used to weigh and load the raw material (TP-3 and TP-4) into the two rotary tilting furnaces (RTF). The RTF cycle time is approximately four (4) hours per charge. This includes 2-3 hours of melting time per furnace with 1-2 hours allotted for charging and emptying each furnace.

Both RTFs may operate simultaneously using natural gas and pure oxygen as the fuel source. The maximum natural gas usage per furnace is 10,000 cubic feet/hour. The aluminum melting point ranges from 1,220 F - 1,480 F depending on the flux ratio. The RTFs exhaust is each captured by a collection hood that directs the emissions from the melting process to the baghouses. Upstream lime-injection and three baghouses (BH-501, BH-601, and BH-701) are used to control emissions during the melting process. The baghouses are designed so that their use is dependent on the operating conditions of the RTFs with any combination of the baghouses in use at any time. However, if the RTFs are operating concurrently, at least two baghouses must be in operation.

BH-501 has two compartments which are in parallel after a cyclone. The exhaust from the RTF hood is drawn through the cyclone and then splits into each compartment of BH-501 where particulates are removed. The outflow from the baghouses are then combined and sent up a single stack (EP 521). The other two baghouses are each composed of one compartment and do not have an associated cyclone. Each exhausts to an individual emission point (EP 621 and EP 721).

After completion of the melting process, the molten aluminum is tapped from the furnace into a refractory lined trough. The molten metal is directed from the trough to a Lazy Susan where the metal is poured into cast steel containers called sow molds. No air emissions result from the pouring and cooling of the liquid aluminum. The sow is removed after the liquid metal has solidified and cooled. The aluminum ingots are stored in designated product storage area prior to final shipment.

After completion of the aluminum tapping process the non-metallic product (NMP) is removed from the RTFs in preparation for the next raw material charge. Each RTF is tilted and rotated to transfer the NMP into steel containers at the furnace mouth (TP-5 and TP-6). The NMP is then transferred to the NMP Processing Area via an endloader and dumped (TP-7) into a hopper. The hopper collects and then dumps the NMP to the cooling drum (TP-8). The NMP Cooler consists of a loading hopper and long cylindrical drum. The hot NMP is transferred from the hopper to the cylindrical drum while it is rotating. The outside of the cylindrical drum is water cooled to aid in the dissipation of the heat from the hot NMP. The tumbling process cools the NMP to a temperature that prohibits a thermite reaction (i.e. smoking). The cooling section of the drum is vented directly to the atmosphere (EP 321).

After cooling, the NMP is sent to the sorter (TP-9) where it is classified into three sizes and dumped into appropriate bins (TP-10). The NMP is then transferred to the enclosed NMP storage area. The NMP is later shipped off-site for disposal. A collection hood that is vented to the baghouses captures any emissions generated from TP-7 and the sorting process. The NMP cooler is not operated concurrently with the RTF unless two baghouses are in operation.

A physical barrier (that is designed not to interfere with vehicle traffic or proper ventilation for employees) shall be maintained to prevent fugitive particulate emissions from leaving the building. In the event that fugitive emissions exit the building, the doors of the plant building shall

be immediately closed and/or operations shall be temporarily shut down until dusting conditions subside.

The facility also includes truck and endloader traffic on paved roadways and mobile work areas.

Proposed Modifications

The modification evaluated herein primarily addresses the requested increase in aggregate throughput of the RTFs as a result of Consent Order CO-R34-E-2012-04. The existing permit limits the aggregate throughput (aluminum and flux) of the RTFs to 47,000,000 pounds per year (23,500 tons per year). AL REC is now requesting an aggregate throughput of 131,400,000 pounds per year (65,700 tons per year) with an associated increase in NMP throughput to 19,710 tons per year. Additional substantive modifications consist of:

- Addition of a third baghouse (BH-701) to the facility and clarification of the size and operating parameters of the two existing baghouses;
- Delivery of flux has been added as a potential emissions source at the facility;
- The emissions of Dioxin/Furan (D/F) has been reduced based on a calculation error in Permit Application R13-1977C;
- Fugitive emissions generated from the use of endloaders has been added and emissions associated with truck traffic have been updated to account for the larger throughput.

SITE INSPECTION

Due to the limited nature of the modification, the writer did not conduct a site inspection of the Millwood Facility for this permitting action. Mr. James Robertson of the Compliance/Enforcement Section conducted a full site inspection of the facility on April 13, 2011; which generated the violations currently addressed in Consent Order CO-R34-E-2012-04.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

Rotary Tilting Furnaces

Emissions from the RTFs were estimated by using AP-42 emission factors (AP-42 is a database of emission factors maintained by USEPA) for the combustion of natural gas (Section 1.4, 7/98), based on the emission standards in 40 CFR 63, Subpart RRR, and based on stack test results. Hourly emissions were based on the (1) maximum aggregate natural gas combustion rate of 20,000 scf/hr and on (2) an aggregate aluminum and flux throughput of 7.5 tons/hour. Annual emissions were based on the (1) maximum aggregate natural gas combustion rate of 17.52×10^6 scf/yr and on (2) an aggregate aluminum and flux throughput of 65,700 tons/year. Aggregate emissions of RTFs (emission factors for each RTF are the same and they vent to a common stack) and the emission

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factor/emission factor source are given in the following table:

Table 1: Aggregate RTF Potential-To-Emit (PTE)⁽¹⁾

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO	84 lb/10 ⁶ scf-natural gas	AP-42, Table 1.4-1	1.68	7.36
Dioxin/Furan	2.1 x 10 ⁻⁴ gr-D/F TEC/ton	§63.1505(i)(3)	2.25e-07	9.86e-07
HCl	0.29 lb-HCL/hr ⁽²⁾	Stack Test	1.16	5.08
NO _x	100 lb/10 ⁶ scf-natural gas	AP-42, Table 1.4-1	2.00	8.76
PM _{2.5}	0.40 lb-PM/ton	§63.1505(i)(1) ⁽³⁾	3.16	13.82
PM ₁₀	0.40 lb-PM/ton	§63.1505(i)(1) ⁽³⁾	3.16	13.82
PM	0.40 lb-PM/ton	§63.1505(i)(1) ⁽³⁾	3.16	13.82
SO ₂	0.6 lb/10 ⁶ scf-natural gas	AP-42, Table 1.4-1	0.02	0.06
VOC	5.5 lb/10 ⁶ scf-natural gas	AP-42, Table 1.4-1	0.12	0.50

(1) Aggregate emissions of both RTFs.

(2) Emission factor for one furnace; emissions based on a safety factor of 2.

(3) Particulate matter emissions based on Subpart RR emission standard but RTFs are not subject to this standard based on facility's area source status.

NMP Cooling and Processing

There is no emission factor for particulate matter emissions from NMP Cooling and Processing (EP 321). Therefore, particulate matter emissions from this area were estimated by using the emission factor for low moisture ore primary crushing (0.5 lb/ton-crushed) given in AP-42 Section 11-24 (8/82). Hourly emissions were based on a throughput of 2.25 tons/hour and annual emissions were based on a maximum yearly throughput of 19,710 tons. As the process occurs inside the plant building, a 50% control percentage was applied to the potential emissions. Portions of this processing are vented to the baghouses, but for worst-case purposes, only the partial enclosure was considered in the emissions calculations. Based on the above, the particulate matter PTE of EP 321 is 0.57 lb/hr and 2.47 ton/year.

Material Handling

Material handling emissions (generated from the transfer points TP-1 through TP-16) were calculated using emission factors generated by the equations given in AP-42 Section 13.2.4 (11/06) or well-known emission factors obtained from the Air Pollution Engineering Manual. Variables within the emission factor equations, including applicable particulate matter control devices, were based on guidance provided by DAQ or on reasonable values of anticipated inherent material properties. Maximum hourly and annual emission rates were based on the maximum hourly design and limited annual throughputs of the specific equipment, as applicable.

Fugitive particulate matter emissions generated by truck traffic and endloaders were calculated using emission factors generated by the industrial paved haulroad equations given in AP-42 Section 13.2.1. (2/11).

Based on the above, the material handling emissions are given in the following table:

Table 2: Material Handling PTE⁽¹⁾

Section	PM _{2.5}		PM ₁₀		PM	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Transfer Points	0.19	0.35	1.26	2.35	2.65	4.94
Endloader Traffic	1.42	0.40	5.46	1.53	27.54	7.70
Truck Traffic	0.60	0.17	2.35	0.66	11.70	3.27
<i>Total Material Handling</i>	<i>2.21</i>	<i>0.92</i>	<i>9.07</i>	<i>4.54</i>	<i>41.89</i>	<i>15.91</i>

Greenhouse Gases (GHGs)

As part of this permitting action, the writer calculated the GHG annual PTE of the Millwood Plant based on the aggregate natural gas combustion rate of the RTFs. Using the natural gas combustion emission factors provided in AP-42, Section 1.4 for CO₂ (120,000 lb/10⁶ scf), N₂O (2.2 lb/10⁶ scf), and CH₄ (2.3 lb/10⁶ scf) and the as-limited maximum annual aggregate natural gas usage rate of 175.20 10⁶ scf, the following CO₂e emission

Table 3: Millwood Plant Annual GHG Emissions in TPY⁽¹⁾

Source	CO ₂	N ₂ O	CH ₄	CO ₂ e
RTFs	10,512.00	0.19	0.20	10,575.10

(1) The amount of CO₂e calculated is far less than the threshold that would define the facility as a major source of GHGs under 45CSR14 (100,000 TPY).

Summary

The following table summarizes the post-modification annual PTE of the Millwood Facility:

Table 4: Millwood Facility Post-Modification Annual PTE

Source	PTE (ton/year)								
	PM _{2.5}	PM ₁₀	PM	NO _x	CO	SO ₂	VOC	HCL	D/F
Rotary Furnaces ⁽¹⁾	13.82	13.82	13.82	8.76	7.36	0.06	0.50	5.08	9.86e-07
NMP Cooler	0.25	0.25	2.47	0.00	0.00	0.00	0.00	0.00	0.00
Transfer Points	0.35	2.35	4.94	0.00	0.00	0.00	0.00	0.00	0.00
Haulroads	0.57	2.19	10.97	0.00	0.00	0.00	0.00	0.00	0.00
<i>Total</i>	<i>14.99</i>	<i>18.61</i>	<i>32.20</i>	<i>8.76</i>	<i>7.36</i>	<i>0.06</i>	<i>0.50</i>	<i>5.08</i>	<i>9.86e-07</i>

(1) Particulate matter emissions from RTFs are assumed to all be PM_{2.5} or less.

The change in PTE as a result of this modification is given in the following table:

Table 5: Modification Emissions

Pollutant	R13-1977C		R13-1977D		Change	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
CO	1.68	3.68	1.68	7.36	0.00	3.68
NO _x	2.00	4.38	2.00	8.76	0.00	4.38
PM _{2.5}	5.01	6.87	5.43	14.99	0.42	8.12
PM ₁₀	5.01	6.87	12.29	18.61	7.28	11.74
PM	9.91	11.58	45.62	32.20	35.71	20.62
SO ₂	0.02	0.02	0.02	0.06	0.00	0.04
VOC	0.12	0.24	0.12	0.50	0.00	0.26
HCL	3.00	4.70	1.16	5.08	-1.84	0.38
D/F	4.50e-04	7.05e-04	2.25e-07	9.86e-07	-4.50e-04	-7.04e-04

REGULATORY APPLICABILITY

The modified Millwood facility is subject to a variety of substantive state and federal air quality rules and regulations. Each applicable rule, and those with questionable applicability, will be discussed in detail below.

45CSR7: To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

45CSR7 has three substantive requirements applicable to the AL REC manufacturing processes - defined as secondary aluminum production . These are the opacity requirements under Section 3, the mass emission standards under Section 4, and the fugitive emission standards under Section 5. Each of these sections will be discussed below.

45CSR7 Opacity Standards - Section 3

Section 3.1 sets an opacity limit of 20% on all applicable source operations. At the Millwood facility, this consists of the RTFs, NMP Cooling and Processing, and the material handling transfer points. Proper use of the cyclones and baghouses on the RTFs should mitigate any opacity problems from these sources. The location of the NMP Cooling and Processing emission points and the significant material handling transfer points inside the plant building should mitigate any opacity problems from these sources.

45CSR7 Weight Emission Standards - Section 4

Section 4.1 of 45CSR7 requires that each manufacturing processes meet a particulate matter limit based on the weight of material processed through the source operation. Two source operations at the Millwood Facility are subject to this standard: PM emissions from the RTFs (here, considered as one source) and the NMP Processing and Cooling Operations.

The RTFs are defined as type ‘b’ source type operations under §45-7-2.38. The aggregate maximum amount of material charged through the RTFs is 15,000 pounds per hour (lb/hr). Based on Table 45-7A, the particulate matter limit would be 13 lb/hr (for a process mass between any two consecutive process weights stated in the table, the emission limitation is determined by linear interpolation). The maximum aggregate potential hourly PM emissions from the RTFs is estimated to be 3.16 lb/hr. This emission rate is 24.30% of the 45CSR7 limit.

The NMP Processing & Cooling Operations are defined as type ‘a’ operations under §45-7-2.38. The maximum amount of material processed by the operation is 4,500 lb/hr. Based on Table 45-7A, the particulate matter limit would be 4.60 lb/hr. The maximum aggregate potential hourly PM emissions from all sources in the NMP Processing & Cooling Operations (TP-8, TP-9, TP-10, and EP-321) is estimated to be 0.81 lb/hr. This emission rate is 17.60% of the 45CSR7 limit.

Section 4.2 of 45CSR7 requires that manufacturing source operations meet maximum acid gas concentration limits as given under Table 45-7B. The table includes limits for HCl which will be emitted by the RTFs. Based on Table 45-7B, the HCl limit is 210 mg/dscf. Assuming the worst case scenario that all HCl is emitted from one emission point with the lowest volumetric flow rate, the proposed emission concentrations of HCl at the maximum potential HCl emission rate (1.16 lb/hr) and worst case stack parameters (emission point 521 - 21,598 acfm with a moisture content of 6%) is 23.40 mg/dscf; this represents 11.14% of the Rule 7 limit.

45CSR7 Fugitive Emissions - Section 5

Section 5.1 of Rule 7 states that each manufacturing process must include a system to minimize the emissions of fugitive particulate matter. The material handling operations at the Millwood facility have the potential to emit fugitive emissions and are, therefore, subject to this requirement. The substantive transfer points are partially enclosed and the haulroads are paved. These measures represent the minimization of fugitive particulate matter.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

45CSR10 has requirements limiting in-stack SO₂ concentrations of “manufacturing processes.” The furnaces/cooler is defined as a “manufacturing process” and is subject to the applicable requirements discussed below.

45CSR10 Manufacturing Processes - Section 4

Section 4.1 of Rule 10 requires that no in-stack SO₂ concentration exceed 2,000 parts per million by volume (ppm_v) from any manufacturing process source operation. The applicable source operation at the Millwood facility is the RTFs. The use of natural gas as the only fuel source of the furnaces ensures that any SO₂ emissions will be far below the 2,000 ppm_v limit.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary

Permits, General Permits, and Procedures for Evaluation

The Millwood Facility is defined as an existing “stationary source” under §45-13-2.24. Based on the definition as given under Section 2.17, the emissions increases associated with this requested change (see Table 4 above) define this permitting action as a “modification.” Therefore, pursuant to §45-13-5.1, AL REC is required to obtain a modification permit under 45CSR13 for the changes evaluated herein.

As required under §45-13-8.3 (“Notice Level A”), AL REC placed a Class I legal advertisement in a “newspaper of general circulation in the area where the source is . . . located.” The ad ran on May 17, 2012 in *The Jackson Herald* and the affidavit of publication for this legal advertisement was submitted on June 1, 2012.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration (non-applicability)

The post-modification potential-to-emit of the Millwood Plant is below the levels that would define the source as “major” under either 45CSR14 and, therefore, the modification evaluated herein is not subject to the provisions of 45CSR14.

45CSR17: To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter (non-applicability)

45CSR17 requires facilities to “prevent and control particulate matter air pollution from materials handling, preparation, storage and other sources of fugitive particulate matter.” However, based on §45-17-6.1, sources that are subject to the fugitive particulate matter emission requirements of 45CSR7 are exempt from the provisions of this 45CSR17. The potential sources of fugitive particulate matter at the proposed facility are subject to the requirements of 45CSR7 and are, therefore, exempt from 45CSR17.

45CSR30: Requirements for Operating Permits (non-applicability)

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The proposed facility does not meet the definition of a “major source under § 112 of the Clean Air Act” as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. However, as the plant is subject to a National Emission Standard for Hazardous Air Pollutants (NESHAP) - 40 CFR 63, Subpart RRR - the facility would, in most cases, be subject to Title V as a “deferred source.” However, pursuant to §63.1500(e), as a non-major “area source,” AL REC is not required to obtain a Title V permit for the proposed facility. Therefore, the Millwood Plant is not subject to 45CSR30.

40 CFR 63, Subpart RRR National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

The AL REC Millwood facility is defined as a “secondary aluminum production facility” under 40 CFR 63, Subpart RRR. However, as shown above, the facility-wide annual emissions of HCl (the only substantive Hazardous Air Pollutant emitted), as enforced by the proposed permit, is less than the threshold that would define the source as major under 40 CFR 63 (10 TPY of any one HAP or 25 TPY of all HAPS emitted at a facility). Area sources are defined under 40 CFR 63 as any source that is not defined as a major source. Therefore, the Millwood facility is defined, for the purposes of 40 CFR 63, as an “area source” and so regulated.

Area sources are exempt from most emission standards and requirements under Subpart RRR. However, area sources are still subject to Dioxin/Furan (D/F) limitations on “Group 1 Furnaces” with associated monitoring, record-keeping, and reporting requirements. A Group 1 Furnace is defined as a furnace of any design that melts, holds, or processes aluminum that contains paint, lubricants, coatings, or other foreign materials with or without reactive fluxing, or processes clean charge with reactive fluxing. Based on this definition, AL REC’s Rotart Tilting Furnaces are subject, pursuant to §63.1505(i)(3), to a limit of 15 µg of D/F TEQ per Mg (2.1×10^{-4} gr of D/F TEQ per ton) of feed/charge. AL REC has proposed this statutory limit as their maximum potential to emit of these compounds and it has been placed in the proposed permit.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the modified Millwood Facility and that are not classified as “criteria pollutants.” Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM₁₀), Particulate Matter less than 2.5 microns (PM_{2.5}), and Sulfur Dioxide (SO₂). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Applicability to 40 CFR 63, Subpart RRR was discussed above.

In addition to criteria pollutants, the Millwood Facility has the potential to emit Hydrochloric Acid (HCl) and trace amounts of Dioxin/Furan (D/F). Section 112(b) of the Clean Air Act (CAA) identifies 188 compounds as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. These compounds are designated as Hazardous Air Pollutants (HAPs) and include HCl and Dioxin/Furans.

The HCl emissions will be generated from the fluxing operations (introduction of Cl₂ into the molten Aluminum within the rotary furnaces). The proposed potential to emit of HCl (5.08 tons/year) is below the threshold that would define the source as a major source of HCl emissions under 40 CFR 63. The Integrated Risk Information System (IRIS) states that “[HCl] has not undergone a complete evaluation and determination under US EPA's IRIS program for evidence of human carcinogenic potential.”

The facility is subject to 40 CFR 63, Subpart RRR for the potential to emit trace amounts of D/F. The facility is required to meet the 2.1×10^{-4} gr of D/F TEQ per ton of feed charge limit on the rotary furnaces. Based on this emission limit and permitted charge rates, the maximum annual emission rate of D/F would be 1.97×10^{-3} lb/year. AL REC has conducted performance testing pursuant to Subpart RRR to show compliance with this standard.

D/F is the abbreviated or short name for a family of toxic substances that all share a similar chemical structure. D/F can enter the body through breathing contaminated air, drinking contaminated water or eating contaminated food. D/F can cause a number of health effects. The USEPA has said that it is likely to be a cancer causing substance to humans. For this reason, the potential emission of D/F from secondary aluminum producing facilities has been addressed in a MACT standard (Subpart RRR).

MACT standards (such as Subpart RRR) are designed to reduce HAP emissions to a maximum achievable degree, taking into consideration the cost of reductions and other factors. When developing a MACT standard for a particular source category, the EPA looks at the current level of emissions achieved by best-performing similar sources through clean processes, control devices, work practices, or other methods. These emissions levels set a baseline, often referred to as the "MACT floor" for the new standard. At a minimum, a MACT standard must achieve, throughout the industry, a level of emissions control that is at least equivalent to the MACT floor.

AIR QUALITY IMPACT ANALYSIS

The proposed modification does not meet the definition of a "major modification" pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

The primary monitoring, compliance demonstration, reporting, and recording requirements for the Millwood facility shall be those required under 40 CFR 63, Subpart RRR. These include the requirement to:

- Record the total weight of feed/charge to rotary furnaces;
- Continuously operate a bag leak detection system on the baghouses;
- Operate a device to continuously monitor and record the temperature of the baghouses inlet gases; and
- Record the lime feeder setting in the lime-injected baghouses once each day of operation.

Additionally, AL REC shall be required to:

- For the purposes of demonstrating compliance with maximum furnace charge limits, maintain monthly and rolling twelve month records of the amount of material that is charged into the furnaces. [4.2.1.]
- For the purposes of demonstrating compliance with maximum natural gas usage limits, maintain monthly and rolling twelve month records of the amount of natural gas that is combusted in the furnaces. [4.2.2.]
- For the purpose of determining continuing compliance with the applicable opacity limits of 45CSR7, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for all material handling emission sources subject to an opacity limit. [4.2.3.]
- Meet all applicable monitoring, source-specific record-keeping, and compliance demonstration requirements, including any not specified in the draft permit, as given under 45CSR7, 45CSR10, and 40 CFR 63, Subpart RRR.

PERFORMANCE TESTING OF OPERATIONS

Performance testing on criteria pollutants, HCL, and D/F took place in 2012. The results indicated that facility was in compliance with all emission limits. Therefore, at this time, no additional source-specific performance testing is required in the draft permit. However, AL REC shall be required to, when required by the Director, conduct or have conducted test(s) to determine compliance with the emission limitations or emission control requirements established in the draft permit and/or applicable regulations.

CHANGES TO R13-1977C

The following substantive changes were made to permit R13-1977C:

- The Lime Bin (B1) was removed from Table 1 as an Emission Unit as it is fed by bags and will have no substantive particulate matter emissions;
- Baghouse BH-721 (and the associated emission point EP 721) was added to Table 1 as a potential emission point of the rotary furnaces;
- The fee program for the facility was changed from Title V to 45CSR22 (see 45CSR30 non-applicability discussion above);
- Requirements for the RTFs were updated with revised emission limits, new operating requirements pertaining to use of lime-injection and the baghouses, an increase in annual aggregate charge rate, and an increase in the annual aggregate natural gas combustion rate;
- Information in the Table 4.1.5(a) concerning transfer points was updated to reflect current plant layout and throughput; and

- Additional applicable Subpart RRR monitoring and operating requirements were placed in the draft permit.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable regulations will be achieved. Therefore, I recommend to the Director the issuance of a Permit Number R13-1977D to AL REC, LLC for the modification to their Millwood Facility located near Estar, Jackson County, WV.

Joe R. Kessler, P.E.
Engineer

Date