

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date: **date, 2009**

Region: Mooresville Regional Office
County: Stanly
NC Facility ID: 8400004
Inspector's Name: Jim Westmoreland
Date of Last Inspection: 06/12/2008
Compliance Code: C / In Compliance With
 Procedural Reqr

| | | | | | |
|---|---|---|---|--|--|
| Facility Data | | | Permit Applicability (this application only) | | |
| Applicant (Facility's Name): Alcoa, Inc.-Badin Works Facility Address: Alcoa, Inc.-Badin Works 293 Highway 740 Badin, NC 28009 SIC: 3341 / Secondary Nonferrous Metals NAICS: 331314 / Secondary Smelting and Alloying of Aluminum Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V | | | SIP: NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other: | | |
| Contact Data | | | Application Data | | |
| Facility Contact | Authorized Contact | Technical Contact | Application Number: 8400004.06A Date Received: 11/01/2006 Application Type: Renewal Application Schedule: TV-Renewal Existing Permit Data Existing Permit Number: 03886/T29 Existing Permit Issue Date: 05/17/2007 Existing Permit Expiration Date: 07/31/2007 | | |
| Randall Kiser, P.E. Senior Staff Engr. (704) 422-5685 P O Box 576 Badin, NC 28009 | Mark Gross Plant Manager (704) 422-5701 P O Box 576 Badin, NC 28009 | Randall Kiser, P.E. Senior Staff Engr. (704) 422-5685 P O Box 576 Badin, NC 28009 | | | |
| Review Engineer: Mark Cuilla Review Engineer's Signature: Date: date, 2009 | | | Comments / Recommendations: Issue 03886/T30 Permit Issue Date: date, 2009 Permit Expiration Date: date, 2014 | | |

I. Purpose of Application

This permitting action is a renewal of an existing Title V permit pursuant to 2Q .0513. The existing Title V permit (**03886T29**) was issued on **May 17, 2007**, and was scheduled to expire on **July 31, 2007**. The renewal application was received on **October 27, 2006**, or at least nine months prior to the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

In addition to renewal of the current permit, the Permittee notes that they received a Best Available Retrofit Technology (BART) determination letter from DENR dated **August 11, 2006**. That letter indicated that the BART-eligible source at the facility was exempt from the BART determination step. The letter continued to state that the Permittee could request via permit application, that a permit shield be included in the permit for this determination. However, DAQ does not have the regulatory ability to add such a shield at this time. Therefore, no permit shield will be included in the renewed permit.

II. Facility Description

The facility is an aluminum production plant. Although the majority of the plant is currently idle under voluntary curtailment, the facility remains classified as a Title V facility because potential emissions of particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, and hazardous air pollutants are all greater than their respective major source thresholds.

III. History/Background/Application Chronology

October 27, 2006 – Permit application **8400004.06A** was received for the renewal of the Title V air permit. Permit was assigned to Gautam Patnaik for processing.

October 31, 2006 – Received MRO's comments and recommendations on the renewal application.

June 18, 2008 – MRO completed compliance inspection of the facility and noted that the majority of the facility is currently idle and that it appeared to be in compliance.

July 25, 2008 – Received letter from Permittee indicating the request to remove sources as part of the decommissioning of Potline II. Specific sources to be removed include:

203/204-PL-IIA

203/204-PL-IIB

203/204-PL-IIC

203/204-PL-IIID

May 21, 2009 – Permit application **8400004.06A** was reassigned to Mark Cuilla for processing. Sent email to the Permittee to verify if the application as originally submitted still stood as the appropriate submittal and to see if the equipment list was still current (see MRO's comments about the facility being idle).

June 2, 2009 – Received email response from Permittee adding to the list of permanently shut-down equipment that should be removed from the permit. Specific sources to be removed include:

161R and 161-RC-1

161T and 161-RC-2

All sources listed from the Ingot Plant – Continuous Casting Area: **134-C-1, 134-C-1-FB, 134-C-2, 134-C020FB, 134-C-3, 134-C-3-FB, 134-C-4, 134-C-4-FB, 134-6, 134-C7-BF**

ES-PAC-2 (2 diesel-fired IC engines)

July 16, 2009 – DRAFT permit sent to Permittee and MRO for comment prior to public notice and EPA review. The Permittee commented that the following additional equipment should be removed from the permit as it either has been removed from the site or can no longer operate as permitted due to removal of other equipment. Specific sources to be removed include:

I34-C-1-FB and I34-C-2-FB

IClchlorine

161N with associated 161-NC

161S with associated 161-SC

161M with associated 161-MC

Date, 2009 – DRAFT sent to 30-day public notice and 45-day EPA review prior to issuance.

IV. Permit Modifications/Changes and ESM Discussion

The following table describes the modifications to the current permit as part of the renewal process.

| Page | Section | Description |
|-------|---|---|
| Cover | - | -amended all dates and permit revision numbers |
| TOC | - | -removed references to Part II here and throughout the permit |
| All | Header | -amended permit revision number |
| 3-6 | Equipment table | -removed equipment per Permittee's request |
| 8 | 2.1 A (table) 2.1 A.1.b | -added source number to applicable regulation -testing rule cross reference correction |
| 9 | 2.1 A.1.c 2.1 A.1.d 2.1 A.1.e 2.1 A.2.a 2.1 A.2.b 2.1 A.2.c | -updated shell language -updated shell language -updated shell language -added ID numbers -added ID numbers -testing rule cross reference correction |
| 10 | 2.1 A.2.d | -updated shell language |
| 11 | 2.1 B.1.b 2.1 B.1.c | -testing rule cross reference correction -updated shell language |
| 12 | 2.1 B.1.d 2.1 B.1.e 2.1 B.1.f 2.1 B.1.g 2.1 B.2.a 2.1 B.2.b 2.1 B.2.c | -updated shell language -added monitoring/recordkeeping requirements for uncontrolled sources -added reporting requirements for uncontrolled sources -added ID numbers -added ID numbers -added ID numbers -testing rule cross reference correction |
| 13 | 2.1 B.2.d 2.1 B.2.e 2.1 B.2.f | -updated shell language -updated shell language -updated shell language |
| 15 | 2.1 C.1.b 2.1 C.1.c 2.1 C.1.d 2.1 C.1.e | -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language -updated shell language |
| 16 | 2.1 C.2.a 2.1 C.2.b 2.1 C.2.d 2.1 C.3.a 2.1 C.3.b 2.1 C.3.c 2.1 C.3.d | -added ID numbers -testing rule cross reference correction -added ID numbers -added ID numbers -added ID numbers -testing rule cross reference correction -updated shell language and added ID numbers |
| 17 | 2.1 C.3.e | -updated shell language and added ID numbers |
| 18 | 2.1 D.1.a 2.1 D.1.b 2.1 D.1.c 2.1 D.1.d 2.1 D.1.e | -added ID numbers -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language -updated shell language |
| 19 | 2.1 D.2.a 2.1 D.2.b 2.1 D.2.c | -added ID numbers -testing rule cross reference correction -updated shell language and added ID numbers |

| Page | Section | Description |
|-------|---|---|
| 20 | 2.1 E (table) 2.1 E.1.a | -added CAM reference -added ID numbers |
| 21 | 2.1 E.1.b 2.1 E.1.c 2.1 E.1.d 2.1 E.1.e 2.1 E.1.f 2.1 E.1.g | -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language -added monitoring/recordkeeping requirements for uncontrolled sources -added reporting requirements for uncontrolled sources -added ID numbers |
| 22 | 2.1 E.2.a 2.1 E.2.b 2.1 E.2.c 2.1 E.2.d | -added ID numbers -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language and added ID numbers |
| 23-24 | 2.1 E.3 | -added CAM language |
| 24 | 2.1 F (table) 2.1 F.1.a | -added CAM reference -added ID numbers |
| 25 | 2.1 F.1.b 2.1 F.1.c 2.1 F.1.d 2.1 F.1.e 2.1 F.2.a | -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language -added ID numbers -added ID numbers |
| 26 | 2.1 F.2.g 2.1 F.2.k | -testing rule cross reference correction -added “no reporting” language |
| 26-27 | 2.1 F.3 | -added CAM language |
| 28 | 2.1 G.1.a 2.1 G.1.b | -added ID numbers -testing rule cross reference correction |
| 29 | 2.1 G.1.c 2.1 G.1.d 2.1 G.1.e 2.1 G.2.a 2.1 G.2.b 2.1 G.2.c | -updated shell language and added ID numbers -updated shell language -added ID numbers -added ID numbers -added ID numbers -testing rule cross reference correction |
| 30 | 2.1 G.2.d | -updated shell language and added ID numbers |
| 31 | 2.1 H.1.a 2.1 H.1.b 2.1 H.1.c 2.1 H.1.d | -added ID numbers -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language |
| 32 | 2.1 H.1.e 2.1 H.2.a 2.1 H.2.b 2.1 H.2.c 2.1 H.2.d 2.1 H.2.e | -added ID numbers -added ID numbers -added ID numbers -testing rule cross reference correction -updated shell language and added ID numbers -updated shell language and added ID numbers |
| 34 | 2.1 I.1.a 2.1 I.1.b 2.1 I.1.c 2.1 I.1.d 2.1 I.2.a 2.1 I.2.b 2.1 I.2.c | -added ID numbers -testing rule cross reference correction -updated shell language -added “no reporting” language -added ID numbers -testing rule cross reference correction -added ID numbers |

| Page | Section | Description |
|-------|---|---|
| 35 | 2.1 I.3.a 2.1 I.3.b 2.1 I.3.c 2.1 I.3.d | -added ID numbers -added ID numbers -testing rule cross reference correction -added ID numbers |
| 36 | 2.1 J.1.b 2.1 J.1.d 2.1 J.2.a 2.1 J.2.b | -updated shell language -added ID numbers -added ID numbers -testing rule cross reference correction |
| 37 | 2.1 J.2.c 2.1 J.2.d 2.1 J.2.e 2.1 J.3.a 2.1 J.3.b | -updated shell language and added ID numbers -updated shall language -added ID numbers -added ID numbers -testing rule cross reference correction |
| 37-38 | 2.1 J.3.c | -updated shell language and added ID numbers |
| 38 | 2.2 A.1.c | -added ID numbers |
| 41 | 2.2 A.1.p | -updated shell language |
| 42 | 2.2 B.1.c | -modified testing requirement to require testing upon restart of equipment per MRO request |
| 45 | 2.2 B.1.r | -updated shell language |
| 46 | 2.2 C | -amended equipment list to remove sources per Permittee (specifically all references to Potline II). This was carried throughout permit condition. |
| 46-49 | 2.2 C.1 | -amended MACT language to remove sections applicable to deleted equipment. |
| 50 | 2.2 D.1 | -updated shell language |
| 55 | 2.2 D.1.v | -modified testing requirement to require testing upon restart of equipment per MRO request |
| 58 | 2.2 E | -added table of applicable regulations |
| 58-60 | 2.2 E.2 (table) | -removed toxic emission limits for deleted equipment |
| 61 | 2.2 E.3 | -added last MACT/air toxics compliance language |
| 62-71 | General Conditions | -amended shell conditions (v2.22.1) |

The following table indicates all changes to ESM as part of this permit renewal:

| Current Description | Modified Description |
|--|--|
| 32 aluminum ore reduction cells (ID No. 203/204-PL-IIA) [MACT LL] | <i>End-dated per Permittee request</i> |
| 30 aluminum ore reduction cells (ID No. 203/204-PL-IIB) [MACT LL] | <i>End-dated per Permittee request</i> |
| 30 aluminum ore reduction cells (ID No. 203/204-PL-IIC) [MACT LL] | <i>End-dated per Permittee request</i> |
| 32 aluminum ore reduction cells (ID No. 203/204-PL-IID) [MACT LL] | <i>End-dated per Permittee request</i> |
| Potline II reacted ore tank north (ID No. 161R) | <i>End-dated per Permittee request</i> |
| Fabric filter (360 square feet of filter area; ID No. 161-RC-1) | <i>End-dated per Permittee request</i> |
| Potline II reacted ore tank south (ID No. 161T) | <i>End-dated per Permittee request</i> |

| Current Description | Modified Description |
|--|--|
| Fabric filter (360 square feet of filter area; ID No. 161-RC-2) | <i>End-dated per Permittee request</i> |
| Five natural gas-fired casting furnaces (ID Nos. 134-C-1, 134-C-2, 134-C-3, 134-C-4, and 134-6) [MACT RRR] | <i>End-dated per Permittee request</i> |
| Five in-line fluxers (ID Nos. 134-C-1-FB, 134-C-2-FB, 134-C-3-FB, 134-C-4-FB, and 134-C7-FB) [MACT RRR] | <i>End-dated per Permittee request</i> |
| Two diesel-fired IC engines for air compressors (ID No. ES-PAC-2) | <i>End-dated per Permittee request</i> |
| Two natural gas-fired indirect heaters (0.9 million Btu per hour heat input each)for in-line fluxers in the continuous casting ingot plant (ID Nos. I34-C-1-FB and I34-C-2-FB) | <i>End-dated per Permittee request</i> |
| 150 chlorine cylinders (1,350 pounds maximum storage), ingot plant (ID No. IChlorine) | <i>End-dated per Permittee request</i> |
| Potline II pure ore tank north (ID No. 161N) with associated fabric filter (ID No. 161-NC) | <i>End-dated per Permittee request</i> |
| Potline II pure ore tank south (ID No. 161S) with associated fabric filter (ID No. 161-SC) | <i>End-dated per Permittee request</i> |
| Potline II pure ore bucket fill (ID No. 161M) with associated fabric filter (ID No. 161-MC) | <i>End-dated per Permittee request</i> |

V. Regulatory Review

The facility is currently subject to the following regulations:

- 15A NCAC 2D .0512, Particulates from Miscellaneous Wood Products Finishing Plants
- 15A NCAC 2D .0515, Particulates from Miscellaneous Industrial Processes
- 15A NCAC 2D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 2D .0521, Control of Visible Emissions
- 15A NCAC 2D .0529, Fluoride Emissions from Primary Aluminum Reduction Plants
- 15A NCAC 2D .1100, Control of Toxic Air Pollutants
- 15A NCAC 2D .1111, Maximum Achievable Control Technology (40 CFR 63, Subparts LL and RRR)
- 15A NCAC 2Q .0711, Emission Rates Requiring a Permit

A regulatory review for the existing sources will not be included in this document.

As part of this permit renewal the following regulations have been added to the permit (See discussions for each below):

- 15A NCAC 2D .0614, Compliance Assurance Monitoring
- 15A NCAC 2Q .0705, Existing Sources and SIC Calls

VI. NSPS, NESHAPS/MACT, PSD, 112(r), CAM

NSPS – The facility is not currently subject to any New Source Performance Standards. This permit renewal does not affect this status.

NESHAPS/MACT – The facility is currently subject to the Maximum Achievable Control Technology Standards for primary and secondary aluminum production (40 CFR 63, Subparts LL and RRR respectively). The detailed monitoring, recordkeeping, and reporting language for each of these two MACTs are already specified in the permit. This permit renewal does not affect this status. However, as part of the renewal, the list of applicable equipment subject to Subpart RRR has been amended to remove all references to Potline II per the Permittee’s **July 25, 2008** request and **June 2, 2009** email.

The renewal application discusses additional MACT Subparts (40 CFR 63, Subparts EEEE, DDDDD, ZZZZ, M, and GGGGG). In each case, the Permittee has made a demonstration why these Subparts do not apply at this time. DAQ agrees with these statements.

PSD – The facility is not currently subject to any Prevention of Significant Deterioration requirements. This permit renewal does not affect this status.

112(r) – The facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule. This permit renewal does not affect this status.

CAM – 40 CFR 64 requires that a continuous compliance assurance monitoring plan be developed for all equipment located at a major facility, that have pre-control emissions above the major source threshold, and use a control device to meet an applicable standard for that pollutant. The following table indicates the current equipment/control device relationships:

| Emission Source ID No. | Emission Source Description | Control Device ID No. | Control Device Description |
|-------------------------------|--|------------------------------|--|
| Anode Forming | | | |
| 252-CCU-1 | Coal and Coke Receiving – hopper, conveyor, bucket elevator, two coke silos (Nos. 252A and 252B), and coal silo (No. 252C) | 252-DC-12 | One fabric filter (480 square feet of filter area) |
| 050-BM-1 | Anode ball mill, screw conveyors, classifier | 050-C51 | One fabric filter (5,184 square feet of filter area) |
| 050-BC-1 | Dense phase coarse receiver from anode recycle | 050-BC-153 | One fabric filter (378 square feet of filter area) |
| 050-BCV-123 | Dense phase fines tank (No. BC152) and anode recycle screens | 050-BC-152 | One fabric filter (250 square feet of filter area) |
| 050-GB | Hammermill/screens/screw conveyors/scales (general building exhaust) | 050-C54 | One fabric filter (5,900 square feet of filter area) |
| 050-C59 | Coke tank | | |
| 050-C60 | Coke tank | | |
| 050-C66 | Coke tank | | |
| 050-C67 | Coke tank | | |
| 050-B21 | Scrap tank | | |
| 050-B22 | Scrap tank | | |
| 050-C-65 | Coke injection fines silo | | |

| Emission Source ID No. | Emission Source Description | Control Device ID No. | Control Device Description |
|---|---|------------------------------|--|
| 050 050-B-1 050-B-2 050-B-3 050-B-7 050-B-8 050-B-8A 050-B-10 050-B-14A | Scrap house Scrap pan conveyor Scrap hammermill Scrap screw conveyor Scrap bucket elevator Scrap screens Scrap screw conveyor Scrap bucket elevator Scrap screw conveyor | 050-B12 | One fabric filter (5,000 square feet of filter area) |
| 050-M59 050-M60 050-M69 050-M90 050-M91 050-M92 050-5503VPS (MACT, Subpart LL) 050-C-64 050-250C ⁽¹⁾ | Paste mixer No. 1 Paste mixer No. 2 Mixer conveyor belt Mixer conveyor belt Mixer conveyor belt Mixer conveyor belt Anode press/vacuum pump Coke enriched fines silo Pitch tank | 050-DCS-1 | One fabric filter (9,989 square feet of filter area) |
| Cathode Production | | | |
| 139-T-10 | Cathode graphite super fines tank | 139-G-16 | One fabric filter (170 square feet of filter area) |
| 139-CBM-1 | Cathode ball mill No. 1, bucket elevator, screen, impactor, scale, baked scrap tank (No. T-9), five coal tanks (Nos. T-1 through T-5), cyclone and classifier | 139-G-9 | One fabric filter (2,667 square feet of filter area) |
| 014-CMM-1 | Cathode milling machine No. 1 | 014-BS-1 | One fabric filter (573 square feet of filter area) |
| 014-CMM-2 | Cathode milling machine No. 2 | 014-BS-8 | One fabric filter (478 square feet of filter area) |
| 139-CH-2 | Cathode chip vacuum transport and chip tank | 139-BS-4 | One fabric filter (170 square feet of filter area) |
| Anode/Cathode Bake | | | |
| 261-ABFP-1 261-ABFP-2 | Bake furnace packing material handling and screening No. 1 and No. 2 | DC-261-E | One fabric filter (3,519 square feet of filter area) |
| 261-FASILO | Fresh alumina storage silo | 261-CD-BV2 | One fabric filter (2,600 square feet of filter area) |
| 261-RASILO | Reacted alumina storage silo | 261-CD-BV | One fabric filter (3,600 square feet of filter area) |

| Emission Source ID No. | Emission Source Description | Control Device ID No. | Control Device Description |
|---|--|--|---|
| 261-ABF-1 261-ABF-2 (MACT, Subpart LL) | Two natural gas-fired anode/cathode bake furnaces Nos. 1 and 2 (82.4 million Btu per hour maximum heat input capacity, each) | 261-DCC 261-CD-AVR 261-CD-AVR-DC | One direct contact condenser (temperature controlled water injection rate 7-15 gpm) Alumina injected venturi scrubber (1.0-5.0 tph dry injection rate) One fabric filter (6,875 square feet of filter area) |
| 261-SHC | Initial stub hole cleaning station No. 1 | 261-SHC-DC | One fabric filter (406 square feet of filter area) |
| 262-SHC | Initial stub hole cleaning station No. 2 | 262-SHC-DC | One fabric filter (406 square feet of filter area) |
| Anode Assembly | | | |
| 232-SHC | Final stub hole cleaning station | 232-SHC-DC | One fabric filter (406 square feet of filter area) |
| 232-IMF-1 232-IMF-2 | Iron induction furnaces Nos. 1 and 2 | 232-DC-2 | One fabric filter (6,900 square feet of filter area) |
| Alumina/Fluoride Receiving and Distribution | | | |
| 140-DC | Railcar alumina unloading hopper, airslide, bucket elevator | 140-DC-DC | One fabric filter (11,520 square feet of filter area) |
| ASC-1 | E/W Airslide – East | ASC-1-DC | One fabric filter (250 square feet of filter area) |
| ASC-2 | E/W Airslide – West | ASC-2-DC | One fabric filter (250 square feet of filter area) |
| ASC-3 | N/S Airslide – North | ASC-3-DC | One fabric filter (250 square feet of filter area) |
| ASC-4 | N/S Airslide – South | ASC-4-DC | One fabric filter (250 square feet of filter area) |
| 140-G 160-R 140-F | Potline I pure ore tank Potline I reacted ore tank and bucket elevator Potline I railcar unload pneumatic transfer and fluoride storage tank | CD-145-DC | One fabric filter (1,120 square feet of filter area) |
| 140D | Railcar unload pneumatic transfer and fluoride storage tank | CD-140-D CD-145-DC | One fabric filter (750 square feet of filter area) One fabric filter (1,120 square feet of filter area) |
| Aluminum Reduction | | | |
| 201-PL-1 202-PL-1 (MACT, Subpart LL) | 62 aluminum ore reduction cells 62 aluminum ore reduction cells | 160-AR-PL1 160-FF-PL1 | Eight alumina fluid bed scrubbers Eight fabric filters (seven at 36,000 and one at 10,750 square feet of filter area) ⁽²⁾ |

| Emission Source ID No. | Emission Source Description | Control Device ID No. | Control Device Description |
|------------------------|---|-----------------------|---|
| Anode Recycle | | | |
| 204M-001 | Spent anode cleaning and handling | 204M-BH-1 | One fabric filter (14,500 square feet of filter area) |
| 232-ABBP-1 | Butt blasting | 232-DC-6 | One fabric filter (2,352 square feet of filter area) |
| 232-ABC-1 | Butt crusher and hammermill | 232-DC-7 | One fabric filter (7,560 square feet of filter area) |
| 232-ARBP-1 | Rod brushing | 232-DC-5 | One fabric filter (1,920 square feet of filter area) |
| Bath Crushing | | | |
| 204H-BM-1 | Ball mill, screw conveyor, two bucket elevators, vibratory feeder, screens, two screw conveyors | DC-204H-1 | One fabric filter (25,000 square feet of filter area) |
| 204-T2 204-T6 | Two ball mill fines tanks | DC-204H-3 | One fabric filter (457 square feet of filter area) |
| ASC-5 204-T5 | Airslide Alumina tank | DC-204H-2 | One fabric filter (1,270 square feet of filter area) |
| Miscellaneous | | | |
| 206P-SB-1 | Shot blast cleaning machine | SBDC-1 | One fabric filter (410 square feet of filter area) |
| 044-GMP-1 | Graphite machining | 044-DC-3 | One fabric filter (100 square feet of filter area) |
| 053-WP-1 | Woodworking process | DWC-1 | One dust collection system with settling chamber |

The following table indicates the regulations applicable to each emission source/control device relationship:

| Emission Source ID No. | Control Device ID No. | Applicable Regulations* | Pollutant/CAM Required? |
|---|--|-------------------------|--|
| MACT Applicable Sources | | | |
| 261-ABF-1 261-ABF-2 | 261-DCC 261-CD-AVR 261-CD-AVR-DC | 15A NCAC 2D .1111 | Fluorides and POM/No – MACT exemption |
| 050-M59 050-M60 050-M69 050-M90 050-M91 050-M92 050-5503VPS 050-C-64 050-250C | 050-DCS-1 | 15A NCAC 2D .1111 | POM/No – MACT exemption |
| 201-PL-1 202-PL-1 | 160-AR-PL1 160-FF-PL1 | 15A NCAC 2D .1111 | Fluorides/No – MACT exemption |
| Particulate Applicable Sources | | | |
| 252-CCU-1 | 252-DC-12 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |

| Emission Source ID No. | Control Device ID No. | Applicable Regulations* | Pollutant/CAM Required? |
|---|-----------------------|--------------------------|--|
| 050 050-B-1 050-B-2 050-B-3 050-B-7 050-B-8 050-B-8A 050-B-10 050-B-14A | 050-B12 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 050-BM-1 | 050-C51 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 050-GB 050-C59 050-C60 050-C66 050-C67 050-B21 050-B22 050-C-65 | 050-C54 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 050-M59 050-M60 050-M69 050-M90 050-M91 050-M92 050-5503VPS 050-C-64 050-250C | 050-DCS-1 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 139-CBM-1 | 139-G-9 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 139-T-10 | 139-G-16 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 261-ABFP-1 261-ABFP-2 | DC-261-E | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 232-IMF-1 232-IMF-2 | 232-DC-2 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 261-SHC | 261-SHC-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 262-SHC | 262-SHC-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 232-SHC | 232-SHC-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 050-BCV-123 | 050-BC-152 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 232-ABBP-1 | 232-DC-6 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 232-ABC-1 | 232-DC-7 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 232-ARBP-1 | 232-DC-5 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 050-BC-1 | 050-BC-153 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 014-CMM-1 | 014-BS-1 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 139-CH-2 | 139-BS-4 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 014-CMM-2 | 014-BS-8 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 044-GMP-1 | 044-DC-3 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 206P-SB-1 | SBDC-1 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 140-DC | 140-DC-DC | 15A NCAC 2D .0515 | Particulate matter/Yes, estimated 110 tons PM₁₀ per year |
| ASC-1 | ASC-1-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| ASC-2 | ASC-2-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| ASC-3 | ASC-3-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| ASC-4 | ASC-4-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |

| Emission Source ID No. | Control Device ID No. | Applicable Regulations* | Pollutant/CAM Required? |
|--|--|--------------------------|--|
| 261-RASILO | 261-CD-BV | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 140-G 160-R 140-F | CD-145-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 140D | CD-140-D CD-145-DC | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 204H-BM-1 | DC-204H-1 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| ASC-5 204-T5 | DC-204H-2 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 261-FASILO | 261-CD-BV2 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 204-T2 204-T6 | DC-204H-3 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 204M-001 | 204M-BH-1 | 15A NCAC 2D .0515 | Particulate matter/No, less than 100 tpy |
| 201-PL-1 202-PL-1 | 160-AR-PL1 160-FF-PL1 | 15A NCAC 2D .0515 | Particulate matter/Yes, estimated 788 tons PM₁₀ per year |
| 261-ABF-1 261-ABF-2 | 261-DCC 261-CD-AVR 261-CD-AVR-DC | 15A NCAC 2D .0515 | Particulate matter/No, products of combustion less than 100 tpy |
| 053-WP-1 | DWC-1 | 15A NCAC 2D .0512 | Particulate matter/No, less than 100 tpy |
| Sulfur Dioxide Applicable Sources | | | |
| 261-ABF-1 261-ABF-2 | 261-DCC 261-CD-AVR 261-CD-AVR-DC | 15A NCAC 2D .0516 | Sulfur dioxide/No, control device not for SO ₂ |
| Fluoride Applicable Sources | | | |
| 201-PL-1 202-PL-1 | 160-AR-PL1 160-FF-PL1 | 15A NCAC 2D .0529 | Fluorides/Yes, estimated 788 tons PM₁₀ per year (note PM₁₀ is subset of fluoride emissions) |

**Note. This table does not list any reference to 15A NCAC 2D .0521, Control of Visible Emissions, and 15A NCAC 2D .1100, Control of Toxic Air Pollutants. These regulations are intentionally removed from this table because the regulated pollutants are either not criteria pollutants (visible emissions) or State-enforceable only (NC Toxics). These pollutants are exempt from CAM applicability consideration.*

MACT Applicable Sources -

As shown above, the Permittee operates equipment subject to the Primary Aluminum MACT (15A NCAC 2D .1111, Maximum Achievable Control Technology/40 CFR 63, Subpart LL) for the control of POM emissions. The permit application states “CAM does not apply to POM emissions from these sources because POM emissions from the bake furnaces and anode forming sources are subject to the Primary Aluminum MACT which was proposed after **November 15, 1990**”. DAQ agrees with this statement. 40 CFR 64.2(b)(i) exempts the requirements of this part to any limitation or standard “proposed by the Administrator after **November 15, 1990** pursuant to Section 111 or 112 of the Act.”

Also as shown above, the Permittee operates equipment subject to the Primary Aluminum MACT (15A NCAC 2D .1111, Maximum Achievable Control Technology/40 CFR 63, Subpart LL) for the control of total fluoride (TF) emissions. The permit application states “based on information included in Part IV.A of the preamble to the Primary Aluminum MACT, the MACT applies to the emissions of the hazardous air pollutant hydrogen fluoride (HF), using TF as a surrogate.” The application goes on to state “CAM does not apply to TF/HF emissions from these sources because TF/HF emissions from the potlines and bake furnaces are subject to the Primary Aluminum MACT which was proposed after **November 15, 1990**”. DAQ agrees with this statement. 40 CFR 64.2(b)(i) exempts the requirements of this part to any limitation or standard “proposed by the Administrator after **November 15, 1990** pursuant to Section 111 or 112 of the Act.”

Particulate Applicable Sources –

The Permittee estimated particulate (PM₁₀) emissions from each source by using engineering calculations based on existing data (per EPA CAM guidance documents). Pre-control PM₁₀ emissions were estimated based on the following assumptions-

The Potline Dry Alumina Scrubber/Baghouse Systems (**Sources 201-PL-1 and 202-PL-1**) have the worst case pre-control device particulate loading. In each system, particulates in the form of the scrubbing media alumina are being purposefully injected at high rates into the air stream. The fresh alumina feed rate of 15 tons per hour and maximum air flow of 540,000 cubic feet per minute equate to a particulate loading of 6.48 grains per cubic foot of air flow. To determine potential for each source, the worst case grain loading was multiplied by the design air flow rate of each collector. To determine what fraction of the pre-control particulate emissions are in the form of PM₁₀, the ton per year estimate is multiplied by the fraction of the source material that is less than 20 microns in diameter (based on sieve analyses of various materials). This cutoff represents an over-estimation of potential pre-controlled PM₁₀ emissions. The calculations are shown below:

Establishment of worst-case grain loading-

$(15 \text{ tons/hour})(2000 \text{ lbs/ton})(7000 \text{ grains/lb}) = 210,000,000 \text{ grains/hour}$

$(540,000 \text{ ft}^3/\text{min})(60 \text{ min/hour}) = 32,400,000 \text{ ft}^3/\text{hour}$

$(210,000,000 \text{ grains/hour})(1 \text{ hr}/32,400,000 \text{ ft}^3) = 6.48 \text{ grains/ft}^3$

Specific material potential pre-controlled emissions-

(ID Nos. 201-PL-1 and 202-PL-1)

Air flow to control device – 540,000 ft³/min

PM fraction (<20 microns) – 0.006

$(6.48 \text{ grains/ft}^3)(540,000 \text{ ft}^3/\text{min})(0.006)(1 \text{ lb}/7000 \text{ grains})(1 \text{ ton}/2000 \text{ lbs})(60 \text{ min/hr})(8760 \text{ hrs/yr})$

= 788 tons per year PM₁₀

The following CAM plan has been included for the applicable equipment in the renewed permit as Sections 2.1 E.3. The Permittee shall not be required to comply with these conditions until such time as the sources are re-started. A requirement that the Permittee notify DAQ upon restart of the equipment will be included in the permit condition.

3. 15A NCAC 2D .0614: COMPLIANCE ASSURANCE MONITORING

- a. Per 40 CFR 64 and 15A NCAC 2D .0614, the Permittee shall comply with the following.
- b. Background
 - i. Emission unit.
 - (A) Description. Railcar unloading hopper, airslide, bucket elevator (ID No. 140-DC).
 - ii. Applicable Regulation, Emission Limit, and Monitoring Requirements.
 - (A) Regulation. 15A NCAC 2D .0515.
 - (B) Emission Limit
 - $E = 4.10 \times P^{0.67}$ Where E = allowable emission rate in pounds per hour and P = process weight in tons per hour.
 - (C) Control Technology. One fabric filter (ID No. 140-DC-DC).
- c. Monitoring Approach. The key elements of the monitoring approach for particulate matter, including parameter to be monitored, parameter ranges and performance criteria are presented in the following table.

| | Indicator |
|---------------------------------------|--|
| I. Indicator | Visible emissions |
| Measurement Approach | Visible emissions from the fabric filter will be monitored daily using EPA Reference Method 22-like procedures. |
| II. Indicator Range | An excursion is defined as the presence of visible emissions above normal. Excursions trigger an inspection, corrective action, and a reporting requirement. |
| QIP Threshold | The QIP threshold is five excursions in a 6-month reporting period. |
| III. Performance Criteria | |
| A. Date Representativeness | Measurements are being made at the emission point (fabric filter outlet). |
| B. Verification of Operational Status | NA |
| C. QA/QC Practices | The observer will be familiar with Reference Method 22 and follow Method 22-like procedures. |
| D. Monitoring Frequency | Observations are done daily. |
| Data Collection Procedures | VE observations are documented by the observer. |
| Averaging Periods | NA |

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- d. The Permittee is not required to comply with this permit condition until such time as the sources are restarted. Within 10 days of restart of the applicable equipment, the Permittee shall notify the Regional Supervisor, Mooresville Regional Office of this fact.

- e. *The Permittee shall submit a summary report of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.*

It should be noted that the Permittee has argued that CAM is not applicable to potlines (**ID Nos. 201-PL-I and 202-PL-I**) because its PM₁₀ emissions are a subset of TF emissions. And as such, the enhanced monitoring required under Subpart LL for TF serves as a surrogate for PM₁₀ CAM. The same control equipment that reduces TF emissions from these sources also serves to control PM₁₀ emissions. DAQ disagrees with this statement. CAM applicability is based on pollutant specific emission limits. The emission limits for TF in the MACT are in pounds per ton aluminum produced and the emission limits for particulate in 15A NCAC 2D .0515 are in pounds per hour. The differences in units for the same pollutant means that the Permittee has to look at each emission limit as a separate limit for CAM applicability. Particulates subject to the MACT are exempt, but particulates subject to the SIP rule are not. Therefore, the CAM plan for these sources is as follows (Section 2.1 F.3):

3. 15A NCAC 2D .0614: COMPLIANCE ASSURANCE MONITORING

- a. *Per 40 CFR 64 and 15A NCAC 2D .0614, the Permittee shall comply with the following.*
- b. *Background*
 - i. *Emission unit.*
 - (A) *Description. Sixty-two aluminum ore reduction cells in Building 201 (ID No. 201-PL-I), and Sixty-two aluminum ore reduction cells in Building 202 (ID No. 202-PL-I).*
 - ii. *Applicable Regulation, Emission Limit, and Monitoring Requirements.*
 - (A) *Regulations. 15A NCAC 2D .0515 and 15A NCAC 2D .0529.*
 - (B) *Emission Limit*
 $E = 4.10xP^{0.67}$ *Where E = allowable emission rate in pounds per hour and P = process weight in tons per hour.*
 - (C) *Control Technology. Eight parallel alumina fluid bed scrubbers (ID No. 160-AR-PLI) each in series with eight fabric filters (ID No. 160-FF-PLI).*
- c. *Monitoring Approach. The key elements of the monitoring approach for particulate matter, including parameter to be monitored, parameter ranges and performance criteria are presented in the following table.*

| | Indicator |
|-----------------------------|---|
| <i>I. Indicator</i> | <i>Visible emissions</i> |
| <i>Measurement Approach</i> | <i>Visible emissions from the fabric filter will be monitored daily using EPA Reference Method 22-like procedures.</i> |
| <i>II. Indicator Range</i> | <i>An excursion is defined as the presence of visible emissions above normal. Excursions trigger an inspection, corrective action, and a reporting requirement.</i> |
| <i>QIP Threshold</i> | <i>The QIP threshold is five excursions in a 6-month reporting period.</i> |

| | <i>Indicator</i> |
|--|---|
| <i>III. Performance Criteria</i> | |
| <i>A. Date Representativeness</i> | <i>Measurements are being made at the emission point (fabric filter outlet).</i> |
| <i>B. Verification of Operational Status</i> | <i>NA</i> |
| <i>C. QA/QC Practices</i> | <i>The observer will be familiar with Reference Method 22 and follow Method 22-like procedures.</i> |
| <i>D. Monitoring Frequency</i> | <i>Observations are done daily.</i> |
| <i>Data Collection Procedures</i> | <i>VE observations are documented by the observer.</i> |
| <i>Averaging Periods</i> | <i>NA</i> |

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- d. The Permittee is not required to comply with this permit condition until such time as the sources are restarted. Within 10 days of restart of the applicable equipment, the Permittee shall notify the Regional Supervisor, Mooresville Regional Office of this fact.*
- e. The Permittee shall submit a summary report of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.*

Fluoride Applicable Sources –

As described above, both gaseous and particulate fluorides are primary pollutants from the potlines (**ID Nos. 201-PL-I and 202-PL-I**). In addition, the Permittee has noted that the potlines are the worst-case source for its particulate calculations; again, particulates being a subset of fluoride emissions. Those calculations indicate that potential pre-controlled emissions of particulate (PM₁₀ portion of the particulate) are greater than the CAM applicable thresholds. This determination would also be applicable to the fluorides subject to 15A NCAC 2D .0529. This regulation requires that the Permittee control fluoride emissions from these sources to 95% capture and 98.5% control (in addition to work practice standards). Prior to idling these sources, the Permittee tested in compliance with these requirements in 2002. The same control equipment is employed for the control of fluoride and particulate from these sources; therefore, the CAM plan for particulate is sufficient for fluorides. Therefore, because the renewed permit includes in Section 2.1 F.3 a CAM plan for particulates, no additional requirements for fluoride emissions is required. It should be noted that the Permittee is not required to comply with this condition until such time as the sources are re-started. A requirement that the Permittee notify DAQ upon restart of the equipment will be included in the permit condition.

VII. Facility Wide Air Toxics

The permit currently contains both modeled emission rates on a source-by-source basis per 15A NCAC 2D .1100 in accordance with an **July 3, 2002** (as amended on **February 21, 2003** and **November 20, 2003**) modeling demonstration and a toxic pollutant emission rate table for those toxics not exceeding their respective TPER. This permit renewal does not affect this status. However as part of the renewal, modeled emission rates for sources identified by the Permittee in a **July 25, 2008** request and **June 2, 2009** email, have been removed from the permit because the sources no longer operate and have been removed from service.

In addition to the requirements of 15A NCAC 2Q .0711 for the submittal of a modeling demonstration, the demonstration was also submitted pursuant to 15A NCAC 2D .0705, Existing Sources and SIC Calls. This regulation requires that the facility be in compliance with NC Air Toxics as of the date of the last known maximum achievable control technology (MACT) standard to apply to the facility. For Alcoa, Subpart RRR represents the last MACT to apply with a compliance date of **March 24, 2003**. As such, the renewed permit will be modified to include language indicating compliance with 15A NCAC 2Q .0705 as follows:

State-enforceable only

1. **15A NCAC 2Q .0705: EXISTING SOURCES AND SIC CALLS** – *As of July 3, 2002 (and as amended February 21, 2003 and November 20, 2003), emissions of toxic air pollutants have been demonstrated on a facility-wide basis (excluding those sources exempt under 15A NCAC 2Q .0702 “Exemptions”) that each of the toxic air pollutants (TAPs) emitted from all sources at the facility are either below its respective toxic permit emission rates (TPER) listed in 15A NCAC 2Q .0711 “Emission Rates Requiring a Permit” or in compliance with modeled emission rate per 15A NCAC 2D .1100 “Control of Toxic Air Pollutants.”*

VIII. Facility Emissions Review

The following table represents the latest years’ emission inventories from the facility:

| Pollutant(s) | 2007 Actual Emissions (tpy) | 2006 Actual Emissions (tpy) |
|---------------------|------------------------------------|------------------------------------|
| CO | 5.17 | 11.38 |
| NO _x | 6.19 | 13.09 |
| PM ₁₀ | 0.47 | 1.03 |
| SO ₂ | 0.09 | 0.09 |
| VOC | 0.34 | 0.74 |
| Total HAP/TAP | 0.12 | 0.25 |

IX. Stipulation Review

MRO noted no stipulation modifications as part of their permit application review or as part of their latest inspection report.

X. Public Notice/EPA and Affected State(s) Review

Pursuant to 15A NCAC 2Q .0521, a notice of the DRAFT Title V Permit shall be placed in a newspaper of general circulation in the area where the facility is located. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also pursuant to 2Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 2Q .0521 above. The State of South Carolina and The Mecklenburg County Local Program are affected programs within 50 miles of the facility.

XI. Conclusions, Comments, and Recommendations

A professional engineer's seal was not required for this renewal.

A consistency determination was not required for this renewal.

MRO recommends issuance of the permit and has reviewed the DRAFT permit prior to notice and issuance (See Section III above).

RCO concurs with MRO's recommendation to issue the renewed air permit.