Notice of Compliance Status Report

Alloy Resources Corporation-

Secondary Aluminum Processing Unit

Alloy Resources Corporation

Muskegon, Michigan

December 2016

List of Acronyms

List of Acronyms

ABBREVIATION	DEFINITION
ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
Cl_2	Chlorine
CMS	Continuous Monitoring Systems
CPMS	Continuous Parameter Monitoring Systems
CPT	Compliance Performance Test
D/F	Dioxin/Furan
HAP	Hazardous Air Pollutant
HCl	Hydrogen Chloride
MACT	Maximum Achievable Control Technology
MDEQ-AQD	Michigan Department of Environmental Quality – Air Quality Division
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOCS	Notification of Compliance Status Report
OM&M	Operation, Maintenance, and Monitoring
PET	Performance Evaluation Test
PM	Particulate Matter
PTI	Permit to Install
SA	Secondary Aluminum
SSM	Startup, Shutdown, & Malfunction
SSTP	Site Specific Test Plan
TEQ	Toxic Equivalency
USEPA	United States Environmental Protection Agency

Section 1
Introduction

1.1 General Information

Owner/Operator:	**Alloy Resources Corporation**
Street Address:	**2281 Port City Blvd.** **Muskegon, MI 49442**
Mailing Address:	**same as street address**
Website :	http://www.alloyresourcescorp.com
Plant Name:	**Alloy Resources Corporation (ARC)**
Plant Contact/Title:	**Dennis Flanagan, Plant Manager**
Plant Contact Phone Number :	**(231) 683-1832**
Plant Street Address	**2281 Port City Blvd.** **Muskegon, MI 49442**
Plant Mailing Address:	**same as street address**
Plant Fax Number:	**(231) 773-2038**
Plant 4-digit Standard Industrial Classification (SIC) Code(s):	**3341**
Plant UTM coordinates:	**565299 E-W** **4785117 N-S**
Plant Permit Number:	**PTI 340-07E (MDEQ-AQD)**

1.2 Compliance Information

This source is a (check one): ☐ major source ☒ area source

1.3 Report Summary

On March 23, 2000, the United States Environmental Protection Agency (USEPA) promulgated the Secondary Aluminum National Emission Standards for Hazardous Air Pollutants (SA NESHAP) in 40 CFR § 63 Subpart RRR. The SA NESHAP compliance date for existing sources was March 24, 2003. This document covers the ARC operations that are regulated under the NESHAP for secondary aluminum production.

ARC is an aluminum processing and casting facility that operates a Secondary Aluminum Processing Unit (SAPU) that includes two reverberatory melting furnaces EUALREVERB and

EUREVERB50 along with a single rotary furnace EUROTARY. The SAPU at ARC is defined as FGFURNACES in PTI 340-07E. However, EUREVERB50 was not operated during the test and will only be operated apart from EUROTARY under limits established during the CPT conducted in February 2016. FGFURNACES processes both clean and unclean charge aluminum scrap into molten aluminum and rolling ingots for further processing. This operation meets the definition of a secondary aluminum production facility found in 40 CFR 63.1503. Therefore, FGFURNACES is subject to the SA NESHAP, contained in 40 CFR § 63. Subpart RRR.

On October 14, 2016, MDEQ-AQD approved the SSTP for this CPT (see attached approval letter in Appendix A). Performance testing was conducted in accordance with 40 CFR 63.1511(b) for FGFURNACES from October 24, 2016 through October 27, 2016. This testing was conducted to demonstrate compliance with emissions standards listed for Group 1 furnaces at major or area sources listed in 40 CFR 64.1505(i). Alliance Source Testing, LLC (Alliance) conducted the stack testing.

This NOCS has been prepared in accordance with the requirements of 40 CFR § 63.1515(b) and 40 CFR § 63.9(h). It summarizes the methods used to determine compliance, the results of the compliance testing event, the quantity of hazardous air pollutants (HAPs) emitted, and the methods intended for use in determining continued compliance at ARC.

The production data during the CPT for FGFURNACES is contained in Tables 4-1 and 4-2. Tables 4-3 through 4-7 summarize the analytical results from the CPT event for FGFURNACES. Tables 5-1 through 5-3 summarize the furnace parametric operating parameters monitored during the CPT. Table 6-1 presents the ongoing compliance operating parametric values and ranges for the SAPU.

A listing of the information required for a complete NOCS along with the regulatory citation and the location of the information in this document is presented below.

Table 1-1
NOCS Report Map

Regulatory Requirement	Citation – 40 CFR § 63.	Location in Report	Detailed Data in Appendices
Site Specific Test Plan (SSTP)	1515(b)(2)	Section 3	Appendix A
Performance Evaluation Test (PET) Results	1515(b)(2)	Section 2	Appendix B
Performance Stack Test Report	1515(b)(1)	Sections 3 and 4 (Summary of Results)	Appendix C (Full Test Report)

Table 1-1
NOCS Report Map

Regulatory Requirement	Citation – 40 CFR § 63.	Location in Report	Detailed Data in Appendices
Performance Test Charge Weight/Production Data	1515(b)(1)	Section 5	Appendix D
Performance Test Parametric Monitoring Data	1515(b)(4)	Section 5	Appendix D
Operations, Monitoring and Maintenance (OM&M) Plan	1515(b)(9)	Section 6	Appendix E
Emission Unit Labels	1515(b)(1)	Section 6	Appendix F
ACGIH Capture/Collection Conformance Documentation	1515(b)(1)	Section 2	Appendix G
Bag Leak Detection Analysis	1515(b)(1)	Section 5	Appendix H
Startup, Shutdown and Malfunction (SSM) Plan [1]	1515(b)(1)	Section 6	Appendix E

Notes: NA- Not Applicable.

Section 2
Process Operations During CPT

The SAPU at ARC consisting of two reverberatory furnaces EUALREVERB and EUREVERB50 along with one rotary furnace EUROTARY is subject to the National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production (SA NESHAP), contained in 40 CFR Part 63 Subpart RRR.

The production process tested during the CPT were operated as described below. The operation of the process deviated where noted from the SSTP, which is included in Appendix A of this NOCS.

The following sections provide a description of the process and how it was operated during the CPT.

2.1 FGFURNACES Operations

ARC operates a SAPU including three controlled furnaces (EUALREVERB, EUREVERB50 and EUROTARY) exhausting through the lime injected baghouse identified in PTI 340-07E. The ARC SAPU, defined as FGFURNACES in PTI 304-07E, receives both clean an unclean scrap including virgin aluminum and reclaimed scrap as well as internally generated run-around scrap and alloying agents.

ARC has a system in place for fluxing with chlorine gas to remove metal oxides by floating the oxides to the surface of the molten bath of EUALREVERB. While, ARC can monitor the chlorine gas flow rate and the length of time (beginning and ending of fluxing cycle) no chlorine gas was used during this test and will not be used unless future testing verifies operation of the system can meet permit limits. Solid flux is added to the scrap charge as needed to prevent excess oxides and metal burning. This solid flux is weighed and reported as a charge ingredient in the scrap charge detail report (heat sheet) routinely during the operating cycles for all three furnaces. Extra flux additions are used for special maintenance and cleaning activities, or due to process upsets and are addressed in the OMM.

FGFURNACES went through a complete production cycle including charging, fluxing and tapping (for a minimum of three hours) during the CPT. FGFURNACES was operated at the highest production level achievable with the charge materials representative of the range of materials processed by the furnace on that day. However, EUREVERB50 was not operated

during the test and will not be operated moving forward unless future testing verifies operation of the furnace does not impact the compliance status of FGFURNACES.

The capture/collection systems (furnace hooding) on EUALREVERB and EUROTARY were documented to be in operating accordance with the American Conference of Governmental Industrial Hygienists (ACGIH) guidance provided in Chapters 3 and 5 of the "Industrial Ventilation: A Manual of Recommended Practice". Supporting calculations documenting theoretical flow requirements and actual values measured during an evaluation of the hood system conducted by ARC are provided in Appendix G. Comparable baghouse data collected during the CPT is presented in Appendix D. The captured emissions are vented through a closed system to the baghouse control devices. Dilution air is added to control temperature at the inlet of the fabric filters, when required.

Section 3
Testing Program Description

The testing program at ARC was designed to meet the requirements established under 40 CFR 63 Subpart RRR (SA NESHAP) for Group 1 furnaces with add-on air pollution control devices. The SA NESHAP requires the following:

- A SAPU processing scrap other than clean charge materials with emissions controlled by a lime injected fabric filter must be tested for PM and Dioxin Furan (D/F) at the outlet of the control device and HCl at either the outlet or both the outlet and inlet.

3.1 Test Program Summary

Testing of FGFURNACES was completed using the methods and techniques detailed in the approved SSTP (see Appendix A). Testing was conducted over three days and two operating conditions. D/F testing was conducted during three four hour testing periods during days 1 and 2. Particulate, HCl and HF testing was conducted during all six testing periods.. Operating conditions during October 25 and the first testing period on October 26 (Condition 1) were characterized by the maximum aluminum production rate possible and worst case scrap through the SAPU and therefore, the highest possible D/F emission rate due to the increased temperature and quantity of flux added to the furnaces. Operating conditions during the second testing period on October 26 and all of October 27 (Condition 2) were characterized by the maximum flux usage in the SAPU. Maximum flux usage is correlated with maximum HCl/HF emission rates based on the chemistry and temperature of the process. Therefore, Condition 1 testing verified compliance at the maximum aluminum throughput rate and baghouse temperatures of the SAPU and Condition 2 testing verified compliance at the maximum flux throughput rate of the SAPU.

Emission testing was performed at the exhaust stack for the combined lime injected baghouse that controls FGFURNACES at ARC. The exhaust stack is 65 inches in diameter with sampling ports located at 90 degree angles. Portions of the compliance testing were observed by Eric Grinstern and Jeremy Howe of the MDEQ-AQD.

USEPA Methods 1, 2, and 3 were used to gather information related to sample point determination, volume flow, exhaust gas composition, and exhaust gas moisture. Testing was conducted to determine the PM (Methods 17 and 202) and HCl (Method 26) emissions, using a combined sample train, from FGFURNACES. Copies of the procedures and results for the USEPA Methods used during the compliance testing event are included in the Source Test Report (Appendix C).

During the compliance testing events, charge data (charge weights and scrap classification) was monitored to ensure the representative nature of the feed/charge rates to FGFURNACES. Additionally, production data was collected to establish production rates for the furnace. The ARC production data was used to calculate the pollutant emission rates per ton of aluminum produced to determine compliance with the SA NESHAP requirements.

In addition, the following operational parameters were monitored and recorded for FGFURNACES:

- The continuous lime feed rate
- The furnace baghouse system inlet temperatures
- The signal output of the bag leak detectors
- The gaseous reactive flux addition rates were zero for all tests as the chlorine injection system was removed from service and will not be used without prior notification.
- Total solid flux addition

Section 4 presents the analytical and calculated emissions results. Section 5 presents the parametric monitoring results. This information was used to establish compliant operating parameter values and ranges to demonstrate continued compliance with the applicable standards presented in Section 6.

The following methodology was used to calculate the NESHAP compliance status of the subject emission units.

3.1.1 FGFURNACES – Group 1 Furnace Compliance Evaluation

For the CPT on FGFURNACES, ARC demonstrated compliance by testing the exhaust stack of the control device while the associated units operated under the highest aluminum throughput load or capacity and the highest flux throughput load or capacity reasonably expected to occur on a short-term basis.

Aluminum production information was collected during the CPT. This set of data was also used to calculate the pollutant emission rates per ton of aluminum production to determine compliance with the SA NESHAP requirements.

Testing on FGFURNACES was conducted over three days in order to facilitate data collection for all required contaminants listed in the SA NESHAP at the desired operating conditions.

Section 4
Test Results

This section has been prepared to present the results of the CPT that was conducted at ARC from October 25-27, 2016. Minor deviations from the methods of testing outlined in the SSTP and the final testing notifications were observed. No adverse impact on test results were observed due to the minor deviations. Please see the full test report in Appendix C for further details.

4.1 FGFURNACES Results Summary

The SA NESHAP and PTI 340-07E emission limitations that apply to the controlled SAPU (FGFURNACES) at ARC are for PM, HCl and D/F. As outlined earlier in this report emissions were collected from the exhaust stack from the lime injected baghouse at ARC.

The production data for FGFURNACES is contained in Tables 4-1 and 4-2 for each of the two operating conditions. Note that no gaseous chlorine was used during the CPT. The analytical results from the testing event are presented in Tables 4-3 and 4-4. A complete copy of the Source Emission Evaluation Report and a summary of the production data and emissions calculations are included in Appendix C and Appendix D of this document. Operating parameters during Condition 1 maximized aluminum production and emissions of dioxin furans were anticipated to be greatest under those conditions. Therefore, D/F emissions were only measured under Condition 1. Operating parameters during Condition 2 maximized the use of solid reactive flux, therefore, HCl emissions were anticipated to be greater under those operating conditions.

Table 4-1
Summary Results: FGFURNACES Production Data Condition 1

Run Number	Date	Production (tons/hr)	Production (Tons/Test)	Solid Flux Addition (lb/test)	Production (total flux/ton charge)
1	10/25/2016	6.35	25.41	5,700	224.3
2	10/25/2016	6.42	25.67	4,950	192.8
3	10/26/2016	5.80	23.21	4,970	214.2
Average		**6.19**	**24.76**	**5,206.7**	**210.4**

Table 4-2
Summary Results: FGFURNACES Production Data Condition 2

Run Number	Date	Production (tons/hr)	Production (Tons/Test)	Solid Flux Addition (lb/test)	Production (total flux/ton charge)
4	10/26/2016	4.92	19.67	5,390	274.1
5	10/27/2016	4.17	16.66	5,190	311.5
6	10/27/2016	4.26	17.04	4,760	279.4
Average		**4.45**	**17.79**	**5,113.3**	**288.3**

As shown in Tables 4-3 and 4-4, the PM emissions from FGFURNACES measured under both conditions during the CPT were well below the emissions limits required in PTI 340-07E and the SA NESHAP for Group 1 furnaces. The data listed in Tables 4-3 and 4-4 are based on emissions from FGFURNACES and throughput for the SAPU. All tested results presented are filterable and condensable emission rates combined.

Table 4-3
FGFURNACES (SAPU) Summary Results Condition 1: PM Emissions

Emission Unit	Pollutant	Units	Run 1	Run 2	Run 3	Average	Limit
FGFURNACES	PM	gr/dscf	0.00047	0.00036	0.00014	**0.00032**	**0.01**
FGFURNACES	PM10	lb/hr	0.58	0.58	0.75	**0.64**	**2.91**
FGFURNACES	PM2.5	lb/hr	0.58	0.58	0.75	**0.64**	**2.91**

Table 4-4
FGFURNACES (SAPU) Summary Results Condition 2: PM Emissions

Emission Unit	Pollutant	Units	Run 4	Run 5	Run 6	Average	Limit
FGFURNACES	PM	gr/dscf	0.00023	0.0004	0.00028	**0.00031**	**0.01**
FGFURNACES	PM10	lb/hr	1.5	1.5	0.31	**1.10**	**2.91**
FGFURNACES	PM2.5	lb/hr	1.5	1.5	0.31	**1.10**	**2.91**

As shown in Table 4-5, the HCl emissions from the SAPU are significantly below the NESHAP emissions limit of 0.34 pounds of HCl per ton of aluminum (lb/ton charged) presented in PTI 340-07E.

Table 4-5
FGFURNACES (SAPU) Summary Results: HCl Emissions

Emission Unit	Units	Run 1/3	Run 2/4	Run 3/6		Average	NESHAP Limit
FGFURNACES – Condition 1	lb/ton	0.011	0.010	0.0071	--	**0.0094**	**0.34**
FGFURNACES – Condition 2	lb/ton	0.013	0.0083	0.0089	--	**0.010**	**0.34**

1 NESHAP Standard is 0.40 lb/ton. Limit presented is from MDEQ-AQD permit PTI 340-07E representing 85% of the NESHAP limit

Additionally, an HF limit of 0.34 pounds of HF per ton of aluminum (lb/ton charged) is listed in PTI 340-07E. Results of emission testing of FGFURNACES are shown in Table 4-6 below.

Table 4-6
FGFURNACES (SAPU) Summary Results: HF Emissions

Emission Unit	Units	Run 1/3	Run 2/4	Run 3/6		Average	NESHAP Limit
FGFURNACES – Condition 1	lb/ton	0.0018	0.0017	0.0020	--	**0.0019**	**0.34**
FGFURNACES – Condition 2	lb/ton	0.0023	0.0027	0.0026	--	**0.0025**	**0.34**

Table 4-7 outlines the D/F emissions from FGFURNACES during the worst case Condition 1 operating period. The presented average demonstrates compliance with both the SA NESHAP limit on lb/ton of D/F emissions and the limit listed in PTI 340-07E on lb of D/F emissions per hour.

Table 4-7
FGFURNACES (SAPU and Group 1 Furnace) Summary Results: Dioxin/Furan Emissions

Emission Unit	Units	Run 1	Run 2	Run 3		Average	NESHAP Limit
FGFURNACES	lb/ton	9.9E-10	9.1E-10	4.9E-10		**8.1×10^{-10}**	**3.0×10^{-8}**
FGFURNACES	lb/hr	5.9E-9	6.2E-9	3.4E-9	--	**5.2×10^{-9}**	**2.25×10^{-7}**

1 NESHAP standard presented, limit in PTI 340-07E listed as 3.0E-8 lb/ton for FGMACT-RRR and 2.25E-7 lb/hr for FGFURNACES

2 Data presented in lb/ton converted from gr TEQ/ton presented in Appendix C. gr TEQ/ton * 1 lb/7000 gr = lb TEQ/ton

Section 5
Parametric Monitoring Results

The parameters that were monitored during the CPT are outlined and described below. The tables presented in this section are a summary of the process and emission control parameters within which ARC operated during the compliance testing applicable to the SA NESHAP. Appendix D contains the parametric data recorded during the CPT.

Table 5-1 below outlines the parameters required to be monitored under 40 CFR § 63.1510 and the method employed at ARC to monitor each parameter. The parametric operating parameters were recorded during the full cycles that were tested. These values were then converted to the required units for inclusion in the report. Note that no chlorine reactive flux was used during the CPT but the monitoring system remains in place at ARC.

Table 5-1
FGFURNACES Monitored Data

Parameter	Operating Cycle or Time Period	Monitoring Method	Monitoring Unit
Aluminum Charged	Each Batch	Aluminum Production Measurement Scale	Pounds per Charge
Chlorine Reactive Flux Injection	Hourly Flow Rate During Operation	Chlorine Demag System	Pounds per Hour
Solid Flux Addition	Each Batch	Aluminum Production Measurement Scale	Pounds per Charge
Baghouse Inlet Temperature	Test Run Average	Temperature Probe	Degrees Fahrenheit
Lime Feed Rate	Test Run Average	Lime Injector Setting	Pounds per Hour
Carbon Feed Rate	Test Run Average	Carbon Injector Setting	Pounds per Hour

5.1 FGFURNACES Parametric Monitoring Parameters

Tables 5-2 and 5-3 show the results of parametric monitoring for each test run monitored during the CPT for FGFURNACES at ARC for each of the two tested operating conditions. For the tested scenario, the furnace parameters were recorded during the full batch cycles that were tested. These values were then converted to the required units for inclusion in the report.

Table 5-2
Operating Data Summary – Condition 1

Test Runs	Aluminum Production (tons/test)	Total Chlorine Flux Injection Rate (lb Cl_2/ton Al)	Solid Flux Injection Rate (lb flux/ton Al)	Average Baghouse Inlet Temperature (°F)	Average Lime Feed Rate (lb/hr)	Average Carbon Injection Rate (lb/hr)
Run 1	25.41	0	224.3	184.8	36.0	6.5
Run 2	25.67	0	192.8	189.2	33.5	6.0
Run 3	23.21	0	214.2	186.6	28.0	5.5
Average	**24.76**	**0**	**210.4**	**186.9**	**32.5**	**6.0**

Table 5-3
Operating Data Summary – Condition 2

Test Runs	Aluminum Production (tons/test)	Total Chlorine Flux Injection Rate (lb Cl_2/ton Al)	Solid Flux Injection Rate (lb flux/ton Al)	Average Baghouse Inlet Temperature (°F)	Average Lime Feed Rate (lb/hr)	Average Carbon Injection Rate (lb/hr)
Run 4	19.67	0	274.1	186.3	33.5	4.3
Run 5	16.67	0	311.5	189.6	30.5	6.5
Run 6	17.04	0	279.4	190.6	36.0	6.5
Average	**17.79**	**0**	**288.3**	**188.8**	**33.3**	**5.77**

5.2 Bag Leak Detector Monitoring Results

The bag leak detection system is not a continuous mass monitoring device. The data generated can be used as an indication that a malfunction, such as a fabric filter bag failure, has occurred. Continuous compliance is demonstrated by monitoring various operating parameters, including the use of a CPMS, such as a bag leak detection device. The stack sample analyses of the collected samples for the emissions of D/F, HCl, and PM shows that the detection device provides an indication of normal operation that is well within the allowable emission limits.

The charts presented as part of Appendix H (Bag Leak Detection Data) provide summaries of the bag leak detection data that was measured during the emission sampling events. Based on this data, the baselines of the bag leak detection devices are within the standard allowable emission limits, and the bag leak detectors proved to be reliable indicators that the systems were operating properly.

Section 6
Plan for Ongoing Compliance Demonstration

Table 6-1 presents the compliant operating parameters ARC intends to operate within to maintain compliance with the SA NESHAP. The values and ranges represent those values established during the February 2016 CPT which demonstrated compliance with the regulatory requirements. As such, operations within these values and ranges will demonstrate continued compliance.

Note that as indicated in the test plan, Condition 2 was only proposed to set the solid reactive flux limit. All other limits identified during the CPT were based on data collected from testing during Condition 1.

Table 6-1
NESHAP Compliant Operating Parametric Monitoring

EMISSION UNIT	PARAMETER	MONITORING VALUE/RANGE
FGFURNACES	Bag Leak Detector	Initiate corrective action within one hour of alarm and complete in accordance with OM&M Plan; operate such that alarm does not sound more than 5% of operating time in a 6-month period.
	Baghouse Inlet Temperature	3 hour average ≤ 211.9 °F – Average from stack text +25 °F
	Baghouse Pressure Drop	2.5-8 inches H2O
	Lime Injection Rate	≥ 32.5 lbs/hr – setting during stack test
	Carbon Injection Rate	≥ 6.0 lbs/hr – setting during stack test
	Chlorine Flux Injection	0 lbs/ton – per stack test
	Solid Flux Addition	≤ 288.3 lbs/ton (14%) - per stack test

Notes: This table applies only to requirements of the SA NESHAP.

This information has been incorporated into the facility's OM&M Plan, and ARC will monitor these parameters to allow the facility to report continued compliance with the SA NESHAP requirements.

Appendix F provides emission unit label formats.

Section 7
Certification Statement

As required by 40 CFR 63.9(h), the following certification is made.

I, the undersigned, hereby certify, based upon information and belief formed after reasonable inquiry, the statements and information submitted in this document are true, accurate, and complete.

By: _____ 12-6-16

Authorized Signature — Date

DENNIS FLANAGAN — GM/VP

Typed or Printed Name Signatory — Title of Signatory