UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

DATE:	See Date of Section Chief Signature Below
SUBJECT:	CLEAN AIR ACT INSPECTION REPORT Trialco Inc., Chicago Heights, Illinois
FROM:	Sarah Clark, Environmental Engineer AECAB (IL/IN)
THRU:	Nathan Frank, Section Chief AECAB (IL/IN)
TO:	File

BASIC INFORMATION

Facility Name: Trialco Inc.

Facility Location: 900 East Lincoln Highway, Chicago Heights, IL

Date of Inspection: August 2, 2021

EPA Inspector(s):
1. Sarah Clark, Environmental Engineer
2. Linda Rosen, Environmental Engineer

Other Attendees:
1. Jay Armstrong, President, Trialco Inc.
2. Jim Dee, CFO, Trialco Inc.
3. Bill Larson, Plant Engineer, Trialco Inc. (intermittent)
4. John Colebrook, Managing Consultant, Trinity Consultants

Contact Email Address: jdee@trialco.net

Purpose of Inspection: Observe technical upgrades, including air pollution capture and collection system upgrades, that Trialco, Inc. has made to comply with the National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production (Secondary Aluminum NESHAP).

Facility Type: The facility is a secondary aluminum production facility.

Regulations Central to Inspection: Secondary Aluminum NESHAP

Arrival Time: 10:17 am
Departure Time: 4:00 pm

Inspection Type:
☐ Unannounced Inspection
☒ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials
☒ Stated authority and purpose of inspection
☐ Provided Small Business Resource Information Sheet
☒ Small Business Resource Information Sheet not provided. Reason: Already provided.
☒ Provided CBI warning to facility

The following information was obtained verbally from Jim Dee, Bill Larson, and John Colebrook unless otherwise noted.

Process Description:

Trialco, Inc. (Trialco) smelts aluminum scrap to make aluminum alloys in the form of ingots and sows. There are two reverbatory furnaces, the main furnace (MF) and the small furnace (SF), which operate in batch cycles, and there are three preheat ovens, which are used to preheat sows or wet scrap before charging to the furnaces. Trialco uses solid reactive flux and chlorine gas to separate impurities from the aluminum. Air emissions from the MF and SF are controlled by the ETA baghouse (BH) and Wheelabrator BH, respectively, which are equipped with lime and ammonia injection. For each BH, Trialco monitors the lime and ammonia injection rates, bag leak detection system (BLDS), inlet temperature, and the differential pressure across each BH.

Staff Interview:
At the start of the inspection, Mr. Dee informed us that the SF was pouring metal and that the MF was filled with a batch that would pour at noon. No charging would occur during EPA's inspection. EPA reviewed hardcopy furnace production schedules.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

EPA observed the furnace labels for the SF and MF (Photos 1 and 2). Between the labels, EPA observed digital readouts of the chlorine usage (Photo 75, top) and temperature (Photo 75, bottom).

Mr. Larson accompanied inspectors to the outdoor BH control rooms where EPA observed the new baghouse data historian (Photo 3) and recent alarms (Photo 4). Mr. Larson said that he receives an email each time an alarm is triggered. He explained that the "North Bag House" corresponds to the SF BH (the Wheelabrator BH), the "South Bag House" corresponds to the MF BH (the ETA BH), and the “Precoat Bag Weight” indicates total super sac weight. According to the data historian, and as shown in Photo 4, the most recent alarm occurred at “8/2/2021 10:58:43 PM” with the message, “North Precoat Analog Input Out Of Scale.” Mr. Larson explained that he put new belts on the system this morning after the belts got loose.

Trialco uses a FilterSense DynaCHARGE PM 100 BLDS. The BLDS monitor displayed the instantaneous and 6-minute averge BLDS output for the SF BH and MF BH (Photos 5-8). Mr. Larson explained that “Particulate 1” corresponds with the North BH or SF BH and “Particulate 2” corresponds with the South BH or MF BH. Mr. Larson said that the system is operating with the factory settings. Mr. Larson was not confident in the exact alarm set points and delay times and told EPA that the information would be in the manual that came with the system. Mr. Larson also explained that if there is any buildup on the sensor, the sensor will automatically reprogram itself.

EPA observed the ammonia tank and ammonia injection gauges (Photos 9-15). The facility has added an additional monitoring system so that there is now one for each furnace’s baghouse. The new system is up and running on the MF BH, but the data is not going to the sensor. The existing monitoring system was installed on the SF BH and the ammonia gauge corresponding to the SF BH indicated an ammonia injection rate of approximately 25 cubic feet per hour. The ammonia gauge corresponding to the MF BH did not indicate any flow. Mr. Larson explained that the knobs on top of each gauge adjust the ammonia flow rate.

Next, EPA observed the chlorine tanks (Photos 16-19). There is a north and a south tank room, and in each tank room, there are six tanks stored on one platform scale. Each scale is tested every three months and, according to Mr. Larson, has an accuracy of 1 or 5 pounds. The north and south tank rooms are piped together, such that chlorine can flow from one side to the other, balanced by pressure, and connected to this pipe, there is a single pipe that routes chlorine to the facility. When chlorine injection is needed at the facility, the chlorine is drawn from all six tanks on one side at a time. Mr. Larson showed EPA the chlorine weight monitor (Photo 26) which displayed the current weight for the north and south scales separately. Trialco explained that the data historian reported the amount of chlorine used over the last 15-minute period and last 60-minute period, and that negative readings could represent flow between the north and south tanks.

EPA then observed the BLDS and BH inlet temperature sensors positioned at each BH stack and inlet, respectively (Photos 20-25) before touring the outdoor scrap yard with Mr. Dee (Photos 27-

42). EPA observed a variety of aluminum products in the scrap yard including incoming sows, old streetlight and/or flag posts, wheels, furnace run-off, wire, road signs, furnace 'clean out' or extrusion, punches from cans, and post-consumer aerosol cans and aluminum water bottles. Mr. Dee characterized the streetlight/flag poles as painted mixed low copper (PTD MLC) scrap. Mr. Dee explained that Trialco was in the process of selling off certain types of scrap, such as the old street signs. Mr. Dee also explained that aerosol cans (i.e. alloy 1070) have a different alloy composition than used beverage cans (UBCs), which are composed of three alloys.

Inside the facility, EPA observed the SF capture and collection system (Photos 43-48, 52-53, 55-59). Floor-to-hood metal plates were installed on the left and right sides of the metal charge well hood and heat resistant curtains hung from the front of the metal hood and across gaps on either side. EPA observed that the heat resistant curtains that hung from the metal hood were tattered and torn, with gaps between curtains. EPA observed that the duct routing exhaust from the SF to the baghouse was connected to the SF hood at a 90° angle, with the opening of the duct flush with the back of the hood, and that the duct experienced a sharp transition in diameter (enlargement) a few feet downstream from the SF hood. EPA also observed the hooding for the capture and collection system for the SF hearth, where, similarly, the duct connected at a 90° angle flush with the back of the hood. EPA noted that the pump well doors were closed. Immediately in front of the SF charge well, EPA observed a pile of aluminum scrap that Mr. Dee confirmed included alloy 1070 (Photo 54). Across from the SF, EPA observed a large bay door opening to the outdoors (Photos 49-50).

Trialco showed EPA the separate ducts that route emissions from the SF and MF to the Wheelabrator BH and ETA BH, respectively, and indicated to EPA that the damper, which can connect the two ducts, was closed (Photo 60). Mr. Larson stated that there was currently no monitor on the duct damper. Mr. Dee said that Trialco will not block off this duct permanently; Trialco plans to continue to use this damper to route emissions to the other BH in case of an emergency or outage.

EPA observed the floor scale used to weigh raw materials. Mr. Larson explained that the scale is calibrated at least every 3 months (Photo 51). EPA also observed the preheat ovens, one of which was warming sows, and the square ducts that routed emissions from the preheat ovens to the main duct for the ETA BH (Photos 61-63).

Next, EPA observed the MF capture and collection system (Photos 64-74). EPA noted that the pump well doors were closed. Floor-to-hood metal plates were installed at the front of the charge well hood covering approximately 2/3 of the opening and curtains hung across gaps to either side of the charge well.

EPA then observed the lime injection system (Photos 76-81). A super sac of lime is positioned on load cells, and from there, lime enters one of two augers that feed lime through long flexible hoses to each furnace BH duct. Mr. Larson explained how a level sensor is used to detect the presence of lime and explained how Trialco upgraded the lime injection system by increasing the feed diameter to reduce clogging. Mr. Larson stated that he installed a fresh bag of lime the morning of EPA's inspection.

Photos and/or Videos: were taken during the inspection.
Photos containing confidential business information (CBI) are marked accordingly in Appendix A.

Field Measurements: were not taken during this inspection.

RECORDS REVIEW

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

During the closing conference, Mr. Colebrook showed EPA electronic records of monitoring data and alarms. EPA observed that the "North baghouse" (the Wheelabrator BH) was off for approximately 25 minutes the morning of the inspection, which Trialco staff explained was to tighten some belts on the fan. When EPA asked about audio and/or visual alarms, Trialco staff said that there were none, apart from the email to Bill Larson for 15-minute deviations. Mr. Armstrong explained that cold air dampers open when the exhaust gets too hot; Mr. Colebrook added that the baghouse damper air has a high set point, above the alarm threshold.

When EPA asked about production records or corrective actions reports, Trialco staff explained that records for production and corrective actions were still maintained on paper. When EPA asked about flux, Trialco staff stated that, currently, the solid flux injection rate is maintained on paper and that the chlorine injection rate is determined by integrating over chlorine flow.

When EPA asked about lime injection, Trialco staff said that the flow of lime from the super sac is divided approximately 60/40 to the ETA and Wheelabrator BHs, based on the air flow to each BH. The lime auger settings are reported in Hertz or rotations per minute. To confirm the pound per hour (lb/hr) rate, Trialco staff said that Trialco could weigh the output and count the number of rotations on the auger ("bucket test") and said that Mr. Larson periodically checks this. Mr. Colebrook also explained how the lb/hr rate can be estimated by integrating the data reported by the lime super sac load cell.

When EPA asked about the ammonia system, Mr. Colebrook showed EPA the current digital readout of approximately 28.4 gallons per minute and said that the digital signal was more accurate than the analog output observed earlier.

When EPA asked about the BLDS, Trialco staff said that Trialco was currently using the factory settings but planned on making necessary adjustments if needed during the next stack test.

When EPA asked about the chlorine injection system, Trialco staff explained that a small amount of nitrogen gas is present in the system to keep the lines open and that the system must remain on to prevent molten metal from flowing up the line while the chlorine lance is submerged. Trialco staff said that they were currently exploring different metering options capable of handling this type of nitrogen/chlorine system.

DIGITAL SIGNATURES

Report Author: SARAH CLARK

Digitally signed by SARAH CLARK
Date: 2021.09.30 13:54:33 -05'00'

Section Chief: NATHAN FRANK

Digitally signed by NATHAN FRANK
Date: 2021.10.01 14:05:21 -05'00'

APPENDICES AND ATTACHMENTS

1. Appendix A: Digital Image Log

Facility Name: Trialco Inc.
Facility Location: 900 East Lincoln Highway, Chicago Heights, IL
Date of Inspection: August 2, 2021

APPENDIX A: DIGITAL IMAGE LOG

1. **Inspector Name:** Sarah Clark	2. **Archival Record Location:** ERC > AECAB Library > Enf_Trialco_IL_19 > Enf_Trialco Inc_IL_19_Inspection 2021

Image Number	File Name	Date and Time (CDT)	Latitude and Longitude	Description of Image
1	P8020001.JPG	2021:08:02 11:18:54	41.505188, -87.609428	SF furnace label
2	P8020002.JPG	2021:08:02 11:19:06	41.505137, -87.60943	MF furnace label
3	P8020003.JPG	2021:08:02 11:22:16	41.505, -87.609167	BH data historian "North Bag House" corresponds to SF BH "South Bag House" corresponds to MF BH Precoat indicates total super sac weight
4	P8020004.JPG	2021:08:02 11:24:53	41.505303, -87.608208	BH Alarm history 7/29/21-8/2/21
5	P8020005.JPG	2021:08:02 11:27:55	41.504825, -87.608447	BLDS output Screen too dark to read.
6	P8020006.JPG	2021:08:02 11:28:08	41.504783, -87.608562	BLDS output Screen too dark to read.
7	P8020007.JPG	2021:08:02 11:28:45	41.504765, -87.608465	BLDS output "Particulate 1" corresponds to SF BH "Particulate 2" corresponds to MF BH
8	P8020008.JPG	2021:08:02 11:29:06	41.504767, -87.608482	BLDS output: instantaneous and 6-minute average
9	P8020009.JPG	2021:08:02 11:37:53	41.505035, -87.608673	Ammonia tank
10	P8020010.JPG	2021:08:02 11:38:54	41.505025, -87.608672	Ammonia tank
11	P8020011.JPG	2021:08:02 11:42:10	41.504963, -87.608713	Ammonia injection system Left side: SF BH. Right side: MF BH
12	P8020012.JPG	2021:08:02 11:42:15	41.504963, -87.608713	Ammonia injection system Gauge reads 25 cubic feet per hour to SF BH
13	P8020013.JPG	2021:08:02 11:42:19	41.504963, -87.608713	Ammonia injection system Gauge did not indicate flow to MF BH
14	P8020014.JPG	2021:08:02 11:42:58	41.504928, -87.608755	Ammonia injection system Knobs on top adjust flow rate
15	P8020015.JPG	2021:08:02 11:43:57	41.504917, -87.608757	Ammonia injection system, as viewed from outside
16	P8020016.JPG	2021:08:02 11:49:14	41.504822, -87.608385	South chlorine tanks on load scale (CBI)

17	P8020017.JPG	2021:08:02 11:51:05	41.50483, -87.60836	North chlorine tanks on load scale (CBI)
18	P8020018.JPG	2021:08:02 11:51:16	41.50483, -87.60836	North chlorine tanks on load scale (CBI)
19	P8020019.JPG	2021:08:02 11:52:09	41.504852, -87.608298	Pipe that connects north and south tank rooms and routes chlorine to facility (CBI)
20	P8020020.JPG	2021:08:02 11:59:27	41.504722, -87.608056	MF BH stack
21	P8020021.JPG	2021:08:02 12:01:52	41.5047, -87.608435	SF BH stack with BLDS
22	P8020022.JPG	2021:08:02 12:03:27	41.504695, -87.608453	MF BH stack with BLDS
23	P8020023.JPG	2021:08:02 12:04:34	41.504697, -87.608458	MF BH inlet temperature monitor after spark arrester
24	P8020024.JPG	2021:08:02 12:04:42	41.504697, -87.608458	MF BH inlet temperature monitor after spark arrester
25	P8020025.JPG	2021:08:02 12:06:19	41.504693, -87.608465	SF BH inlet temperature monitor
26	P8020026.JPG	2021:08:02 12:07:27	41.504687, -87.608468	Chlorine weight monitor
27	P8020027.JPG	2021:08:02 12:14:53	41.504444, -87.608611	Scrap: incoming aluminum sows and old light poles, "painted category"
28	P8020028.JPG	2021:08:02 12:17:45	41.5048, -87.608152	Scrap yard: Furnace "run off"
29	P8020029.JPG	2021:08:02 12:17:51	41.5048, -87.608152	Scrap yard: Furnace "run off" and wheels
30	P8020030.JPG	2021:08:02 12:19:57	41.504722, -87.608056	Scrap yard: Light poles
31	P8020031.JPG	2021:08:02 12:20:42	41.505062, -87.60816	Scrap yard: Road signs
32	P8020032.JPG	2021:08:02 12:22:33	41.505062, -87.60816	Scrap yard: Light poles and wheels
33	P8020033.JPG	2021:08:02 12:24:06	41.505077, -87.608118	Scrap yard: Road signs
34	P8020034.JPG	2021:08:02 12:25:27	41.505313, -87.608137	Scrap yard: Unknown, possibly clean out / extrusion
35	P8020035.JPG	2021:08:02 12:26:25	41.505313, -87.608138	Scrap yard: Punches from cans
36	P8020036.JPG	2021:08:02 12:33:07	41.505278, -87.608056	Scrap yard: Post-consumer aerosol cans and water bottles (Alloy 1070)
37	P8020037.JPG	2021:08:02 12:35:38	41.505492, -87.607832	Scrap yard: Alloy 1070
38	P8020038.JPG	2021:08:02 12:38:31	41.50536, -87.607838	Scrap yard: Alloy 1070

39	P8020039.JPG	2021:08:02 12:39:19	41.50536, -87.607837	Scrap yard: Painted mixed low copper scrap
40	P8020040.JPG	2021:08:02 12:41:09	41.505252, -87.607833	Scrap yard: Punches from cans.
41	P8020041.JPG	2021:08:02 12:41:19	41.50525, -87.60783	Scrap yard: Punches from cans.
42	P8020042.JPG	2021:08:02 12:41:24	41.50525, -87.60783	Scrap yard: Punches from cans.
43	P8020043.JPG	2021:08:02 13:31:04	41.50538, -87.609383	SF front (CBI)
44	P8020044.JPG	2021:08:02 13:34:33	41.50532, -87.609443	SF side of charge well, with well walker
45	P8020045.JPG	2021:08:02 13:34:37	41.50532, -87.609443	SF side of charge well, with well walker
46	P8020046.JPG	2021:08:02 13:35:33	41.505297, -87.609438	SF hearth door
47	P8020047.JPG	2021:08:02 13:36:51	41.505292, -87.609345	SF pump well
48	P8020048.JPG	2021:08:02 13:36:56	41.505292, -87.609345	SF pump well (CBI)
49	P8020049.JPG	2021:08:02 13:38:55	41.505295, -87.609313	Bay door across from SF
50	P8020050.JPG	2021:08:02 13:38:55	41.505295, -87.609313	Bay door across from SF
51	P8020051.JPG	2021:08:02 13:41:35	41.505108, -87.609357	Floor scale
52	P8020052.JPG	2021:08:02 13:44:10	41.505, -87.609167	SF hood duct connection
53	P8020053.JPG	2021:08:02 13:45:02	41.505108, -87.609323	SF hood duct connection
54	P8020054.JPG	2021:08:02 13:45:58	41.505108, -87.609323	Alloy 1070 on floor in front of SF
55	P8020055.JPG	2021:08:02 13:49:35	41.5051, -87.609308	SF ductwork connection to back of hood
56	P8020056.JPG	2021:08:02 13:49:43	41.505098, -87.609283	SF ductwork connection to back of hood
57	P8020057.JPG	2021:08:02 13:53:05	41.505103, -87.60927	SF ductwork connection to back of hood
58	P8020058.JPG	2021:08:02 13:56:27	41.50506, -87.60924	SF hearth door hood (CBI)
59	P8020059.JPG	2021:08:02 13:56:40	41.50506, -87.60924	SF hearth door hood duct connection (CBI)
60	P8020060.JPG	2021:08:02 14:01:47	41.505, -87.609167	Left: SF BH duct; Right: MF BH duct; Connection with damper

61	P8020061.JPG	2021:08:02 14:02:33	41.504973, -87.609288	MF BH with square duct connection to preheat ovens
62	P8020062.JPG	2021:08:02 14:06:50	41.504925, -87.60925	Preheat ovens
63	P8020063.JPG	2021:08:02 14:07:15	41.504882, -87.609392	Preheat ovens
64	P8020064.JPG	2021:08:02 14:08:24	41.504878, -87.609473	MF hearth door
65	P8020065.JPG	2021:08:02 14:10:08	41.504878, -87.609473	MF hearth duct
66	P8020066.JPG	2021:08:02 14:10:54	41.504878, -87.609473	MF charge well
67	P8020067.JPG	2021:08:02 14:11:48	41.504885, -87.609487	MF duct to pump well, as viewed from charge well
68	P8020068.JPG	2021:08:02 14:12:03	41.504885, -87.609492	MF charge well hood duct connection
69	P8020069.JPG	2021:08:02 14:13:32	41.504883, -87.609493	MF charge well hood old "blocked off" duct connection
70	P8020070.JPG	2021:08:02 14:17:30	41.504722, -87.609167	MF charge well hood front (CBI)
71	P8020071.JPG	2021:08:02 14:18:02	41.504882, -87.609502	MF pump well (CBI)
72	P8020072.JPG	2021:08:02 14:19:39	41.504862, -87.609517	MF ductwork
73	P8020073.JPG	2021:08:02 14:19:44	41.504862, -87.609517	MF ductwork front of hood (CBI)
74	P8020074.JPG	2021:08:02 14:21:00	41.504872, -87.609535	MF pump well (CBI)
75	P8020075.JPG	2021:08:02 14:31:28	41.504838, -87.609415	Chlorine rate display
76	P8020076.JPG	2021:08:02 14:38:33	41.504722, -87.608889	Lime injection system auger
77	P8020077.JPG	2021:08:02 14:38:37	41.504722, -87.608889	Lime injection system level sensor
78	P8020078.JPG	2021:08:02 14:38:42	41.504722, -87.608889	Lime injection system super sac on load cells
79	P8020079.JPG	2021:08:02 14:38:53	41.504795, -87.608757	Lime injection system readout with total weight of super sac bag
80	P8020080.JPG	2021:08:02 14:41:50	41.504722, -87.608611	Lime injection system tubing to MF BH duct
81	P8020081.JPG	2021:08:02 14:41:52	41.504803, -87.608753	MF BH duct