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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-1479C
Plant ID No.:	009-00023
Applicant:	Wheeling-Nisshin, Inc.
Facility Name:	Follansbee
Location:	Brooke County
NAICS Code:	332812
Application Type:	Modification
Received Date:	February 4, 2013
Engineer Assigned:	Joe Kessler
Fee Amount:	$2,000
Date Received:	$1,000 (February 6, 2013) $1,000 (March 21, 2013)
Complete Date:	March 25, 2013
Due Date:	June 23, 2013
Applicant Ad Date:	February 15, 2013
Newspaper:	*The Brooke County Review*
UTM's:	Easting: 534.346 km Northing: 4,464.008 km Zone: 17
Description:	Addition of a new coater and dryer to the Aluminizing and Galvanizing Line (AGL), removal of equipment from the permit that is no longer at the facility, and institution of hours of operation restrictions on existing natural gas combustion sources.

On December 1, 1987, Wheeling-Nisshin, Inc. (WNI) was issued Permit Number R13-0971 for the construction and operation of a Metal Coating Facility located in Follansbee, Brooke County, WV. The original facility consisted of just the Continuous Galvanizing Line (CGL). Since that time, the facility has been the subject of the following substantive permitting actions:

- On June 10, 1992, Permit Number R13-1479 was issued to WNI for the addition of an AGL;
- On January 1, 2000, Permit Number R13-1479A was issued to WNI for the addition of an in-line Acrylic Coater to the CGL; and
- On December 31, 2002, Permit Number R13-1479B was issued to WNI to consolidate R13-1479A and R13-0971 into one permit and to add other emission units not previously included

in either permit.

DESCRIPTION OF PROCESS/MODIFICATIONS

Existing Facility

The existing Follansbee Metal Coating Facility consists of a 62 tons/hour CGL and a 77 tons/hour AGL. The AGL is a multi-product steel strip coating line that can produce regular or "spangled" galvanized, galvanneal, and aluminized "Type I" coated steel strip. The CGL is a multi-product steel strip coating line that can produce light-gauge galvanized and *GALVALUME* steel strip. The CGL also features an acrylic coater.

The above is accomplished as follows: Steel coils are delivered to the facility and are fed under tension through either the CGL/AGL process where they are subject to various heating, cooling, galvanizing, and coating (if required) stages to produce the desired product. Additional emission units at the existing facility include space heaters, a boiler, and a cooling tower. All combustion at the facility is done with natural gas or a natural-gas/hydrogen mixture. One finished, coils are packaged and loaded onto trucks for delivery.

Proposed Modifications

As a part of this permitting action, WNI is proposing to:

- Add an additional product option to the existing AGL line. This requires the installation of a new 77 tons/hour AGL coater (69S) and a new 9.0 mmBtu/Hr coater dryer (68S);
- Remove the existing AGL (5S) and CGL (13S) Spangle Minimizer from the permit; and
- Place annual hours of operation limits on the Galvanneal (3S), Rig Preheater (16S), Tight Coil Anneal Furnaces (17S-22S), AGL Area Space Heaters (23S-42S), CGL Area Space Heaters (43S-55S), and the Mobile Space Heaters (56S-57S).

SITE INSPECTION

On February 27, 2013, the author conducted an inspection of WNI's Follansbee facility. The contact for the inspection was Mr. Lonny Riggs, E, H & S Coordinator for WNI. The inspection included a walk-thorough of the entire facility and an overview of the facility's operation. The AGL was in operation during the inspection but the CGL was not and had been down for some time. Observations from the inspection include:

- The facility is located at a well-known location on a large, long strip of land between downtown Follansbee and the Ohio River;
- No noticeable odor was detected outside or inside the WNI building;

- The CGL was not in operation and Mr. Riggs stated that there were no plans to restart it in the near future;

- The facility was not currently doing in-house annealing as it was cheaper to buy coils pre-annealed. However, this process is not being removed from the permit;

- The AGL and CGL non-oxygen furnaces use a mixture of hydrogen and natural gas as a fuel to promote maximum efficiency;

- Major construction was on-going at the facility to add the new galvanizing pot to the AGL. The new emission units, however, were not yet on-site; and

- The latitude and longitude of the facility is 40.32747 and -80.59737, respectively.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

The following will summarize the air emissions and calculation methodologies for the equipment/processes that are proposed for modification in this permitting action. WNI provided detailed calculations in Attachment N of the permit application for each new/modified emission unit including greenhouse gases (GHG).

Natural-Gas Fired Combustion Exhaust Emissions

Emissions from the new or modified natural gas-fired units (furnaces, heaters, boiler, etc.) were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4 (AP-42 is a database of emission factors maintained by USEPA). Hourly emissions were based on the maximum design heat input (MDHI) of each heater and annual emissions were based on either an annual hours of operation of 8,760 hours or as limited under 4.1.5(c) of the draft permit. As hydrogen - an extremely efficient fuel - is used in some of the combustion units, using the natural-gas combustion emission factors provided in AP-42 is considered conservative.

Coating Operations

Potential emissions from the new AGL coater were based on a mass balance calculation that assumes all VOCs used in the coating process volatilize (no HAP-containing coating are used). Hourly emissions were based on a maximum steel throughput of 77 tons/hour and a VOC content (as-applied) of the coatings of 0.015 lb-VOCs/gal. Annual emissions were based on an annual coating usage of 45,125 gallons.

Based on the above, the new AGL coater will have a VOC potential-to-emit (PTE) of 0.08 lbs/hour and 0.34 tons/year (TPY).

Emissions Summary

A post-modification facility-wide PTE is included as Attachment A to this evaluation. The post-modification change in annual PTE is given in the following table:

Table 1: Post-Modification Change in Annual PTE

Permit	NO_x	CO	VOCs	SO_2	PM[(1)]	HAPs	CO_2e[(2)]
R13-1479B	98.80	80.75	24.30	1.45	39.00	1.71	n/a
R13-1479C	85.32	68.05	23.95	1.50	21.31	1.56	95,446
Change	***(13.48)***	***(12.70)***	***(0.35)***	***0.05***	***(17.69)***	***(0.15)***	***95,446***

(1) All particulate matter emitted is assumed to be $PM_{2.5}$ or less.

(2) Based on multiplying the mass amount of emissions for each of the six greenhouse gases by the gas's associated global warming potential published at Table A-1 to Subpart A of 40 CFR Part 98 - Global Warming Potentials. Used to determine major source status of facilities under 45CSR14. Contribution from emissions of methane ignored here - estimated to be less than an aggregate of 2 TPY or 42 TPY of CO_2e. .

REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to the modifications discussed herein.

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

Pursuant to the definition of "fuel burning unit" under 45CSR2 ("producing heat or power by indirect heat transfer"), 45CSR2 applies, according to information supplied by WNI, to only the boiler (15S) and the hot water heater (58S). Neither of these units are being modified as a part of this permitting action. No other natural-gas combustion device, including the new Coater Dryer, is subject to 45CSR2.

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

45CSR7 has three substantive requirements applicable to the existing and proposed natural gas-fired furnaces, dryers, and process heaters (1S-4S, 6S, 11S-12S, 16S, 12S-22S) - each defined as a "manufacturing process" pursuant to §45-7-2.20. 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" as defined under §45-7-2.38. As all the applicable sources combust natural gas or a mixture of natural gas and hydrogen which has very low emissions of particulate matter, the emission units should easily meet this limit.

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. The natural gas-fired furnaces, dryers, and process heaters are defined as a type 'd' source type operations. The maximum amount of material charged through the CGL is 124,000 pounds per hour and through the AGL is

154,000 lbs per hour. Based on Table 45-7A, the particulate matter limit would be 21.2 lb/hr for each source operation regardless of whether it was in the CGL or AGL. The maximum potential hourly PM emissions from any of the natural gas-fired furnaces, dryers, and process heaters is estimated to be 0.37 lb/hr (the aggregate facility-wide maximum emission rate of particulate matter is estimated to only be 7.22 lb/hr). Therefore, all of the applicable emission units are in compliance with the 45CSR7, Section 4 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 only potential substantive source of fugitive emissions present at the facility are the haulroads and mobile work areas. However, the Follansbee's haulroads and mobile work areas are paved. Based on the small amount of truck traffic expected at the plant, this is determined to be sufficient to meet Section 5 of 45CSR7.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides (non-applicability)

45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing processes," and limiting H_2S concentrations in process-gas streams. The only potential applicability of 45CSR10 to the Follansbee Plant are the limitations on fuel burning units.

Pursuant to the definition of "fuel burning unit" under 45CSR10 ("producing heat or power by indirect heat transfer"), the limitations on fuel burning units under 45CSR10 apply, according to information supplied by WNI, to only the boiler (15S) and the hot water heater (58S). Neither of these units are being modified as a part of this permitting action. No other natural-gas combustion device, including the new Coater Dryer, is subject to 45CSR10.

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 proposed modifications at the existing Follansbee Plant do not have the potential to increase the PTE in excess of six (6) lbs/hour and ten (10) TPY that would, pursuant to §45-13-2.17, define the installation as a "modification" under 45CSR13. However, due to the complexity of the requested changes and the need to update the permit to the new boilerplate, WNI voluntarily submitted a full modification application for the proposed modifications.

As required under §45-13-8.3 ("Notice Level A"), WNI placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on February 15, 2013 in *The Brooke County Review* and the affidavit of publication for this legal advertisement was submitted on February 25, 2012.

As this permitting action involves the addition of restrictions on certain equipment and processes to "limit physical and operational capacity below major stationary source thresholds" the applicant will be required to follow the Notice Level C requirements under §45-13-8.5.

***45CSR14/45CSR19 Major Modification (Non-Applicability*)**

The post-modification PTE (see Table 1 above) of Follansbee Metal Coating Facility is below the levels that would define the source as "major" under either 45CSR14 or 45CSR19 and, therefore, the modification evaluated herein is not subject to the provisions of 45CSR14 or 45CSR19.

45CSR30: Requirements for Operating Permits

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 post-modification PTE of the Follansbee Metal Coating Facility is below the levels that would define the source as "major" under 45CSR30. However, as there are emissions sources at the facility subject to requirements promulgated under §111 or §112(r) of the Clean Air Act (specifically 40 CFR 60, Subpart TT) that do not have a specific exemption from Title V permitting, the facility is considered a non-major source subject to Title V.

40 CFR 60, Subpart TT: Standards of Performance for Metal Coil Surface Coating

Pursuant to §60.460, Subpart TT applies to "the following affected facilities in a metal coil surface coating operation: each prime coat operation, each finish coat operation, and each prime and finish coat operation combined when the finish coat is applied wet on wet over the prime coat and both coatings are cured simultaneously." The existing CGL Coater and the proposed AGL Coater are defined as affected facilities under Subpart TT.

The substantive requirement applicable to the CGL and AGL Coater is given under §60.460(1): that no more than "0.28 kilogram VOC per liter (kg VOC/ l) of coating solids applied for each calendar month for each affected facility that does not use an emission control device(s)" shall be emitted. This requirement will be placed in the proposed permit and the applicable monitoring under §60.463(c)(1) is required as well. WNI has calculated their estimated as-applied VOC contents to be: AGL Coater = 0.0018 kg/L and CGL Coater = 0.012 kg/L. These VOC levels are far below the Subpart TT limit.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

There is no increase in, or addition to, the facility's PTE of non-criteria regulated pollutants associated with the proposed modifications (see Table 1 above). Therefore no new toxicity analysis is required.

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.

Additionally, based on the nature of the proposed modification, modeling was not required under 45CSR13, Section 7.

MONITORING, COMPLIANCE DEMONSTRATIONS, RECORD-KEEPING, AND REPORTING REQUIREMENTS

The following substantive monitoring, compliance demonstration, and record-keeping requirements shall be required (as these requirements were updated and revised for all emission units at the facility, all will be listed here even for those equipment not modified):

- For the purposes of demonstrating compliance with the maximum annual throughput limits for the AGL and CGL set forth in 4.1.2. and 4.1.3. of the draft permit, WNI shall be required to monitor and record the monthly and rolling twelve month total throughput of coils in the AGl and CGL line.

- For the purposes of demonstrating compliance with 4.1.4(c)of the draft permit, WNI shall be required to calculate the monthly and rolling twelve month total VOC and HAP emissions from all coating operations (AGL and CGL) according to the requirements given under 4.2.2(a) through (d) of the draft permit.

- For the purposes of demonstrating compliance with the maximum hours of operation limits for the natural-gas combustion units set forth in 4.1.5.of the draft permit, WNI shall be required to monitor and record the monthly and rolling twelve month total hours of operation of each unit with a limit in Table 4.1.5(c) of the draft permit.

- For the purposes of demonstrating compliance with visible emissions limitations set forth in 4.1.5(d)(1) of the draft permit, WNI shall be required to:

    - Conduct an initial Method 22 visual emission observation on 15S and 58S to determine the compliance with the visible emission provisions. WNI shall be required to take a minimum of two (2) hours of visual emissions observations on the units.

    - Conduct monthly Method 22 visible emission observations of 15S and 58S exhaust to ensure proper operation for a minimum of ten (10) minutes each month the units are in operation.

    - In the event visible emissions are observed in excess of the limitations given under 4.1.5(d)(1) of the draft permit, WNI shall be required to take immediate corrective action.

- For the purposes of determining compliance with the percent sulfur requirement under 4.1.6(b) of the draft permit, WNI shall be required to, for each load of fuel delivered to the facility, obtain from the fuel supplier a certification of the sulfur content of the fuel supplied.

- For the purposes of demonstrating compliance with the maximum hours of operation limits for the emergency generators set forth in 4.1.6(d) of the draft permit, WNI shall be required to monitor and record the monthly and rolling twelve month total hours of operation the

emergency generators.

- WNI shall be required to meet all applicable Monitoring, Compliance Demonstration and Source-Specific Recordkeeping and Reporting Requirements as given under 40 CFR 60, Subpart TT.

PERFORMANCE TESTING OF OPERATIONS

The following substantive performance testing requirements shall be required:

- At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, WNI shall be required to conduct or have conducted test(s) to determine compliance with the emission limitations established in the permit application and/or applicable regulations.

- The permittee shall meet all applicable Performance Testing Requirements as given under 40 CFR 60, Subpart TT.

CHANGES TO PERMIT R13-1479B

The proposed permit is presented in the updated permitting format/boilerplate and is completely different from R13-1479B.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of a Permit Number R13-1479C to Wheeling-Nisshin, Inc. for the above discussed modifications at the Follansbee Metal Coating Facility located in Follansbee, Brooke County, WV.

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Joe Kessler, PE
Engineer

_____

Date

Attachment A

Wheeling Nisshin, Inc.: Follansbee
R13-1497C: 009-00023

Post-Modification Facility-Wide PTE

Emission Unit	EP ID	CO		NO_x		PM[1]		SO_x		VOC		CO_2e[2]		HAPs	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Non-Oxygen Furnace (AGL)	1E	4.10	17.96	4.88	21.37	0.37	1.62	0.03	0.13	0.27	1.18	5,860	25,668	0.09	0.39
Radiant Tube Furnace (AGL)	2E	1.39	6.09	1.65	7.23	0.13	0.57	0.01	0.04	0.09	0.39	1,981	8,677	0.03	0.13
Gavanneal (AGL)	3E	1.67	3.66	1.99	4.36	0.15	0.33	0.01	0.03	0.11	0.24	2,388	5,230	0.04	0.09
Aluminum Premelt (AGL)		0.57	2.50	0.68	2.98	0.05	0.22	0.01	0.04	0.04	0.18	811	3,552	0.01	0.04
Strip Dryer (AGL)	5E	0.25	1.07	0.29	1.27	0.02	0.09	0.01	0.04	0.02	0.09	350	1,533	0.01	0.04
Non-Oxygen Furnace (CGL)	10E	2.52	11.04	3.00	13.14	0.23	1.01	0.02	0.09	0.17	0.74	3,600	15,768	0.06	0.26
Radiant Tube Furnace (CGL)	11E	1.28	5.60	1.52	6.66	0.12	0.53	0.01	0.04	0.08	0.35	1,827	8,002	0.03	0.13
Acrylic Coater (CGL)	13E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.32	18.92	0	0	0.00	0.01
Boiler	14E	2.13	9.33	2.54	11.13	0.19	0.83	0.02	0.09	0.14	0.61	3,047	13,346	0.05	0.22
Rig Preheater	15E	0.41	0.45	0.49	0.54	0.04	0.04	0.00	0.00	0.03	0.03	583	638	0.01	0.01
Tight Coil Anneal Furnaces	16E-22E	1.57	1.72	1.86	2.04	0.14	0.15	0.01	0.01	0.10	0.11	2,237	2,450	0.04	0.04
Area Space Heaters (AGL)	22E-41E	0.57	1.25	0.68	1.49	0.05	0.11	0.00	0.01	0.04	0.08	816	1,787	0.01	0.02
Area Space Heaters (CGL)	42E-54E	1.06	2.32	1.26	2.76	0.10	0.22	0.01	0.02	0.07	0.15	1,515	3,318	0.02	0.04
Mobile Space Heaters	55E-56E	0.25	0.27	0.29	0.32	0.02	0.02	0.00	0.00	0.02	0.02	350	383	0.01	0.01
Hot Water Heater	57E	0.03	0.11	0.03	0.13	0.01	0.04	0.01	0.04	0.01	0.04	35	153	0.01	0.04
Caterpillar Emergency Generator	58E	2.45	0.30	3.84	0.96	0.31	0.08	0.71	0.18	0.46	0.12	399	100	0.01	0.00
Kohler Emergency Generator	59E	7.61	1.00	14.11	3.53	1.41	0.35	2.40	0.60	0.16	0.04	746	187	0.01	0.00
Nissan Emergency Generator	60E	1.40	0.17	6.48	1.62	0.46	0.12	0.43	0.11	0.53	0.13	241	60	0.01	0.00
Cooling Towers	61E-65E	0.00	0.00	0.00	0.00	3.26	14.26	0.00	0.00	0.00	0.00	0	0	0.00	0.00
Paved Road Dust	n/a	0.00	0.00	0.00	0.00	0.10	0.46	0.00	0.00	0.00	0.00	0	0	0.00	0.00
Coater Dryer (AGL)	67E	0.73	3.21	0.87	3.81	0.06	0.26	0.01	0.02	0.04	0.18	1,049	4,595	0.01	0.04
Acrylic Coater (AGL)	68E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.34	0	0	0.00	0.01
Facility-Wide Total ➜		*29.99*	*68.05*	*46.46*	*85.32*	*7.22*	*21.31*	*3.70*	*1.50*	*6.78*	*23.95*	*27,835*	*95,446*	*0.46*	*1.56*

(1) All particular matter emissions are assumed to be 2.5 microns or less.
(2) Contribution from emissions of methane ignored here - estimated to be less than an aggregate of 2 TPY or 42 TPY of CO_2e.