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**west virginia** department of environmental protection

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Earl Ray Tomblin, Governor  
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## **ENGINEERING EVALUATION / FACT SHEET**

### BACKGROUND INFORMATION

Application No.: R13-2880  
Plant ID No.: 033-00198  
Applicant: Scott Aluminum Corporation (Scott)  
Facility Name: Wilsonburg  
Location: Harrison County  
NAICS Code: 331319  
Application Type: Construction  
Received Date: April 13, 2011  
Engineer Assigned: Joe Kessler  
Fee Amount: \$1,000  
Date Received: April 18, 2011  
Complete Date: May 5, 2011  
Due Date: August 3, 2011  
Applicant Ad Date: April 21, 2011  
Newspaper: *The Exponent-Telegram*  
UTM's: Easting: 552.6 km Northing: 4,348.5 km Zone: 17  
Description: Permit to restart Aluminum Sheet Rolling and Sizing Facility.

On March 24, 1997, Precision Coil, Inc. (Precision Coil) was issued permit R13-1972 (Facility ID 033-00065) to construct an aluminum sheet rolling and sizing facility in Wilsonburg, Harrison County, WV. On April 29, 2011 Precision Coil ceased operating and was given an enforcement status of "90 - Permanent Shutdown." Sometime thereafter the facility was purchased by Aluminum Services, Inc. (Aluminum Services) and an application submitted to restart the facility under a new Plant ID Number.

On May 3, 2011, Aluminum Services was granted a "no-permit needed" decision (PD11-023) to conduct "Research & Development" activities at the facility as allowed under 45CSR13A prior to receiving a construction permit.

In May 2011, Aluminum Services was purchased by Scott Aluminum Corporation (Scott). The permit application was updated appropriately on June 14, 2011.

## DESCRIPTION OF PROCESS/MODIFICATION

The proposed Wilsonburg Facility will be an aluminum sheet rolling and sizing facility. To accomplish this, the facility employs one cold rolling mill, two natural gas-fired annealing furnaces, and other operations to support these sources. A detailed process description is provided below.

Aluminum coils are unloaded via fork truck in the plant's receiving area and are transported to the cold rolling mill (101S) where they are drawn through a set of rolls that physically reduce the sheet thickness. The cold rolling mill has a maximum design capacity of 16.5 tons of aluminum per hour (TPH).

To facilitate the rolling process, a light hydrocarbon oil (similar to Number 2 Fuel Oil) is applied to the aluminum sheet as it passes through the mill. The high-speed rolling process, however, creates an oil mist which is mostly captured by a collection hood (an estimated 5% is emitted as fugitive emissions) and then is directed to a mist eliminator (101C). The mist collector knocks out a minimum of 50% of the oil mist. The remainder of the oil mist is emitted through the mist eliminator stack (101E). The collected oil from the rolling mill and the mist collector is filtered with diatomaceous earthy and sent to below ground storage tanks. New rolling oil, to make up for oil lost in the process, is brought in by truck and added to an above ground 8,000 gallon storage tank (300S).

After passing through the rolling mill, the aluminum sheet is re-rolled into a coil and is sent to either Furnace 1 or 2 for annealing. Each furnace uses natural gas as a fuel for the indirect burners. The actual furnace payload area which contains the coils of aluminum is inerted with nitrogen to provide a non-oxidizing environment. Furnace 1 (210S) has a maximum design heat input (MDHI) of 18.0 mmBtu/hr and can process up to 30 tons of aluminum per hour. Furnace 2 (220S) has a MDHI of 5.0 mmBtu/hr and can process up to 10.5 tons of aluminum per hour. While Furnace 1 has one emission point (210E) for combustion emissions and purge emissions, Furnace 2 has three emission points: two for combustion exhaust (220E and 222E) and one for purge emissions (221E). In addition to the emission of criteria pollutants from natural gas combustion, some oil that remains on the rolled aluminum will be volatilized in the furnaces and emitted when the furnaces are purged.

After annealing, the finished aluminum is inspected, packed and shipped. Two annealing furnaces that were operated by Precision Coil (Furnaces 3 and 4) have been decommissioned and will not be used by Scott Aluminum. The facility also utilizes 1.39 mmBtu/hr of natural gas-fired space heating.

## SITE INSPECTION

On May 31, 2011 the writer conducted a site inspection of the Wilsonburg Plant. The contacts at the plant were John Keeling and David Wingard of MSES Consultants and John Eddy

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(President of Scott). The inspection occurred between 10:30 and noon and the weather was clear and very warm. After a short meeting to discuss permitting issues, a walk-through of the plant was commenced. Substantive observations from the inspection:

- The plant was in minimum operation of cold rolling during the inspection under the authority of PD11-023.
- There was a slight oil odor directly adjacent to the mill, but it was not evident at any distance from the mill.
- It was observed that the mist generated in the milling process was being evacuated into the hood above the mill and sent to the mist collector for control.
- There was no opacity visible from the mist collector stack or oil odor outside the facility.
- The facility was overall clean and well organized.
- The paved areas around the facility that will be traveled on by delivery and product trucks were in good shape.

The facility is located in a generally industrial area just off Route 50 west of downtown Clarksburg. East of the facility lies another industrial facility (R.D Wilson & Co.). West of the facility is another building previously owned by Precision Coil but that is not a part of Scott Aluminum. North of the facility is a pipe storage area unconnected to Scott Aluminum. South of the facility is WV State Route 50. The closest residential area is about 0.25 miles north-northeast of the facility.

*Directions to the facility:* Traveling west on WV State Route 50, take the Wilsonburg Rd. Exit about miles west of downtown Clarksburg. The plant is located on the left approximately 0.25 miles from the exit.

## REVIEW OF APPLICANT'S EMISSIONS ESTIMATE

In the permit application and subsequent update, Scott supplied an emissions estimate for the potential emission sources at the facility. The following will discuss the methodology of Scott's emissions estimate for each source.

### *Use of Rolling Oil*

The use of rolling oil in the mill has the potential to create VOC emissions at various points in the process. These are: (1) fugitive loss of oil mist not captured by the cold rolling mill hood, (2) oil mist collected by the cold rolling mill hood that passes through the mist collector and emitted

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from the mist collector stack, (3) oil that remains on rolled aluminum and volatilizes during storage prior to annealing, and (4) oil mist that is driven off the rolled coils during the annealing process and vented up the purge stacks of the annealing furnaces.

Due to the impracticality of predicting the emissions from each individual point, Scott has estimated, on a mass balance basis, that the facility-wide loss of rolling oil (which is 100% VOCs by-weight) will be 80.80 tons per year (TPY). The annual emission rate is based on a worst-case hourly loss of 38.35 lbs-VOC and operation of 4,160 hours/year.

However, it is important to note that the permit will not limit the rolling operations to 4,160 hours/year; as this annual hours of operation number is only a variable in the worst-case emissions calculations. The limited variable is question is the loss of 80.80 TPY of rolling oil - and the permit will include appropriate monitoring and record-keeping to verify compliance with this limit. As the use of rolling oil varies based on the aluminum being rolled and the loss of VOCs during the process, the facility may operate more than 4,160 hours/year and still be in compliance with the annual VOC emission limit. Therefore, the permit will base compliance with the annual VOC on an actual emissions calculation performed on a monthly basis at the facility using mass balance equations.

#### *Annealing Furnaces and Space Heating Combustion Emissions*

Potential emissions from the Annealing Furnaces and Space Heating are based on emission factors for natural gas combustion as given in AP-42 Section 1.4. Hourly emissions are based on the MDHI of each furnace (18.00 mmBtu/hr and 5.00 mmBtu/hr) and the aggregate MDHI of the two natural gas fired space heaters (1.39 mmBtu/hr). Annual emissions of the furnaces are based on an annual operation of 2,080 hours and the annual emissions of the space heaters are based on an annual operation of 2,190 hours.

#### *Storage Tank*

Scott has proposed one 8,000 gallon above-ground virgin rolling oil storage tank. An emissions estimate, based on the TANKS 4.09d program (AP-42, Section 7) for the 8,000 gallon tank. It was estimated that only a trace amount of VOCs would be emitted (less than 5 pounds per year) from the tank.

#### *Paved Haulroad Emissions*

Scott provided an emissions estimate for truck traffic loading and unloading material at the facility. As all the roadways around the building are paved, Scott used the equation given in Section 13.2.1 of AP-42 and appropriate variables to estimate potential emissions.

#### *Greenhouse Gases*

As part of this permitting action, the writer conducted a facility-wide GHG PTE analysis of the Wilsonburg Plant. The results are presented in the following table:

**Table 1: Facility-Wide Annual GHG Emissions in TPY**

Source	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>	CO <sub>2</sub> e
Furnace 1	2,202.35	0.04	0.04	2,215.59
Furnace 2	611.76	0.01	0.01	615.07
Space Heating	170.07	0.00	0.00	170.07
<b>Total</b>	<b>2,814.11</b>	<b>0.05</b>	<b>0.05</b>	<b>3,000.73</b>

Emission factors for natural gas combustion were taken from AP-42 Sections 1.4. Emissions were based on parameters limited in the permit.

#### *Facility-Wide Potential to Emit*

Based on the above estimation methodology, which is determined to be appropriate, the facility-wide annual PTE of the Wilsonburg Plant is given in the following table:

**Table 2: Facility-Wide Annual PTE Summary in TPY**

Source	CO	NO <sub>x</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PM	SO <sub>2</sub>	VOCs	CO <sub>2</sub> e
Rolling Oil Use <sup>(1)</sup>	n/a	n/a	n/a	n/a	n/a	n/a	80.80	n/a
Rolling Mill	n/a	n/a	0.58	0.58	0.58	n/a	n/a	n/a
Annealing Furnaces	2.01	2.39	0.18	0.18	0.18	0.01	0.13	2,830.66
Space Heating	0.26	0.30	0.02	0.02	0.02	0.01	0.02	170.07
Paved Haulroads	n/a	n/a	0.08	0.33	1.67	n/a	n/a	n/a
<b>Facility-Wide Totals →</b>	<b>2.27</b>	<b>2.69</b>	<b>0.86</b>	<b>1.11</b>	<b>2.45</b>	<b>0.02</b>	<b>80.95</b>	<b>3,000.73</b>

(1) As noted above, this accounts for all the oil lost in the process from various emission points.

## REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to this permitting action.

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

Furnaces 1 and 2 have been determined to meet the definition of “fuel burning unit” under 45CSR2 and are, therefore, subject to the applicable requirements therein. Each substantive 45CSR2 requirement is discussed below.

*45CSR2 Opacity Standard - Section 3.1*

Pursuant to 45CSR2, Section 3.1, Furnaces 1 and 2 are subject to an opacity limit of 10%. Proper maintenance and operation of the furnaces (and the authorized use of only natural gas as fuel) should keep the opacity of the units well below 10% during normal operations.

*45CSR2 Weight Emission Standard - Section 4.1.b*

The allowable filterable particulate matter (PM) emission rate for Furnaces 1 and 2 and the space heaters, identified as a Type “b” fuel burning units, per 45CSR2, Section 4.1.a, is the product of 0.09 and the total design heat input of the furnaces in million Btu per hour. The maximum aggregate design heat input (short-term) of the furnaces/space heaters is 24.39 mmBtu/Hr. Using the above equation, the 45CSR2 facility-wide PM emission limit of the boilers will be 2.19 lb/hr. The maximum aggregate potential hourly PM emissions from the furnaces/space heaters is estimated to be 0.20 lb/hr (including condensables). This emission rate is 9.13% of the 45CSR2 limit.

*45CSR2 Control of Fugitive Particulate Matter- Section 5*

Section 5 of 45CSR2 requires a fugitive particulate matter control system for any source of fugitive particulate matter associated with the fuel burning units. Using natural gas as the fuel of the furnaces will result in no potential for fugitive emissions.

*45CSR2 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8*

Section 8 of Rule 2 requires testing for initial compliance with the limits therein, monitoring for continued compliance, and keeping records of that compliance. The TMR&R requirements are clarified under 45CSR2A and discussed below.

*45CSR2A Applicability - Section 3*

Pursuant to §45-2A-3, as an individual applicable “fuel burning units” under 45CSR2 with an MDHI less than 100 mmBtu/hr, the furnaces are not subject to the Testing and MRR Requirements under 45CSR2A.

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

45CSR7 has three substantive requirements applicable to the cold rolling mill. 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.

Pursuant to Section 10.1 of 45CSR7, the furnaces are not subject to the provisions of Rule 7 as they are subject to the particulate matter standards of 45CSR2.

### *45CSR7 Opacity Standards - Section 3*

Section 3.1 sets an opacity limit of 20% on the cold rolling mill. Use of the mist collector and the expected small amount of particulates generated during the rolling process should mitigate any opacity problems from this source.

### *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 cold rolling mill is defined as a type 'a' source type operation. The maximum amount of material charged through the mill is 33,000 pounds per hour (lb/hr). Based on Table 45-7A, the particulate matter limit would be 23.2 lb/hr (for a process mass between any two consecutive process weights stated in the table, the emission limitation is determined by linear interpolation). The maximum potential hourly PM emissions from the cold rolling mill is estimated to be 0.40 lb/hr. This emission rate is 1.7% of the 45CSR7 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 Wilsonburg plant's haulroads and mobile work areas are paved and will be required to be maintained (4.1.6.). Based on the small amount of truck traffic expected at the plant, this is determined to be sufficient to meet Section 3 of 45CSR7.

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

45CSR10 has requirements limiting SO<sub>2</sub> emissions from "fuel burning units," limiting in-stack SO<sub>2</sub> concentrations of "manufacturing processes," and limiting H<sub>2</sub>S concentrations in process gas streams. Furnaces 1 and 2 are defined as a "fuel burning units" and subject to the applicable requirements discussed below.

### *45CSR10 Fuel Burning Units - Section 3*

The allowable aggregate SO<sub>2</sub> emission rate for Furnaces 1 and 2, identified as a Type "b" fuel burning units in a Priority III Region, per 45CSR10, Section 3.3(f), is the product of 3.2 and the total design heat input of the furnaces in million Btu per hour. The maximum aggregate design heat input (short-term) of the furnaces is 24.39 mmBtu/hr. Using the above equation, the 45CSR10 SO<sub>2</sub> emission limit of the boiler would be 78.05 lb/hr. The maximum potential hourly SO<sub>2</sub> emissions from the boiler is estimated to be 0.03 lb/hr. This emission rate is less than one percent of the 45CSR10 limit.

### ***45CSR10 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8***

Section 8 of Rule 10 requires a test for initial compliance with the limits therein, monitoring for continued compliance, and record-keeping of that compliance. The TMR&R requirements are clarified under 45CSR10A and discussed below.

### ***45CSR10A Applicability - Section 3***

Pursuant to §45-10A-3.1(b), as the furnaces will only “combust natural gas, wood or distillate oil, alone or in combination,” it is not subject to the Testing and MRR Requirements under 45CSR10A.

### **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**

As noted above, the proposed construction evaluated herein involves the restart of a facility previously owned and operated by Precision Coil. As the potential to emit of the proposed restarted facility is “more than six (6) pounds per hour and ten (10) tons per year . . . of any regulated air pollutant,” the facility is defined as a “stationary source” under 45CSR13 is required to obtain a permit under 45CSR13.

Based on the limitation of rolling oil loss of 80.80 TPY, and the theoretical loss (if unlimited by the permit) of over 100 TPY of rolling oil, this permit is defined as a “synthetic minor” for the purposes of Title V permitting. Therefore, as required under §45-13-8 (“Notice Level C”), Scott placed a Class I legal advertisement in a “newspaper of general circulation in the area where the source is . . . located.” The ad ran on April 21, 2011 in *The Exponent-Telegram*. The affidavit of publication for this legal advertisement was submitted on April 28, 2011.

Additionally, at the time of public notice, Scott will be required to, within a week of the required DAQ public notice, place a “commercial display” advertisement in *The Exponent-Telegram* and place a sign at the entrance to the site of the proposed source stating that they have applied for a permit with the DAQ.

### **45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration**

Harrison County is classified as “in attainment” with all criteria pollutants. Therefore, as the Wilsonburg Plant is not a “listed source” under §45-14-2.43, the major source applicability threshold for all pollutants except is 250 TPY. The post-modification PTE of all criteria pollutants is less than 250 TPY and, therefore, the provisions of 45CSR14 do not apply.

Concerning GHGs, the current estimate of post-modification CO<sub>2</sub>e is less than 100,000 TPY (see above) and, therefore, the facility is not defined (pursuant to §45-14-2.80(e)(2) of Rule 14 to take effect on June 1, 2011) as a major source for GHGs.

### ***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 restarted facility, however,

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will not have criteria pollutant emissions in excess of 100 TPY or have any applicability to a federal performance standard and, therefore, shall not be subject to the requirements of 45CSR30. However, based on the limitation of rolling oil loss of 80.80 TPY, and the theoretical loss (if unlimited by the permit) of over 100 TPY of rolling oil, this permit is defined as a “synthetic minor” for the purposes of Title V permitting.

### TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the Gallipolis Ferry facility and that are not classified as “criteria pollutants.” Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO<sub>x</sub>), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM<sub>10</sub>), Particulate Matter less than 2.5 microns (PM<sub>2.5</sub>), and Sulfur Dioxide (SO<sub>2</sub>). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects.

The restarted facility, however, does not have the potential to emit any substantive amount of non-criteria regulated pollutants.

### AIR QUALITY IMPACT ANALYSIS

The proposed modification does not meet the definition of a “major source” pursuant to 45CSR14 and, therefore, an air quality impact analysis was not required.

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

To account for the rolling oil lost at very points in the process, Scott shall be required to monitor and record, on a monthly and rolling twelve month basis, the facility-wide VOC emissions associated with the use of rolling oil [4.2.1.]. They have proposed to accomplish this by measuring, as often as is required, the oil levels in the virgin, dirty, and clean oil tanks to track the amount of new oil introduced into the process. They will also weigh new and spent filter media to determine the oil content of landfilled material so as to not count disposed of oil as emissions.

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It is important to note that the permit will not limit the rolling operations to 4,160 hours/year; as this annual hours of operation number is only a variable in the worst-case emissions calculations. The limited variable is question is the loss of 80.80 TPY of rolling oil - and the permit will include appropriate monitoring and record-keeping to verify compliance with this limit. As the use of rolling oil varies based on the aluminum being rolled and the loss of VOCs during the process, the facility may operate more than 4,160 hours/year and still be in compliance with the annual VOC emission limit. Therefore, the permit will base compliance with the annual VOC on an actual emissions calculation performed on a monthly basis at the facility using mass balance equations.

Scott will also be required to maintain monthly and rolling twelve month records of the amount of natural gas that is combusted in the furnaces and space heaters.

Only boilerplate record-keeping and reporting requirements are required..

### TESTING OF OPERATIONS

No specific post-issuance performance testing was required in the permit.

### RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable regulations will be achieved. Therefore, I recommend to the Director the issuance of a Permit Number R13-2880 to Aluminum Services, LLC for construction of the Wilsonburg Plant located in Wilsonburg, Harrison County, WV.

Joe Kessler, PE  
Engineer

Date

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