Statement of Basis

Permit to Construct No. P-2013.0032
Project ID 62300

Yanke Machine Shop, Inc
Boise, Idaho

Facility ID 001-00297

Final

October 3, 2019
Christina Boulay CB
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.
ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE .......................................................... 3

FACILITY INFORMATION ................................................................................................. 5
   Description ..................................................................................................................... 5
   Permitting History ......................................................................................................... 6
   Application Scope ......................................................................................................... 6

TECHNICAL ANALYSIS ..................................................................................................... 7
   Emissions Units and Control Equipment ................................................................. 7
   Emissions Inventories ................................................................................................. 8
   Ambient Air Quality Impact Analyses .................................................................... 8

REGULATORY ANALYSIS ............................................................................................... 9
   Permit Conditions Review ......................................................................................... 9

PUBLIC REVIEW ............................................................................................................... 9
   Public Comment Opportunity .................................................................................... 9

APPENDIX A - PROCESSING FEE
ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC  acceptable ambient concentrations
AACC acceptable ambient concentrations for carcinogens
acfm  actual cubic feet per minute
ASTM  American Society for Testing and Materials
BMP  best management practices
BRC  below regulatory concern as defined in IDAPA 58.01.01.221.01
Btu  British thermal units
CAA  Clean Air Act
CAS No.  Chemical Abstracts Service registry number
cfm  cubic feet per minute
CFR  Code of Federal Regulations
CO  carbon monoxide
CO₂  carbon dioxide
DEQ  Department of Environmental Quality
dscf  dry standard cubic feet
EI  emissions inventories
EL  screening emission levels
EPA  U.S. Environmental Protection Agency
FCAW  Flux Cored Arc Welding
FEC  Facility Emissions Cap
FR  Federal Register
gal/yr  gallons per year
GHG  greenhouse gases
gph  gallons per hour
gpm  gallons per minute
GMAC  Gas Metal Arc Welding
gr  grains (1 lb = 7,000 grains)
HAP  hazardous air pollutants
hr/yr  hours per consecutive 12 calendar month period
IDAPA a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr  pounds per hour
m  meters
MACT  Maximum Achievable Control Technology
MFHAP  Metal fabrication and finishing HAP as defined in 40 CFR 63.11522
mg/dscm  milligrams per dry standard cubic meter
MMBtu  million British thermal units
MMscf  million standard cubic feet
MSDS  Material Safety Data Sheets, now called Safety Data Sheets (SDS)
NA  not applicable
NAAQS  National Ambient Air Quality Standard
NEHAP  National Emission Standards for Hazardous Air Pollutants
ND  no data
NO₂  nitrogen dioxide
NOₓ  nitrogen oxides
NSPS  New Source Performance Standards
O&M  operation and maintenance
O₂  oxygen
PAH  polycyclic aromatic hydrocarbons
PC  permit condition
PM  particulate matter

Page 3
PM$_{2.5}$  particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM$_{10}$  particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM  polycyclic organic matter
ppm  parts per million
ppmw  parts per million by weight
PSD  Prevention of Significant Deterioration
PTC  permit to construct
PTC/T2  permit to construct and Tier II operating permit
PTE  potential to emit
PW  process weight rate
Rules  Rules for the Control of Air Pollution in Idaho
scf  standard cubic feet
SCL  significant contribution limits
SDS  Safety Data Sheets, formerly called Material Safety Data Sheets (MSDS)
SIP  State Implementation Plan
SM  synthetic minor
SM80  synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SMAW  Shield Metal Arc Welding
SO$_2$  sulfur dioxide
SO$_x$  sulfur oxides
T/day  tons per calendar day
T/hr  tons per hour
T/yr  tons per consecutive 12 calendar month period
T2  Tier II operating permit
TAP  toxic air pollutants
T-RACT  Toxic Air Pollutant Reasonably Available Control Technology
ULSD  ultra-low sulfur diesel
VOC  volatile organic compounds
Yanke/YMS  Yanke Machine Shop, Inc.
yd$^3$  cubic yards
μm  micrometers
μg/m$^3$  micrograms per cubic meter
FACILITY INFORMATION

Description
Yanke Machine Shop, Inc. (Yanke) provides metal fabrication and industrial machining services to the mining, agricultural, food processing, and power industries. The fabrication and industrial machining process involves equipment assembly, metal forming, welding and grinding, and abrasive blasting and painting.

The main sources of emissions are natural gas combustion, plasma cutting, welding and grinding, abrasive blasting, and painting.

Natural Gas Heaters
YMS operates 19 natural gas heaters for comfort throughout the colder months of the year. The sizes of the units range from 0.1 to 0.361 MMBtu/hr. YMS provided the prior three years of natural gas consumption to show the sum total operation of all heaters is less than 1,000 hours per year. YMS is requesting a heater use limit of 3,120 hours per year.

Plasma Cutting Operation
The YMS facility operates two plasma cutting tables and three hand held torches. Also, the Fab Shop and Machine/Repair shop buildings where plasma cutting occurs employs a three stage recirculating filtration system that provides 97% removal efficiency for particulate down to 2.5μm in size. Structural metals cut on the tables include mild steel, stainless steel, and aluminum.

Welding and Grinding
The YMS welding operation uses Gas Metal Arc Welding (GMAC) and Flux Cored Arc Welding (FCAW). GMAC and FCAW emission factors from AP-42 Chapter 12.19 were used to estimate welding operation emissions. Welding operations occur in the Fab Shop.

YMS welds base material inside the fabrication building and inside the machine shop and repair shop building. Welding activities generate emissions. YMS uses pedestal and hand-held grinders to fabricate and repair equipment. Grinding is conducted in the same bays as welding. Currently, welding and grinding emissions are captured and controlled through three stage recirculating filtration systems that provide 97% or better capture and control efficiency for PM_{10}/PM_{2.5}. The roll-up or sliding doors where welding emissions can escape shall be closed during welding operations.

Abrasive Blasting
YMS preps and paints some manufactured equipment. Painting preparation is accomplished using abrasive blasting. The abrasive blasting booth is located inside the abrasive blasting building. Abrasive media is comprised of either 60% of crushed glass and 40% of Kleen Blast, or 100% garnet. Emission calculations were based on a worst case scenario of use only of crushed glass and Kleen Blast. Abrasive media is fed into a hopper and delivered through two compressed air guns. Abrasive blasting is conducted in a completely enclosed booth. Two exhaust vents are located inside the abrasive blasting booth. Particulates in the air stream through these two exhaust vents are captured by an Aseco-Madsen baghouse with PM_{10}/PM_{2.5} control efficiency of 99.90%. The abrasive blasting building has a single horizontal exhaust stack.

The abrasive booth has a maximum daily throughput of 660 lb/hour maximum throughput during a 10 hour day with 4 hours accounting for loading, unloading, preparation, and operation maintenance. Total abrasive media purchased not to exceed 850,000 lb/yr. In addition, the permit also includes requirements in 40 CFR 63, Subpart XXXXXX because the abrasive process is subject to the subpart. Abrasive material is currently recycled twice. 6,000 lb/day of abrasive material includes the recycled materials.

Coating
The coating operation is conducted in an enclosed paint booth that is located in an existing room inside the fabrication building and adjacent to the welding and grinding operations that are also located in the fabrication
building. The booth is an updraft paint booth. Particulate matter from the paint booth is vented through a series of filtered wall vents. From the wall vents, particulates are then exhausted to an outside exhaust where particulates pass through another set of filters and are eventually exhausted to the atmosphere. The paint booth filtered wall vents and the set of filters inside the outside exhaust are comprised of Flanders Pre-Pleated-40 Low Pressure Drop Filters. The filters with a MERV 11 rating capture particle size from 2.5 to 10.0 μm with 75% control efficiency.

Three paint spray guns could be used simultaneously. Yanke uses a Graco G40 AA Airless spray gun, a Binks 2100 Conventional spray gun, and a Graco Contractor 2 88420 Airless spray gun. Each gun has a material transfer efficiency of 65%.

**Shop Space Heaters**

Yanke is comprised of three main buildings: the abrasive blasting building, the machine shop and repair shop building, and the office/fabrication building. The fabrication building also contains a parts warehouse and paint booth. Yanke utilizes a total of 19 natural gas-fired space heaters for comfort heating. The total rated heat capacity from these heaters is 5.561 MMBtu per hour. All space heater emissions are vented from roof-top exhaust vents. The space heater exhaust vents are fitted with rain-caps.

**Emissions**

Emissions are expected to occur from the following sources:

- 19 natural gas heater stacks/vents
- Plasma cutting
- Welding and grinding
- Abrasive blasting
- One paint booth stack

**Permitting History**

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

November 23, 2015 P-2013.0032, Initial PTC, Permit status (S).

May 22, 2019 P-2013.0032, PTC modification, Permit status (A), but will become (S) upon issuance of this permit.

**Application Scope**

This PTC is for a modification at an existing minor facility.

The applicant has proposed to:

- Change the grinding wheel usage from an annual quantity of wheels used to an annual weight of media used.

**Application Chronology**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 6, 2019</td>
<td>DEQ received an application and an application fee.</td>
</tr>
<tr>
<td>September 10, 2019</td>
<td>DEQ determined that the application was complete.</td>
</tr>
<tr>
<td>September 10, 2019</td>
<td>DEQ made available the draft permit and statement of basis for peer and regional office review.</td>
</tr>
<tr>
<td>September 30, 2019</td>
<td>DEQ received the permit processing fee.</td>
</tr>
<tr>
<td>October 3, 2019</td>
<td>DEQ issued the final permit and statement of basis.</td>
</tr>
</tbody>
</table>
# TECHNICAL ANALYSIS

## Emissions Units and Control Equipment

<table>
<thead>
<tr>
<th>Source ID No.</th>
<th>Sources</th>
<th>Control Equipment</th>
<th>Emission Point ID No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELD 1 and LATHE 1</td>
<td>Welding Type of welding: Gas Metal Arc Welding (GMAW) Flux Cored Arc Welding (FCAW) Grinding Pedestal grinders Hand-held grinders</td>
<td>Completely Enclosed Buildings with Filtration Control Devices: Manufacturer: Industrial Maid Filtration System Model: D95-MERV 15 or equivalent Type: Air filtration and ventilation with pleated filters and bag filters Control efficiency: 97.00% or greater for PM(<em>{10}) and PM(</em>{2.5}) Or DEQ approved alternatives</td>
<td>11 filtration control devices for fabrication shop bays 1, 2, and 3 7 filtration control devices for fabrication shop bays 4 and 5 7 filtration control devices for repair shop</td>
</tr>
<tr>
<td>BB 1</td>
<td>Abrasive Blasting Manufacturer: Ruemlin Silo capacity: 6,000 lbs/day Total gun capacity: 11 lbs/min or 660 lbs/hr for two guns total</td>
<td>Completely Enclosed Booth with Baghouse: Manufacturer: Asco-Madsen Type: N/D Control efficiency: 99.90% or greater for PM(<em>{10}) and PM(</em>{2.5})</td>
<td>STCK1 Stack height: 20 ft (6.1 m) Exit diameter: 2.82 ft (0.86 m) Exit flow rate: 19,040 acfm Exit temperature: Ambient</td>
</tr>
<tr>
<td>PC 1 and PC 2</td>
<td>Plasma Cutting (PC 1) Manufacturer: Rectro Mega Hornet Model: MG21209ZR5 Type: Table with water-bath Operation: Semidy</td>
<td>Completely Enclosed Buildings with Filtration Control Devices: Manufacturer: Industrial Maid Filtration System Model: D95-MERV 15 or equivalent Type: Air filtration and ventilation with pleated filters and bag filters Control efficiency: 97.00% or greater for PM(<em>{10}) and PM(</em>{2.5}) Or DEQ approved alternatives</td>
<td>3 filtration control devices for plasma bay</td>
</tr>
<tr>
<td>PB 1</td>
<td>Number of guns to be used simultaneously: 3 Coating Spray Gun No. 1 Manufacturer: Graco or equivalent Model: G40 AA or equivalent Gun type: Airless Transfer efficiency: 65% or greater Rated capacity: 5-9 oz/min or about 4.22 gal/hr</td>
<td>Completely Enclosed Booth with Exhaust Filters: Manufacturer: Yanke Machine Shop, Inc. Model: Merv-11 Type: updraft air filtration system Control efficiency: 75% or greater for PM(<em>{10}) and PM(</em>{2.5})</td>
<td>STCK2 Stack height: 32 ft (9.75 m) Exit diameter: 1.1 ft (0.344 m) Exit flow rate: 10,450 acfm Exit temperature: Ambient</td>
</tr>
</tbody>
</table>

<p>| Coating Spray Gun No. 2 Manufacturer: Links or equivalent Model: 2100 or equivalent Gun type: Conventional Transfer efficiency: 65% or greater Rated capacity: 5-9 oz/min or about 4.22 gal/hr | Coating Spray Gun No. 3 Manufacturer: Graco or equivalent Model: Contractor, 2 88420 or equivalent Gun type: Airless Transfer efficiency: 65% or greater Rated capacity: 5-9 oz/min or about 4.22 gal/hr | Complete Enclosed Booth with Exhaust Filters: Manufacturer: Yanke Machine Shop, Inc. Model: Merv-11 Type: updraft air filtration system Control efficiency: 75% or greater for PM(<em>{10}) and PM(</em>{2.5}) |</p>
<table>
<thead>
<tr>
<th>Source ID No.</th>
<th>Sources</th>
<th>Control Equipment</th>
<th>Emission Point ID No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAB 1- FAB 10</td>
<td><strong>Natural Gas Heaters</strong>&lt;br&gt;No. of Units: 10&lt;br&gt;Manufacturer: Modine&lt;br&gt;Model: PDP400AE0131&lt;br&gt;Manufacture Date: 2011&lt;br&gt;Heat input rating: 0.361 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 5 &amp; STCK 14</strong>&lt;br&gt;Ten identical ones, each stack with the following parameters:&lt;br&gt;Stack height: 27 ft (8.23 m)&lt;br&gt;Exit diameter: 0.67 ft (0.2032 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 150 °F (65.6 °C)</td>
</tr>
<tr>
<td>MS 1</td>
<td><strong>Machine Shop Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Modine&lt;br&gt;Model: PDP400AE0130&lt;br&gt;Manufacture Date: 2011&lt;br&gt;Heat input rating: 0.361 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 15</strong>&lt;br&gt;Stack height: 24 ft (7.32 m)&lt;br&gt;Exit diameter: 0.67 ft (0.2032 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 150 °F (65.6 °C)</td>
</tr>
<tr>
<td>MS 2</td>
<td><strong>Machine Shop Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Modine&lt;br&gt;Model: PDP250AE0130&lt;br&gt;Manufacture Date: 2011&lt;br&gt;Heat input rating: 0.226 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 16</strong>&lt;br&gt;Stack height: 24 ft (7.32 m)&lt;br&gt;Exit diameter: 0.67 ft (0.2032 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 140 °F (60.0 °C)</td>
</tr>
<tr>
<td>MS 3</td>
<td><strong>Machine Shop Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Modine&lt;br&gt;Model: PDP250AE0130&lt;br&gt;Manufacture Date: 2011&lt;br&gt;Heat input rating: 0.226 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 17</strong>&lt;br&gt;Stack height: 24 ft (7.32 m)&lt;br&gt;Exit diameter: 0.67 ft (0.2032 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 140 °F (60.0 °C)</td>
</tr>
<tr>
<td>MS 4</td>
<td><strong>Machine Shop Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Modine&lt;br&gt;Model: PDP250AE0130&lt;br&gt;Manufacture Date: 2011&lt;br&gt;Heat input rating: 0.226 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 18</strong>&lt;br&gt;Stack height: 24 ft (7.32 m)&lt;br&gt;Exit diameter: 0.33 ft (0.1016 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 140 °F (60.0 °C)</td>
</tr>
<tr>
<td>PBH 1 and PBH 2</td>
<td><strong>East and West Paint Booth Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Bryant&lt;br&gt;Model: Unknown&lt;br&gt;Manufacture Date: 1980s&lt;br&gt;Heat input rating: 0.110 MM Btu/hr each&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 3 and STCK 4</strong>&lt;br&gt;Stack height: 28 ft (8.53 m)&lt;br&gt;Exit diameter: 0.25 ft (0.0762 m)&lt;br&gt;Exit flow rate: 1,205 acfm&lt;br&gt;Exit temperature: 120 °F (49.0 °C)</td>
</tr>
<tr>
<td>WH 1</td>
<td><strong>Machine Shop Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Bryant&lt;br&gt;Model: 46602&lt;br&gt;Manufacture Date: 1970-1980&lt;br&gt;Heat input rating: 0.125 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 20</strong>&lt;br&gt;Stack height: 27 ft (8.23 m)&lt;br&gt;Exit diameter: 0.25 ft (0.0762 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 120 °F (49.0 °C)</td>
</tr>
<tr>
<td>WH 2</td>
<td><strong>Machine Shop Natural Gas Heaters</strong>&lt;br&gt;Manufacturer: Modine&lt;br&gt;Model: PDP250AE0130&lt;br&gt;Manufacture Date: 2011&lt;br&gt;Heat input rating: 0.226 MM Btu/hr&lt;br&gt;Fuel: Natural gas</td>
<td>None</td>
<td><strong>STCK 18</strong>&lt;br&gt;Stack height: 27 ft (8.23 m)&lt;br&gt;Exit diameter: 0.33 ft (0.101 m)&lt;br&gt;Exit flow rate: No data (rainfall)&lt;br&gt;Exit temperature: 140 °F (60.0 °C)</td>
</tr>
</tbody>
</table>

**Emissions Inventories**

This permitting action did not result in a change in emissions. For the technical analysis and emissions inventory please see the statement of basis for PTC No. P-2013.0032 project 62156 issued May 22, 2019 (2019AAG777).

**Ambient Air Quality Impact Analyses**

This permitting action did not require an ambient air quality impact analysis. For the current ambient air quality impact analysis please see the statement of basis for PTC No. P-2013.0032 project 62156 issued May 22, 2019.

**REGULATORY ANALYSIS**

This permitting action did not result in a change in regulatory analysis. For the current regulatory analysis please see the statement of basis for PTC No. P-2013.0032 project 62156 issued May 22, 2019.
Permit Conditions Review

This section describes the permit conditions for this modified permit that have been added, revised, modified or deleted as a result of this permitting action.

Welding and Grinding Operation; Permit Section 3

Permit Condition 3.8, Grinding Base Material Usage

This permit condition was changed from an annual quantity of wheels used to the annual weight of grinding media used. This did not result in a change in emissions as the emissions calculated in the previous permit were based on weight of media used and this usage did not change in this permitting action, just the way the facility records the grinding wheel media usage.

Permit Condition 3.11, Grinding Material Monitoring Requirement

This permit condition was revised to record the daily, monthly, and annual grinding wheel media used from the quantity of wheels used per year to demonstrate compliance with permit condition 3.8.

Permit Condition 3.12, Grinding Base Material Usage Monitoring Requirement

This permit condition was revised to record the daily, monthly, and annual grinding wheel media used instead of the quantity of wheels used per year to demonstrate compliance with permit condition 3.8.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was not provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c.
APPENDIX A – PROCESSING FEE
PTC Processing Fee Calculation Worksheet

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Yanke Machine Shop, Inc.
Address: 4414 S. Geckler Lane
City: Boise
State: Idaho
Zip Code: 83716
Facility Contact: John Alverson
Title: Operations Manager
AIRS No.: 332312

<table>
<thead>
<tr>
<th></th>
<th>Annual Emissions Increase (T/yr)</th>
<th>Annual Emissions Reduction (T/yr)</th>
<th>Annual Emissions Change (T/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>SO2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>CO</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>PM10</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>VOC</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total:</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Fee Due: $250.00

Comments: