MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 052018-009 Project Number: 2017-09-044
Installation Number: 021-0078

Parent Company: Altec Industries, Inc.

Parent Company Address: 210 Inverness Center Drive, Birmingham, AL 35242

Installation Name: Altec Industries, Inc.

Installation Address: 2106 South Riverside Road, St. Joseph, MO 64507

Location Information: Buchanan County, S13, T57N, R35W

Application for Authority to Construct was made for:
Installation of two boom winding operations, a new paint booth, and material storage tanks. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

Hans Robinson

Prepared by
Hans Robinson
New Source Review Unit

Director or Designee
Department of Natural Resources

MAY 29 2018

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:
http://dnr.mo.gov/regions/

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Altec Industries, Inc. (Altec)
Buchanan County, S13, T57N, R35W

1. Superseding Condition
   A. The conditions of this permit supersede the following special conditions found in the previously issued construction permit 012012-004 issued by the Air Pollution Control Program.
      1) Special Condition 2 – HAPs limits

2. HAPs Emission Limitations
   A. Altec shall emit less than 10.0 tons of each individual HAP and 25.0 tons of combined HAPs in any consecutive 12-month period from the entire installation (see Attachment A and C).

   B. Altec shall emit less than 10.0 tons of $PM_{2.5}$ in any consecutive 12-month period from all equipment listed in Table 4 (see Attachment D).

   C. Altec shall emit less than the SMAL given in Appendix A for each individual HAP in any consecutive 12-month period from all equipment listed in Table 4 (see Attachment B).

   D. Altec shall emit less than 40.0 tons of VOC in any consecutive 12-month period from all equipment listed in Table 4 (Attachment E).

   E. Within the limits above, Altec shall include the startup, shutdown, and malfunction emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050 towards this limit.

   F. Attachment A, Attachment B, and Attachment C, Attachment D, and Attachment E shall be used to demonstrate compliance with Special Condition 2.A, 2.B, 2.C, 2.D, and 2.E. In lieu of these attachments, Altec may keep equivalent electronic records. At a minimum, Altec must record the same information electronically as is specified in the attachments. Equivalent electronic records will be verified at the next inspection.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

3. Capture Device Requirement – Spray Booth (PB-46)
   A. Altec shall capture emissions from the spray applied surface coating operation with a booth and exhaust fan(s).

   B. Altec shall operate the surface coating booth's exhaust fan(s) at all times surface coating is spray applied. Altec shall ensure all spray booth openings are closed during spray coating except for the exhaust inlet and outlet of the booth.

   C. Altec shall operate the surface coating booth's exhaust fan(s) at all times surface coating is spray applied.

   D. Altec shall maintain an operating and maintenance log for the spray booth and exhaust system which shall include the following:
      1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      3) Dates of all above schedules, incidents, activities, and actions.

4. Control Device Requirement - Spray Booth Filters
   A. Altec Industries, Inc. shall control emissions from the PB-46 paint booth using fabric filters as specified in the permit application. Specifically, a Pre-pocket Filter (A) in series with an Airflow Pleat (B) filter. Neither filter may be circumvented: exhaust air must be controlled by both filters. Altec may also use equivalent filters as long as the total filter efficiency is at least equivalent to the total efficiency specified in the permit application.

   B. The fabric filters shall be operated and maintained in accordance with the manufacturer's specifications, or, at minimum, the manufacturer's brochure which indicates capture efficiency.

   C. Replacement filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

   D. Altec shall monitor and record the pressure drop indicated on the magnehelic pressure gauge across the fabric filters at least once every 24 hours. This gauge shall be located such that Department of Natural Resources' employees may easily observe it. If the gauge indicator is at or exceeds the mark indicating filters must be changed to ensure proper operation of the filters, corrective actions shall be taken within eight hours

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

to return the gauge indicator to a level that shows a filter change is not necessary. The instrument used to determine the status of the filters shall be calibrated annually. Altec does not have to record the pressure drop on days when the booth is not in operation.

E. Altec Industries, Inc. shall maintain an operating and maintenance log for the fabric filters which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   3) Dates of all above schedules, incidents, activities, and actions.

5. Use of Alternative Materials
Altec may use alternative coatings in the PB-46 spray booth so long as all new coatings conform to all special conditions within this permit. Emissions from alternative coatings shall be tracked with respect to Special Conditions 2.A, 2.B, 2.C, 2.D, and 2.E.

6. Operational Requirement - Solvent/Paint Cloths
Altec shall keep all solvents, paints, and cleaning solutions in sealed containers whenever the materials are not in use or not being dispensed/filled. Altec Industries, Inc. shall provide and maintain suitable, easily read, permanent markings on all solvent, paint, and cleaning solution containers used with this equipment.

7. Record Keeping and Reporting Requirements
   A. Altec Industries, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.

   B. Altec Industries, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, by mail at P.O. Box 176, Jefferson City, MO 65102 or by email at aircompliancereporting@dnr.mo.gov, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2017-09-044
Installation ID Number: 021-0078
Permit Number: 052018-009

Installation Address:
Altec Industries, Inc.
2106 South Riverside Road
St. Joseph, MO 64507

Parent Company:
Altec Industries, Inc.
210 Inverness Center Drive
Birmingham, AL 35242

Buchanan County, S13, T57N, R35W

REVIEW SUMMARY

- Altec Industries, Inc. (Altec) has applied for authority to install two boom winding operations, a new paint booth, and material storage tanks.

- The application was deemed complete on September 28, 2017.

- HAPs emitted from this project are benzene (CAS 71-43-2; SMAL 2.0 tpy), cumene (CAS 98-82-8; SMAL 10.0 tpy), epichlorohydrin (CAS 106-89-8; SMAL 2.0 tpy), phthalic anhydride (CAS 85-44-9; SMAL 5.0 tpy), toluene (CAS 108-88-3; SMAL 10.0 tpy), ethylbenzene (CAS 100-41-4; SMAL 10.0 tpy), HDI (CAS 822-06-0; SMAL 0.02 tpy), and styrene (CAS 100-42-5; SMAL 1.0 tpy). HAP emissions will result from the coating of resin, curing agent application, defoamer application, application of truck paints and primers, storage tank working/breathing losses, and natural gas combustion. Special Condition 5 allows for the use of alternative materials; therefore additional HAPs may be emitted in the future.

- None of the New Source Performance Standards (NSPS) apply to the installation. New Source Performance Standards (NSPS) 40 CFR 60 Subpart MM, *Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations* does not apply to the PB-46 spray coating since Altec is not an "automobile or light-duty truck assembly plant".

- None of the NESHAPs apply to the proposed equipment.

- The MACT standard, 40 CFR Part 63, HHHHHH, *National Emission Standards for Hazardous Air Pollutants: Miscellaneous Coating Manufacturing* applies to PB-46 spray coating. Since Altec performs motor vehicle and mobile equipment surface coating they may petition for exemption from MACT Subpart HHHHHH so long as no spray coating at the facility contains chromium, lead, manganese, nickel, or cadmium. As such, Altec has successfully petitioned for this exemption and therefore is exempt.

- Spray booth and fabric filters are being used to control particulate emissions from the PB-46 spray booth.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.* Potential emissions of VOC are above insignificant emission exemption levels defined in 10 CSR 10-6.061(3)(A)3.A but below de minimis levels.

- This installation is located in Buchanan County, an attainment area for all criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels and below the SMALs.

- Emissions testing is not required for the equipment as a part of this permit.

- The installation shall amend their Intermediate Operating Permit renewal application (Project # 2015-10-016), which is required within 90 days of commencement of operations. All equipment within this permit will need to be included in the 100 tpy synthetic minor VOC operating permit limit.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Altec Industries, Incorporated (Altec) manufactures and assembles equipment used on utility (electric, telephone, cable, etc.) vehicles. This facility is a synthetic minor source of criteria pollutants and a synthetic area source of hazardous air pollutants. Altec received an Intermediate Operating permit on April 15, 2011 which gave Altec a 100 ton per year VOC limit, a 10 ton per year individual HAP limit, and a 25.0 ton per year combined HAP limit. Should the facility become major for HAPs, they will be subject to 40 CFR 63 Subpart WWWW, *National Emissions Standards for Hazardous Air Pollutants: Reinforced Plastic Composites Production.* In construction permit # 072010-010 Altec took a voluntary 10 ton per year individual HAP and 25.0 ton per year combined HAP limits in order to avoid being subject to 40 CFR 63 Subpart WWWW. 40 CFR 63 Subpart HHHHHH, *Standards of Performance for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*, applies to the installation since the installation performs coating of light-duty trucks. However, Altec has successfully petitioned to be exempt from the rule.

Altec currently has an intermediate operating permit application renewal under review (Project #2015-10-016) which was received by the Department of Natural Resources on October 13, 2015. The contents of this permit will need to be incorporated into that operating permit renewal project. The following construction permits have been issued to Altec from the Air Pollution Control Program.

The following New Source Review permits have been issued to Altec Industries, Inc. from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
1198-006	Installation of a flow solder operation, gel coat booth, batch curing oven and resin boom winding operation.
0299-001	Installation of a powder coating system, sanding dust collection booth and welding fume collection system.
0799-007	Installation of a new powder coat spray operation and a new boom-winding machine.
042000-003	Increase Styrene emission limit.
082000-015	Installation of a new spray booth.
092000-003	Installation of a powder coating operation, a curing oven, a shot blast booth, and a cooling tunnel.
012003-002	Installation of a fiberglass vacuum molding operation, a laser metal cutting operation and four (4) dust collecting units.
032005-011	Addition of two (2) new spray paint booths (emission points PB-30 and PB-31).
072010-010	Installation of a new plastic composite production operation for the manufacture of molded utility vehicle buckets.
012012-004	The installation of a new paint gun and paint booth (PB-44).

PROJECT DESCRIPTION

Altec Industries, Inc. (Altec) intends to install two boom winders (Source IDs BW-4 and BW-5) for the fabrication of booms used in the manufacturing of its products. BW-4 and BW-5 will have differently shaped mandrels and will be operated independently of each other. The boom winders will be installed in a eastern extension of Fiberglass Building M. Emissions from the boom winders will exhaust within the building.

The resin applied, ARALDITE AY 557 US manufactured by Huntsman Advanced Materials Americas LLC, contains 99.999% Bisphenol A epoxy resin with a density of 9.76 lb/gallon, and 0.001% epichlorohydrin (HAP). The melting temperature of Bisphenol A is 86 °F according to the SDS, which means that some Bisphenol A epoxy resin will be solid except for when sprayed. The curing agent, LINDRIDE 6 manufactured by Lindau Chemicals, Inc. is 100% VOC with a density of 10.1 lb/gallon and contains a maximum of 5.0% phthalic anhydride (HAP). The defoamer, BYK-A 500 manufactured by BYK additives & Instruments, is 100% VOC with a density of 7.34 lb/gallon and contains 0.000854% benzene, 2.1% cumene (applicant requested to assume 2.5% for calculations to account any manufacture batch variance), and 0.0854% toluene. (Note: small concentrations of epichlorohydrin, benzene, and Toluene listed above were provided by the manufacturer). The amount of VOC and phthalic anhydride emitted during application and curing of Araldite AY 557 US and Lindride 6 was determined through testing by Lindau Chemicals Inc (i.e. 100% emission of VOC and phthalic anhydride was not assumed). Defoamer may only be applied 20% of the time and according testing from Lindau Chemicals Inc., no phthalic anhydride emissions were detected when defoamer was applied however 1.53% of the total weight of the coatings were lost and assumed to be emitted as VOC. However, without defoamer, phthalic anhydride emissions were 0.01% of total curing agent weight (this value was used for emission calculations). Therefore worse case emissions were calculated as 1.53% VOC and 0.01% phthalic anhydride by weight of coatings applied. HAP emissions of benzene, cumene, epichlorohydrin, and toluene were not calculated by Lindau Chemicals and instead are assumed to be 100% emitted.

Usage rates for ARALDITE AY 557 US, LINDRIDE 6, and BYK-A 500 are based upon known usage rates from existing boom winding operations. (Note: If uncertain about using an alternative

boom winding material, Altec will need to make a permit determination which describes the use of new material) For every 50 lbs (5.15 gallons) of resin (ARALDITE AY 557) applied, 43.75 lbs (4.33 gallons) of curing agent (LINDRIDE 6) and 1.15 lbs (0.16 gallons) of defoamer (BYK-A 500) will be used. Typically, application time for coatings takes 5 hours for Large booms (250 lbs of resin applied; average 50 lbs/hour) and 2 hours for small booms (50 lbs of resin applied; average 25 lbs/hour). Therefore potential to emit calculations were based upon the 50 lbs/hour application rate of large booms since the higher usage rate will result in greater emissions. Altec shall seek approval from the Air Pollution Control Program prior to using an alternative material with a higher application rate.

Altec plans to replace resin storage tanks FR-1 and FR-2. The original FR-1 and FR-2 tanks were determined in 1992 by the Air Pollution Control Program to be below de minimis levels. The vertical replacement tanks will each have a capacity 6,000 gallons (slightly smaller than the original tanks). These vertical fixed roof tanks will continue to store Polycor 940-C-408 which contains 45.91% VOC and 44.295% styrene. Altec will be installing two new storage tanks, FR-3 and FR-4. FR-3 will store Araldite AY557 US while FR-4 will store LINDRIDE 6. Both vertical fixed roof tanks will be able to store 6,000 gallons.

Altec will also be installing a new surface coating paint booth (PB-46) equipped with a 3.937 MMBtu/hr natural gas fired make-up air heater (MUA-46). The PB-46 paint booth will be used for painting utility truck parts and/or truck bodies. The booth is intended to be used for paint touch-ups. Trucks that enter the paint booth will be wiped down with acetone prior to the application of paint. The trucks body is then painted using an HVLP (high velocity low pressure) spray gun. After spraying the truck body, it is dried by air inside of the paint booth. Acetone is then used as needed for clean-up. Paint waste will be placed in waste drums to be transported off-site for proper disposal. The booth and makeup heater will be vented to stack PBS-46 (PBS-46 is divided into two co-located stacks PBS-46A and PBS-46B). The paint booth will be equipped with two filters in series, an initial Pre-pocket Filter (filter A) and a secondary Airflow Pleat (filter B) which will be installed in series. If the type of filter(s) changes or if the filters are not installed in series, the emissions of this permit will need to be reevaluated. Table 2 below summarizes the control efficiencies for both filters listed in the manufactures' specifications.

Table 2: Filter Control Efficiencies

Particle Size	Pre-pocket (filter A)	Airflow Pleat (filter B)	Overall Control[1]
PM_{20} (PM)	100.0%	--	100.0%
PM_{10}	99.8%	50.0%	99.9%
$PM_{2.5}$	4.2%	45.0%	47.3%

[1]Calculated as follows: Overall Control = 100% – ((100%-filter A) x (100%-filter B))

Paints and primers sprayed in PB-46 will be mixed on the spot from the following paints/hardener/reducers listed in Table 3 (other paint colors may be used but the below section are the worst case emission concentrations. Per Special Condition 5, Altec may use alternative coatings to those listed in Table 3). For coatings mixed at Altec, weighted averages of density and HAP compositions must be used from the individual coating components for emissions tracking purposes. Altec is approved to use ACIMS:GESI software to generate mixed coating composition sheets which may be used as documentation for tracking purposes. Any material SDS sheets or supplemental technical documents from the material manufacturers, including emails from the paint manufacturer, technical documents from the manufacturer, and paint composition data

displayed on a paint mixer granted the paint mixer is installed with the manufacturer's software, may be used for emission calculations. All SDS sheets and supplemental technical documents shall be retained on site as a part of Special Condition 2.F.

Altec will mix various component materials in order to make mixed coatings listed in Table 3 below. These final mixed coatings will be then be applied directly to trucks. There may be other coatings as Altec is permitted to use alternative coatings so long as they conform to Special Conditions 2.A through 2.E. Table 3 lists coatings reviewed for this project which reflect typical coatings that will be used by PB-46, though Altec is free to use alternative coatings with varying pollutant compositions (see Special Condition 5; alternative coatings may be mixed slightly differently).

Table 3: Reviewed Sample PB-46 coatings

Mixed Paint/Primer	density (lb/gal)	VOC	Solids	ethyl-benzene	HDI	xylene	toluene
Altec White Paint	10.86	20.14%	68.90%	0.00%	0.10%	0.00%	0.00%
Jet Black Paint	8.46	27.14%	59.46%	0.00%	0.13%	0.00%	0.00%
LV260 Primer	13.00	20.97%	65.84%	0.94%	0.00%	1.27%	0.00%
Lesonal Primer	11.41	23.52%	54.35%	0.98%	0.00%	1.45%	0.37%
NAV1A87N - LV650 RTS (sample atypical)	10.22	34.22%	65.79%	0.31%	0.06%	1.69%	0.28%

Using the Altec White Paint, the HVLP spray gun can spray greater than 6 gallons per hour, amounting to potential emissions greater than 40 tons per year of VOC. Therefore VOC limits and HAP limits are being placed on the project emission points to keep all pollutants below de minimis. Since HAPs may vary among coatings, Altec is required to track all individual HAPs from all emission points listed in Table 4 in order to ensure those emission points do not exceed the SMAL listed in Appendix A (see Special Condition 2.C). For a complete list of project emissions points, see Table 4 below. For all installation wide emission points see Attachment F.

Table 4: Project Emission Points

New Emission Points	Emission Point Description	Pollutants
BW-4	Boom Winder Coating	VOC, HAPs
BW-5	Boom Winder Coating	VOC, HAPs
FR-1	Styrene Resin Storage Tank (6,000 gal)	VOC, HAPs
FR-2	Styrene Resin Storage Tank (6,000 gal)	VOC, HAPs
FR-3	Resin Storage Tank (6,000 gal)	VOC, HAPs
FR-4	Catalyst Storage Tank (6,000 gal)	VOC, HAPs
PB-46	Utility Truck Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
MUA-46	Natural Gas Make-up heater (3.937 MMBtu/hr)	$PM/PM_{10}/PM_{2.5}$, SO_2, NOx, CO, VOC, HAPs

In order to remain a synthetic minor VOC source, Altec will need to add the new equipment added to their Intermediate Operating Permit application (Project # 2015-10-016).

EMISSIONS/CONTROLS EVALUATION

Formulas for calculating emissions from storage tanks were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, section 7.1 *Organic Liquid Storage Tanks* (November, 2006).The only HAP from the boom winding resin storage tank FR-3 will be epichlorohydrin. With the tank able to hold 6,000 gallons, and an estimated 226,235 gallons per year throughput of Araldite AY557 US, the maximum yearly emissions were estimated to be 0.0001 lbs epichlorohydrin. This averages to 3.872E-6 lbs epichlorohydrin per gallon resin. The catalyst storage tank (FR-4) will emit phthalic anhydride (HAP). Using the same methodology as before, FR-4 is rated at 6,000 gallons volume and is expected to have a net throughput of 189,776 gallons/year of LINDRIDE 6. This yields an emission rate of 0.001 lbs/year or 5.269E-9 lbs/gallon. However, phthalic anhydride is a solid at room temperature and therefore will have no associated fugitive emissions. Breathing loss for storage tanks were not considered since all tanks are inside a temperature controlled (70 °F) room which will not see temperature fluctuations. Storage tanks FR-1 and FR-2 are going to replace the previously installed FR-1 and FR-2 tanks which store a styrene based resin (Polycor 940-C-408) used at the facility. The styrene resin contains 45.9% VOC and 44.3% styrene by weight. Total FR-1 and FR-2 styrene resin throughput will be 97,189 gallons/year, yielding 0.0060 tons/year of VOC emissions and 0.0058 tons/year of styrene emissions.

For boom winding coating (BW-4 and BW-5) ARALDITE AY 557 US (resin), LINDRIDE 6 (curing agent), and BYK-A 500 (defoamer) emission factors were calculated as the mass percent of pollutants within each material multiplied by the density of each material (except for VOC and phthalic anhydride emissions; see Project Description).

Emissions from the PB-46 paint booth were calculated by multiplying the density and the weight percentage of HAPs, VOC, and solids (particulate) within each coating. Total VOC and HAP emissions were then calculated by multiplying each emission factor by total material throughput in gallons/hour. The PB-46 paint booth is fully enclosed and therefore will capture 100% of particulate. The paint booth is equipped with two filters in series whose overall control efficiencies are described in Table 2. Spraying will be performed with a high volume low pressure (HVLP) spray gun. According to the EPA document entitled "Sources and Control of Volatile Organic Air Pollutants", APTI Course 482, Third Edition (November 2002), HVLP spray guns achieve a 60% to 70% transfer efficiency. Therefore a 65% transfer efficiency was used for calculations (i.e. 35% overspray of solids content producing particulate emissions). According to a paper entitled "*Size Distribution of Chromate Paint Aerosol Generated in a Bench-Scale Spray booth*" (December 13, 2004), typical size distributions for spray coating particulate will be, by weight, 9.92% $PM_{2.5}$, 40.7% PM_{10}, and 100% PM. Particulate emissions from the PB-46 spray booth were therefore calculated by multiplying the total emission rate of particulate by the size distribution percentages and then again by the appropriate particulate size filter efficiency in Table 2 for $PM_{2.5}/PM_{10}$/PM.

Make up air heater MUA-46 emissions were calculated using the maximum hourly design rate for natural gas combustion of 3.937 MMBtu/hr. Emission factors are derived from EPA document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, section 1.4 *Natural Gas Combustion* (July, 1998)

The following table provides an emissions summary for this project. Existing potential emissions were not determined for this project. Existing actual emissions were taken from the installation's 2015 EIQ (the 2016 EIQ did not have recorded emission values at the time of this evaluation).

Potential emissions of the application represent the potential of the new equipment in Table 4, assuming continuous operation (8760 hours per year).

Table 5: Emissions Summary (tpy)

Pollutant	Regulatory *De Minimis* Levels or *SMAL*	Existing Potential Emissions	Existing Actual Emissions (2015 EIQ)	Potential Emissions of the Project	New Installation Conditioned Potential
PM	25.0	N/D	N/D	< 10.0[1]	N/D
PM_{10}	15.0	N/D	0.0	< 10.0[1]	N/D
$PM_{2.5}$	10.0	N/D	0.0	< 10.0[1]	N/D
SO_2	40.0	N/D	N/D	0.01	N/D
NOx	40.0	N/D	N/D	1.7	N/D
VOC	40.0	< 100.0	28.3	< 40.0	N/D[2]
CO	100.0	N/D	N/D	1.4	N/D
HAPs	10.0/25.0	< 10.0/25.0	N/D	< 10/25.0	< 10.0/25.0
Ethylbenzene	10.0	N/D	N/D	< SMAL	N/D
Toluene	10.0	N/D	N/D	< SMAL	N/D
Benzene	2.0	N/D	N/D	< SMAL	N/D
Cumene	10.0	N/D	N/D	< SMAL	N/D
Xylene	10.0	N/D	N/D	< SMAL	N/D
HDI	0.02	N/D	N/D	< SMAL	N/D
Epichlorohydrin	2.0	N/D	N/D	< SMAL	N/D

N/A = Not Applicable; N/D = Not Determined

[1]Only emissions of $PM_{2.5}$ are limited below 10 tons per year. With filter capture efficiencies, emissions of PM_{10} and PM are indirectly limited to less than those of $PM_{2.5}$

[2]Altec will need to include these emission points within their intermediate Operating Permit and incorporate all project emission points within the installation wide 100.0 tpy VOC limit. The 40.0 tpy limit within this permit applies only to the project emission points and not the entire installation.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.* Potential installation emissions of VOC are above de minimis levels but below major source levels.

APPLICABLE REQUIREMENTS

Altec Industries, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Operating Permits*, 10 CSR 10-6.065
- *Start-Up, Shutdown, and Malfunction Conditions,* 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110
    - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *MACT Regulations*, 10 CSR 10-6.075
    - *National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources,* 40 CFR Part 63, Subpart HHHHHH

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated September 26, 2017, received September 28, 2017, designating Altec Industries, Inc. as the owner and operator of the installation.

OTHER RELIED UPON DOCUMENTS

- E-mail Communications between Altec Industries, Inc. and the Missouri Air Pollution Control Program. This includes supplemental data submitted along with the e-mails.

- (Reference 1) Paper titled "Size Distribution of Chromate Paint Aerosol Generated in a Bench-Scale Spray booth" published December 13, 2004, by Rania A. Sabty-Daily, William C. Hinds, and John R. Froines. (*Paper was used to define particulate size distribution for HVLP spray coating*)

- (Reference 2) Paper titled "Determination of 1,6-Hexamethylene Diisocyanate (HDI) Emissions from Spray Booth Operations" (April 2006) Published by Ontario Ministry of the Environment.

Attachment A – Individual HAPs Compliance Worksheet

Altec Industries, Inc.
Buchanan County, S12, T57N, R35W
Project Number: 2017-09-044
Installation ID Number: 021-0078
Permit Number: 052018-009

HAP Name: _____ CAS No.: _____
This sheet covers the month of _____ in the year _____.

Covers all emission points at the installation (see Attachment F)						
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Material Used (Name)	Emission Unit Description/ID	Amount of Material Used (Include Units)	Density (Pounds per Gallon)	HAP Content (Weight %)	Overall volatile or solid HAP Emission Factor (units vary)	HAP Emissions (Tons)

(c) Total Individual HAP Emissions Calculated for this Month in Tons:	
(d) Last Month's 12-Month Individual HAP Emissions Total, in Tons:	
(e) Previous Year's Monthly Individual HAP Emissions Total, in Tons:	
(f) Current 12-month Total of Individual HAP Emissions in Tons: [(c) + (d) - (e)]	

Instructions: This worksheet must include HAP emissions from all emission units installed or permitted at the time of permit issuance (Attachment F). Density [Column 4] and HAP Content [Column 5] shall be determined from material SDS sheets or supplemental technical documents provided from the manufacturer. For mixed component coatings, Density [Column 4] and HAP Content [Column 5] shall be determined by the weighted averages of components from material SDS sheets or supplemental technical documents provided by the paint manufacturer. Supplemental Technical documents include ACIMS:GESI data, emails with the paint manufacturer, technical documents from the manufacturer, and paint composition data displayed on a paint mixer granted the paint mixer is installed with the manufacturer's software and composition data recorded and documented. All SDS sheets and supplemental technical documents shall be retained on site as a part of Special Condition 3.C.

(a) For evaporative losses from sources such as coatings, resins, paints, gels, solvents, sealants:
1) If usage is in tons - [Column 3] x [Column 5] x [Column 6][note] = [Column 7];
2) If usage is in pounds - [Column 3] x [Column 5] x [Column 6][note] x [0.0005] = [Column 7];
3) If usage is in gallons - [Column 3] x [Column 4] x [Column 5] x [Column 6][note] x [0.0005] = [Column 7];
((Note: For HDI (Hexamethylene,-1,6-Diisocyanate), [Column 6] = 0.076 lb HDI/ lb of HDI sprayed if usage is in pounds or gallons. For HDI emissions usage in tons, [Column 6] = 0.076 tons HDI/ton HDI sprayed (same ratio).
For all other evaporative losses, omit [Column 6] entirely (leave it blank) from the equations above.)

(b) 1) Except for the following emission units (GC-2, RES-1, and PCM-1), the emission factor = 100%
2) For spray layup operations (GC-2), obtain emission factors from the most current version of the *ANSI/ACMA/ICPA UEF-1-2004 Estimating Emission Factors from Open Molding Composite Processes ("UEF") document*
3) For centrifugal casting (RES-1), the VOC HAP emission factor = 1.85%; *obtained from the April 20, 2010 Intermediate Operating Permit Application*
4) For closed molding operations (PCM-1A/B), the VOC HAP emission factor = 3%; obtained from *AP-42 Section 4.4 "Polyester Resin Plastic Products Fabrication" (February 2007)*
5) For laser cutting, record percentage of HAPs in the metal that is cut in [Column 5], record a particulate emission

factor of 62 lbs particulate/hour operated in [Column 6] and the hours operated per laser cutter in [Column 3]; calculate laser HAP emissions as [Column 3] x [Column 5] x [Column 6] = [Column 7] (may need to repeat for multiple metallic HAPs and multiple laser cutters; *obtained from Project 2013-10-074 application*

6) List Gasoline HAP percentages [Column 5]: (3.2% benzene, 11.6% hexane, 4.8% toluene, 1.4% ethylbenzene, and 6.6% xylene) use calculation method (a)3) with VOC emission factors [Column 6]: G1 (breathing) = 0.0091734 lbs/ gallons; G1 (working) = 0.0078526 lbs/gallon; gasoline density: 6.073 lb/gal
7) List Diesel HAP percentages [Column 5]: (0.1% Benzene, 1.0% Hexane, 0.7% Toluene, 0.2% Ethylbenzene, 0.5% Xylene, 0.25% vinyl acetate, 0.05% naphthalene, 0.25% styrene); use calculation method (a)3) with VOC emission factors [Column 6]: D1 (breathing) = 1.6E-6 lbs/ gallons; D1 (working) = 7.9E-6 lbs/gallon; Diesel density: 6.943 lb/gal
8) For used oil combustion in unit OH-1– [Column 3 (gallons)] x [Column 6 (Attachment G)] / [1000 gallons] = [Column 7]
9) For natural gas usage – [Column 3 (standard cubic feet [scf] natural gas)] / [10^6 scf per MMscf] x [Column 6 HAP emission factor (Attachment G)] x [0.0005] = [Column 7]
10) The following outlines solid HAPs emission (Those HAPs which have a 'Y' in the PM column on Appendix A). For powder coating, all particulate is 100% $PM_{2.5}$. For liquid spray coating, $PM/PM_{10}/PM_{2.5}$ = 100%/40.7%/9.92% of total particulate.
    a) For solid HAPs from powder coat booths: [Column 3 (lbs)] x [Column 5] x [100% capture efficiency] x [1 – 0.99 filter control] x [1- 0.65 HVLP transfer efficiency] x [0.0005] = [Column 7]
    b) For solid HAPs from liquid paint booths: [Column 3 (gallons)] x [Column 4] x [Column 5] x [100% capture efficiency] x [1 –filter control] x [1- 0.65 HVLP transfer eff.] x [0.0005] = [Column 7], where filter control is 0.999 for PM10 and 0.473 for PM2.5.
11) The following outlines resin and catalyst storage tank emission factors (from current permit application; *AP-42 Organic Liquid Storage Tanks (November 2006)*):
    a) FR-1: Working loss: 1.19E-07 tons/gallon (100% styrene)
    b) FR-2: Working loss: 1.19E-07 tons/gallon (100% styrene)
    c) FR-3: Working loss: 1.94E-09 tons/gallon (100% epichlorohydrin)
    d) FR-4: Working loss: 1.05E-11 tons/gallon (100% phthalic anhydride)
12) For Boom Winding Operations BWO-1, BW-2, BW-3, BW-4, BW-5, phthalic anhydride emissions from the use of curing agents: [Column 3 (gallons)] x [Column 4] x [Column 6 (enter evaporation rate of 0.01% provided by Lindau Chemicals Inc. emissions study provided with current application] x [0.0005] = [Column 7]; For emissions from Boom Resin and the Defoamer, refer to evaporation losses in part (a)
13) Construction Permit 1198-006 emission points:
    a) Fume Collection System (welding fume control; Construction Permit 1198-006 mass balance; *AP-42 Section 12.19 "Electric Arc Welding" (January 1995)*): [Column 3 (10^3 lbs Electrode Consumed)] x [Column 6 (HAP emission factors)] x [0.0005] = [Column 7] (Note: HAP Emission factors are as follows: Cr – 0.01, Co – 0.01, Mn – 3.18, Ni – 0.01 with units 10^{-1} lbs pollutant /10^3 electrode consumed)
    b) Flow Solder (FS-1) – [Column 3 (lbs soldered)] x [Column 6 (1.5 lbs lead/ton solder, determined through mass balance)] x [0.0005] = [Column 7]

(c) Summation of [Column 7] in Tons;
(d) 12-Month Individual HAP emissions (f) from last month's Attachment A in Tons;
(e) Monthly Individual HAP emissions total (c) from the previous year's Attachment A in Tons; and
(f) Calculate the new 12-month Individual HAP emissions total. **A 12-Month Individual HAP emissions total (f) of less than 10 tons for the installation indicates compliance.**

Attachment B – SMAL Compliance Worksheet

Altec Industries, Inc.
Buchanan County, S12, T57N, R35W
Project Number: 2017-09-044
Installation ID Number: 021-0078
Permit Number: 052018-009

HAP Name: _____ CAS No.: _____
Limit defined in Special Condition 2 or SMAL limit defined in Appendix A _____(tons per year)
This sheet covers the month of _____ in the year _____.

Covers only Table 4 emission points						
Column 1	Column 2	Column 3 (a)	Column 4	Column 5	Column 6	Column 7
Material Used (Name)	Emission Unit Description/ID	Amount of Material Used (Include Units)	Density (Pounds per Gallon)	HAP Content (Weight %)	Overall volatile or solid HAP Emission Factor	HAP Emissions (Tons)
(c) Total Individual HAP Emissions Calculated for this Month in Tons:						
(d) Last Month's 12-Month Individual HAP Emissions Total, in Tons:						
(e) Previous Year's Monthly Individual HAP Emissions Total, in Tons:						
(f) Current 12-month Total of Individual HAP Emissions in Tons: [(c) + (d) - (e)]						

Instructions: This worksheet must include individual HAP emissions from project emission points (Table 4). Density [Column 4] and HAP Content [Column 5] shall be determined from material SDS sheets or supplemental technical documents provided from the manufacturer. For mixed component coatings, Density [Column 4] and HAP Content [Column 5] shall be determined by the weighted averages of components from material SDS sheets or supplemental technical documents provided by the paint manufacturer. Supplemental Technical documents include ACIMS:GESI data, emails with the paint manufacturer, technical documents from the manufacturer, and paint composition data displayed on a paint mixer granted the paint mixer is installed with the manufacturer's software and composition data recorded and documented. All SDS sheets and supplemental technical documents shall be retained on site as a part of Special Condition 3.C.

(a) For evaporative losses from sources such as coatings, resins, paints, gels, solvents, sealants:
1) If usage is in tons - [Column 3] x [Column 5] x [Column 6][note] = [Column 7];
2) If usage is in pounds - [Column 3] x [Column 5] x [Column 6][note] x [0.0005] = [Column 7];
3) If usage is in gallons - [Column 3] x [Column 4] x [Column 5] x [Column 6][note] x [0.0005] = [Column 7];

((Note: For HDI (Hexamethylene,-1,6-Diisocyanate), [Column 6] = 0.076 lb HDI/ lb of HDI sprayed if usage is in pounds or gallons. For HDI emissions usage in tons, [Column 6] = 0.076 tons HDI/ton HDI sprayed (same ratio). **For all other evaporative losses, omit [Column 6] entirely (leave it blank) from the equations above.**))

For HAPs listed as PM ('Y') in Appendix A, choose the appropriate calculation method for units reported:
1) If usage is in tons:[Column 2] x [Column 4] x [0.025] = [Column 5]
2) If usage is in pounds:[Column 2] x [Column 4] x [0.025] x [0.0005] = [Column 5]

For the Remaining Table 4 Emission Sources
1) MUA-46 natural gas usage – [Column 3 (standard cubic feet [scf] natural gas)] / [10^6 scf per MMscf] x [Column 6

HAP emission factor (Attachment G)] x [0.0005] = [Column 7]

2) Storage tank emission factors (from current permit application; *AP-42 Organic Liquid Storage Tanks (November 2006)*): [Column 3 (gallons)] x [Column 6] = [Column 7]
   e) FR-1: Working loss: [Column 6] = 1.19E-07 tons/gallon (100% styrene)
   f) FR-2: Working loss: [Column 6] = 1.19E-07 tons/gallon (100% styrene)
   g) FR-3: Working loss: [Column 6] = 1.94E-09 tons/gallon (100% epichlorohydrin)
   h) FR-4: Working loss: [Column 6] = 1.05E-11 tons/gallon (100% phthalic anhydride)

3) Boom Winding BW-4, BW-5, phthalic anhydride emissions from the use of curing agents:
   [Column 3 (gallons)] x [Column 4] x [Column 6 (enter evaporation rate of 0.01% provided by Lindau Chemicals Inc. emissions study provided with current application] x [0.0005] = [Column 7];
   For emissions from Boom Resin and the Defoamer, refer to evaporation losses in part (a)

(c) Summation of [Column 7] in Tons;
(d) 12-Month Individual HAP emissions (f) from last month's Attachment A in Tons;
(e) Monthly Individual HAP emissions total (c) from the previous year's Attachment A in Tons; and
(f) Calculate the new 12-month Individual HAP emissions total. **A 12-Month Individual HAP emissions total (f) of less than the individual SMAL listed in Appendix A for the installation indicates compliance.** The installation is required to include the startup, shutdown, and malfunction HAP emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050 towards compliance with this limit.

Attachment C – Monthly Combined HAPs Compliance Worksheet

Altec Industries, Inc.
Buchanan County, S12, T57N, R35W
Project Number: 2017-09-044
Installation ID Number: 021-0078
Permit Number: 052018-009

This sheet covers the month of _____ in the year _____.

Covers all emission points at the installation (see Attachment F)		
Column 1	Column 2	Column 3 (a)
Individual HAP Name	Individual HAP CAS number	Total Individual Monthly HAP emissions (tons)
(b1) List the total natural gas usage from all natural gas combustion sources for this month in MMscf: _____MMscf		n/a
(b2) Total HAPs from all natural gas combustion sources for this month, in Tons:		
(c) Total Combined HAP Emissions Calculated for this Month, in Tons:		
(d) Previous Month's 12-Month HAP Emissions Total, in Tons:		
(e) Previous Year's Monthly HAP Emissions Total, in Tons:		
(f) Current 12-month Total of HAP Emissions in Tons: [(b) + (c) - (d)]:		

Instructions: This worksheet must include HAP emissions from all emission units installed or permitted at the time of permit issuance (Attachment F). Obtain information for Column 1 and Column 2 and Column 3 from Attachment A

(a) Record the total monthly individual HAP emissions total Attachment A (c) from the current month's Attachment A
(b1,b2) Record MMscf (10^6 standard cubic feet) of natural gas used for the month in row b1. Then, in row b2, record the total HAPs produced from natural gas combustion: [b2] = [b1]*[1.8879582]/2000

(Note: Attachment A already includes natural gas emissions for individual HAPs. In order to avoid double counting natural gas emissions, Altec may exclude natural gas pollutant emissions from Attachment A (c) when recording natural gas emissions on this attachment (Attachment A should be unaltered in this process). When excluding the individual natural gas pollutant emissions, Altec shall account for total natural gas pollutant emissions using equation [b2].
Alternatively, Altec can account for other individual natural gas HAPs not included within Attachment A by using the following equation [(standard cubic feet [scf] natural gas)] / [10^6 scf per MMscf] x [HAP emission factor (Attachment G)] x [0.0005] = [Column 3(a) individual HAP emissions]).

(c) Summation of [Column 3] in Tons;
(d) Record the previous 12-Month combined HAP emission total (e) from last month's Attachment C, in Tons;
(e) Record the monthly combined HAP emission total (b) from previously year's Attachment C, in Tons; and
(f) Calculate the new 12-month combined HAP emissions total. **A 12-Month Combined HAP emissions total (e) of less than 25.0 tons for the installation indicates compliance.** The installation is required to include the startup, shutdown, and malfunction HAP emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050 towards compliance with this limit.

Attachment D – Monthly $PM_{2.5}$ Compliance Worksheet

Altec Industries, Inc.
Buchanan County, S12, T57N, R35W
Project Number: 2017-09-044
Installation ID Number: 021-0078
Permit Number: 052018-009

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Covers only Table 4 emission points				
	Column 2	Column 3	Column 4	Column 5 (a)
Material Used (name, type)	Amount of material used (include units, tons, lbs or gallons)	Density of material used obtained from SDS (lbs/gal)	Solids Content (%) obtained from SDS	$PM_{2.5}$ Emissions (tons)
(b) Total monthly natural gas usage in from MUA-46 make-up air unit (scf):_____scf				n/a
(c) Total Monthly $PM_{2.5}$ emissions from Natural Gas Combustion (tons):				
(e) Total $PM_{2.5}$ emissions calculated for this month (tons):				
(f) 12-month rolling $PM_{2.5}$ emissions total from previous month's worksheet (tons):				
(g) Monthly $PM_{2.5}$ emissions total from previous year's worksheet (tons):				
(h) Current 12 rolling month total of $PM_{2.5}$ emissions (tons): [(d)+(e)-(f)]				

Instructions:

(a) For PB-46, choose appropriate controlled $PM_{2.5}$ calculation method for units reported:
1) If usage is in tons:[Column 2] x [Column 4] x [0.0183] = [Column 5]
2) If usage is in pounds: [Column 2] x [Column 4] x [0.0183] x 0.0005] = [Column 5]
3) If usage is in gallons: [Column 2] x [Column 3] x [Column 4] x [0.0183] x [0.0005] = [Column 5]

(b) Total natural gas throughput for only make-up air unit (MUA-46) in standard cubic feet (scf)

(c) Natural Gas $PM_{2.5}$ emissions: [Row (b)] / [10^6 scf per MMscf] x [7.6 lb $PM_{2.5}$ per MMscf obtained from AP-42 Section 1.4] x [0.0005] = [Column 5]

(d) Summation of $PM_{2.5}$ emissions in Column 5.

(e) 12-month rolling $PM_{2.5}$ emissions total from previous month's worksheet (tons).

(f) Monthly $PM_{2.5}$ emissions total from previous year's worksheet (tons).

(g) Calculate the new 12-month rolling $PM_{2.5}$ emissions total. **A total of less than 10.0 tons per year of $PM_{2.5}$ indicates compliance.** The installation is required to include the startup, shutdown, and malfunction $PM_{2.5}$ emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050 towards compliance with this limit.

Note: The [0.0183] factor above accounts for the 100% booth capture, 35% HVLP overspray, 9.92% of total particulate being $PM_{2.5}$, and a 47.3% $PM_{2.5}$ filter efficiency such that 1.83% of the coating weight will escape the booth as $PM_{2.5}$ emissions.

Attachment E – Monthly VOC Compliance Worksheet

Altec Industries, Inc.
Buchanan County, S12, T57N, R35W
Project Number: 2017-09-044
Installation ID Number: 021-0078
Permit Number: 052018-009

This sheet covers the month of _____ in the year _____.

Covers only Table 4 emission points						
Column 1	Column 2	Column 3 (a)	Column 4	Column 5	Column 6	Column 7
Material Used (Name)	Emission Unit Description/ID	Amount of Material Used (Include Units)	Density (Pounds per Gallon)	VOC Content (Weight %)	Overall volatile or solid VOC Emission Factor	VOC Emissions (Tons)

(c) Total Individual VOC Emissions Calculated for this Month in Tons:	
(d) Last Month's 12-Month Individual VOC Emissions Total, in Tons:	
(e) Previous Year's Monthly Individual VOC Emissions Total, in Tons:	
(f) Current 12-month Total of Individual VOC Emissions in Tons: [(c) + (d) - (e)]	

Instructions: This worksheet must include VOC emissions from project emission points (Table 4). Density [Column 4] and VOC Content [Column 5] shall be determined from material SDS sheets or supplemental technical documents provided from the manufacturer. For mixed component coatings, Density [Column 4] and VOC Content [Column 5] shall be determined by the weighted averages of components from material SDS sheets or supplemental technical documents provided by the paint manufacturer. Supplemental Technical documents include ACIMS:GESI data, emails with the paint manufacturer, technical documents from the manufacturer, and paint composition data displayed on a paint mixer granted the paint mixer is installed with the manufacturer's software and composition data recorded and documented. All SDS sheets and supplemental technical documents shall be retained on site as a part of Special Condition 3.C.

(a) For evaporative losses from sources such as coatings, resins, paints, gels, solvents, sealants:
1) If usage is in tons - [Column 3] x [Column 5] = [Column 7];
2) If usage is in pounds - [Column 3] x [Column 5] x [0.0005] = [Column 7];
3) If usage is in gallons - [Column 3] x [Column 4] x [Column 5] x [0.0005] = [Column 7];

For the Remaining Table 4 Emission Sources

3) For MUA-46 natural gas usage – [Column 3 (standard cubic feet [scf] natural gas)] / [10^6 scf per MMscf] x [Column 6 = 5.5 lbs VOC/MMscf] x [0.0005] = [Column 7]

4) The following outlines resin and catalyst storage tank VOC emission factors (from current permit application; *AP-42 Organic Liquid Storage Tanks (November 2006)*): [Column 3 (gallons)] x [Column 6] = [Column 7]
i) FR-1: Working loss: [Column 6] = 1.24E-07 tons/gallon
j) FR-2: Working loss: [Column 6] = 1.24E-07 tons/gallon
k) FR-3: Working loss: [Column 6] = 1.94E-09 tons/gallon
l) FR-4: Working loss: [Column 6] = 1.05E-11 tons/gallon

5) For Boom Winding BW-4, BW-5, VOC emissions from the use of curing agents:

Attachment E – Monthly VOC Compliance Worksheet

[Column 3 (gallons)] x [Column 4] x [Column 6 (enter evaporation rate of 1.53% provided by Lindau Chemicals Inc. emissions study provided with current application)] x [0.0005] = [Column 7];
For emissions from Boom Resin and the Defoamer, refer to evaporation losses in part (a)

(c) Summation of [Column 7] in Tons;
(d) 12-Month Individual HAP emissions (f) from last month's Attachment A in Tons;
(e) Monthly Individual HAP emissions total (c) from the previous year's Attachment A in Tons; and
(f) Calculate the new 12-month Individual HAP emissions total. **A 12-Month VOC emissions total (f) of less than 40.0 tons per year for the project (Table 4) emission points indicates compliance.** The installation is required to include the startup, shutdown, and malfunction HAP emissions as reported to the Air Pollution Control Program's Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050 towards compliance with this limit.

Attachment F – Installation Emission Points

Emission Point	Emission Point Description	Pollutants	Emission Point	Emission Point Description	Pollutants
AL-1	Laser Metal Cutting Operation	$PM/PM_{10}/PM_{2.5}$, HAPs	PB-20	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
AL-2	Laser Metal Cutting Operation	$PM/PM_{10}/PM_{2.5}$, HAPs	PB-30	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
B-1	Aboveground Hydraulic Oil Storage Tank	VOC	PB-31	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
B-2	Aboveground Hydraulic Oil Storage Tank	VOC	PB-40	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
BO-01	Burn-off Oven	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs	PB-41	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
BW-2	Boom Winding Operation No. 2	VOC, HAPs	PB-43	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
BW-3	Boom Winding Operation No. 3	VOC, HAPs	PB-44	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
BW-4	Boom Winding Operation No. 4	VOC, HAPs	PB-46	Spray Paint Booth	$PM/PM_{10}/PM_{2.5}$, VOC, HAPs
BW-5	Boom Winding Operation No. 5	VOC, HAPs	MUA-46	Make-up air system for PB-46	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs
BWO-1	Boom Winding Operation No. 1	VOC, HAPs	PC-2A	Powder Coat Booth - Derrick Focus	$PM/PM_{10}/PM_{2.5}$
CO-1	Boom Curing Oven	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs	PC-2B	Powder Coat Curing Oven - Derrick Focus	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs
D-1	Aboveground Diesel Fuel Storage Tank	VOC	PC-4A	Powder Coat Booth - Aerial Focus	$PM/PM_{10}/PM_{2.5}$
DL-1	Laser Metal Cutting Operation	$PM/PM_{10}/PM_{2.5}$, HAPs	PC-4B	Powder Coat Curing Oven - Aerial Focus	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs
DL-2	Laser Metal Cutting Operation	$PM/PM_{10}/PM_{2.5}$, HAPs	PCM-1A	Vacuum Forming & Molding (Bucket Manufacture)	VOC, HAPs
FC-1	Welding Fume Control - Derrick Focus	$PM/PM_{10}/PM_{2.5}$, HAPs	PCM-1B	Vacuum Forming & Molding (Mold Building)	VOC, HAPs
FS-1	Flow Solder Operation	$PM/PM_{10}/PM_{2.5}$, Lead	RES-1	Fiberglass Boom Manufacturing Operation	VOC, HAPs
G-1	Aboveground Gasoline Storage Tank	VOC, HAPs	SB-1	Boom Sanding Operation	$PM/PM_{10}/PM_{2.5}$
GC-2	Gel Coat Spray Operation	VOC, HAPs	SB-3	Shot Blast Booth - Derrick Focus	$PM/PM_{10}/PM_{2.5}$
MUA-20	Make-Up Air Unit (nat gas)	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs	SB-4	Shot Blast Booth - Aerial Focus	$PM/PM_{10}/PM_{2.5}$
MUA-30	Make-up Air Unit (nat gas)	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs	FR-1	Resin Storage Tank	VOC, HAPs
MUA-31	Make-up air system for PB-31	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, HAPs	FR-2	Resin Storage Tank	VOC, HAPs
OH-1	Used Oil Heaters	$PM/PM_{10}/PM_{2.5}$, SOx, NOx, VOC, CO, Lead	FR-3	Resin Storage Tank	VOC, HAPs
			FR-4	Catalyst Resin Storage Tank	VOC, HAPs

Attachment G – Natural Gas and Used Oil Emission Factors

Natural Gas Combustion products[2]				Waste Fuel Oil - Atomizing Burner Combustion HAPs[3]			
HAPs	lb/MMft^3	HAPs	lb/MMft^3	HAPs (metallic)	lb/10^3 gallon	HAPs (TOC)	lb/10^3 gallon
POM aggregate group	6.98E-04	Indeno(1,2,3-cd)pyrene	1.80E-06	Antimony	4.50E-03	Phenol	2.80E-05
2-Methylnaphthalene	2.40E-05	Naphthalene	6.10E-04	Arsenic	6.00E-02	Naphthalene	9.20E-05
3-Methylchloranthrene	1.80E-06	Pentane[1]	2.60E+00	Beryllium	1.80E-03	Phenanthrene/anthracene	1.00E-04
7,12-Dimethylbenzanthracene	1.60E-05	Phenanathrene	1.70E-05	Cadmium	1.20E-02	Dibutylphthalate	3.40E-05
Acenaphthene	1.80E-06	Propane[1]	1.60E+00	Chromium	1.80E-01	Pyrene	8.30E-06
Acenaphthylene	1.80E-06	Pyrene	5.00E-06	Cobalt	5.20E-03		
Anthracene	2.40E-06	Toluene	3.40E-03	Manganese	5.00E-02		
Benzanthracene	1.80E-06	Arsenic	2.00E-04	Nickel	1.60E-01		
Benzene	2.10E-03	Barium[1]	4.40E-03				
Benzo(a)pyrene	1.20E-06	Beryllium	1.20E-05				
Benzo(b)fluoranthene	1.80E-06	Cadmium	1.10E-03				
Benzo(g,h,i)perylene	1.20E-06	Chromium	1.40E-03				
Benzo(k)fluoranthene	1.80E-06	Cobalt	8.40E-05				
Butane[1]	2.10E+00	Copper[1]	8.50E-04				
Chrysene	1.80E-06	Manganese	3.80E-04				
Dibenzo(a,h)anthracene	1.20E-06	Mercury	2.60E-04				
Dichlorobenzene	1.20E-03	Molybdenum[1]	1.10E-03				
Ethane[1]	3.10E+00	Nickel	2.10E-03				
Fluoranthene	3.00E-06	Selenium	2.40E-05				
Fluorene	2.80E-06	Vanadium[1]	2.30E-03				
Formaldehyde	7.50E-02	Zinc[1]	2.90E-02				
Hexane	1.80E+00	Combined (total) HAPs	1.8879582				

[1]These compounds are not HAPs and do not contribute towards total HAPs
[2]EPA document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 1.4 *Natural Gas Combustion* (July, 1998)
[3]EPA document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 1.11 *Waste Oil Combustion* (October, 1996)

Note: If an above pollutant is emitted elsewhere at the facility, add the corresponding Monthly Emissions listed above to the appropriate individual HAPs tracking sheet on Attachment A.

Attachment H – MUA-46 Natural Gas Combustion Products (3.937 MMBtu/hr)

HAPs	lbs/hour	Monthly Emissions	Yearly Emissions	HAPs	lbs/hour	Monthly Emissions	Yearly Emissions
POM aggregate group	2.69E-06	9.84E-07	1.18E-05	Indeno(1,2,3-cd)pyrene	1.80E-06	2.54E-09	3.04E-08
2-Methylnaphthalene	9.26E-08	3.38E-08	4.06E-07	Naphthalene	2.35E-06	8.59E-07	1.03E-05
3-Methylchloranthrene	6.95E-09	2.54E-09	3.04E-08	Pentane	1.00E-02	3.66E-03	4.40E-02
7,12-Dimethylbenzanthracene	6.18E-08	2.25E-08	2.70E-07	Phenanathrene	6.56E-08	2.40E-08	2.87E-07
Acenaphthene	6.95E-09	2.54E-09	3.04E-08	Propane	6.18E-03	2.25E-03	2.70E-02
Acenaphthylene	6.95E-09	2.54E-09	3.04E-08	Pyrene	1.93E-08	7.04E-09	8.45E-08
Anthracene	9.26E-09	3.38E-09	4.06E-08	Toluene	1.31E-05	4.79E-06	5.75E-05
Benzanthracene	6.95E-09	2.54E-09	3.04E-08	Arsenic	7.72E-07	2.82E-07	3.38E-06
Benzene	8.11E-06	2.96E-06	3.55E-05	Barium	1.70E-05	6.20E-06	7.44E-05
Benzo(a)pyrene	4.63E-09	1.69E-09	2.03E-08	Beryllium	4.63E-08	1.69E-08	2.03E-07
Benzo(b)fluoranthene	6.95E-09	2.54E-09	3.04E-08	Cadmium	4.25E-06	1.55E-06	1.86E-05
Benzo(g,h,i)perylene	4.63E-09	1.69E-09	2.03E-08	Chromium	5.40E-06	1.97E-06	2.37E-05
Benzo(k)fluoranthene	6.95E-09	2.54E-09	3.04E-08	Cobalt	3.24E-07	1.18E-07	1.42E-06
Butane	8.11E-03	2.96E-03	3.55E-02	Copper	3.28E-06	1.20E-06	1.44E-05
Chrysene	6.95E-09	2.54E-09	3.04E-08	Manganese	1.47E-06	5.35E-07	6.42E-06
Dibenzo(a,h)anthracene	4.63E-09	1.69E-09	2.03E-08	Mercury	1.00E-06	3.66E-07	4.40E-06
Dichlorobenzene	4.63E-06	1.69E-06	2.03E-05	Molybdenum	4.25E-06	1.55E-06	1.86E-05
Ethane	1.20E-02	4.37E-03	5.24E-02	Nickel	8.11E-06	2.96E-06	3.55E-05
Fluoranthene	1.16E-08	4.23E-09	5.07E-08	Selenium	9.26E-08	3.38E-08	4.06E-07
Fluorene	1.08E-08	3.94E-09	4.73E-08	Vanadium	8.88E-06	3.24E-06	3.89E-05
Formaldehyde	2.89E-04	1.06E-04	1.27E-03	Zinc	1.12E-04	4.09E-05	4.90E-04
Hexane	6.95E-03	2.54E-03	3.04E-02				

Note: This sheet will suffice for monthly and 12-month rolling total emissions tracking to document that all natural gas combustion HAPs for MUA-46 are below the SMAL unless one of the above pollutants is emitted by a separate emission point (such as, but not limited to, PB-46 spray coating emissions). If an above pollutant is emitted from another Table 4 emissions point (such as an alternative coating), Altec shall add individual natural gas HAPs to the appropriate Compliance Worksheet using emission factors from Attachment G. Monthly and yearly HAP emissions calculated on Attachments A through C supersede monthly and yearly emissions listed on the table above.

Appendix A – Screen Action Modeling Levels (SMAL) (continues for two pages)

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N
HEXACHLOROETHANE	67-72-1	5		Y	N
HEXAMETHYLENE,-1,6-DIISOCYANATE	822-06-0	0.02		Y	N
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01		Y	N
HEXANE, [N-]	110-54-3	10		Y	N
HYDRAZINE	302-01-2	0.004		N	N
HYDROGEN CHLORIDE	7647-01-0	10		N	N
HYDROGEN FLUORIDE	7664-39-3	0.1		N	N
HYDROQUINONE	123-31-9	1		Y	N
INDENO(1,2,3CD)PYRENE	193-39-5	0.01	V	Y	N
ISOPHORONE	78-59-1	10		Y	N
LEAD COMPOUNDS		0.01	Q	N	Y
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01	F	Y	N
MALEIC ANHYDRIDE	108-31-6	1		Y	N
MANGANESE COMPOUNDS		0.8	R	N	Y
MERCURY COMPOUNDS		0.01	S	N	N
METHANOL	67-56-1	10		Y	N
METHOXYCHLOR	72-43-5	10	V	Y	Y
METHOXYETHANOL, [2-]	109-86-4	10	P	Y	N
METHYL CHLORIDE	74-87-3	10		Y	N
METHYL ETHYL KETONE (Delisted)	78-93-3				
METHYL HYDRAZINE	60-34-4	0.06		Y	N
METHYL IODIDE	74-88-4	1		Y	N
METHYL ISOBUTYL KETONE	108-10-1	10		Y	N
METHYL ISOCYANATE	624-83-9	0.1		Y	N
METHYL METHACRYLATE	80-62-6	10		Y	N
METHYL TERT-BUTYL ETHER	1634-04-4	10		Y	N
METHYLCYCLCOPENTADIENYL MANGANESE	12108-13-3	0.1	R	N	Y
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	V	Y	Y
METHYLENEDIANILINE, [4,4-]	101-77-9	1	V	Y	N
METHYLNAPHTHALENE, [2-]	91-57-6	0.01	V	Y	N
MINERAL FIBERS		0	T	N	Y
NAPHTHALENE	91-20-3	10	V	Y	N
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N
NAPHTHYLAMINE, [BETA-]	91-59-8	0.01	V	Y	N
NICKEL CARBONYL	13463-39-3	0.1	U	N	Y
NICKEL COMPOUNDS		1	U	N	Y
NICKEL REFINERY DUST		0.08	U	N	Y
NICKEL SUBSULFIDE	12035-72-2	0.04	U	N	Y
NITROBENZENE	98-95-3	1		Y	N
NITROBIPHENYL, [4-]	92-93-3	1	V	Y	N
NITROPHENOL, [4-]	100-02-7	5		Y	N
NITROPROPANE, [2-]	79-46-9	1		Y	N
NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001		Y	N
NITROSOMORPHOLINE, [N-]	59-89-2	1		Y	N
NITROSO-N-METHYLUREA, [N-]	684-93-5	0.0002		Y	N
OCTACHLORONAPTHALENE	2234-13-1	0.01	V	Y	N
PARATHION	56-38-2	0.1		Y	Y
PCB [POLYCHLORINATED BIPHENYLS]	1336-36-3	0.009	X	Y	Y
PENTACHLORONITROBENZENE	82-68-8	0.3		Y	N
PENTACHLOROPHENOL	87-86-5	0.7		Y	N
PHENOL	108-95-2	0.1		Y	N
PHENYLENEDIAMINE, [PARA-]	106-50-3	10		Y	N
PHOSGENE	75-44-5	0.1		Y	N
PHOSPHINE	7803-51-2	5		N	N
PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		N	N
PHTHALIC ANHYDRIDE	85-44-9	5		Y	N
POLYCYLIC ORGANIC MATTER		0.01	V	Y	N
PROPANE SULTONE, [1,3-]	1120-71-4	0.03		Y	Y
PROPIOLACTONE, [BETA-]	57-57-8	0.1		Y	N
PROPIONALDEHYDE	123-38-6	5		Y	N
PROPOXUR [BAYGON]	114-26-1	10		Y	Y
PROPYLENE OXIDE	75-56-9	5		Y	N
PROPYLENEIMINE, [1,2-]	75-55-8	0.003		Y	N
QUINOLINE	91-22-5	0.006		Y	N
QUINONE	106-51-4	5		Y	N
RADIONUCLIDES		Note 1	Y	N	Y
SELENIUM COMPOUNDS		0.1	W	N	Y
STYRENE	100-42-5	1		Y	N
STYRENE OXIDE	96-09-3	1		Y	N
TETRACHLORODIBENZO-P-DIOXIN,[2,3,7,8]	1746-01-6	6E-07	D,V	Y	Y
TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		Y	N
TETRACHLOROETHYLENE	127-18-4	10		N	N
TITANIUM TETRACHLORIDE	7550-45-0	0.1		N	N
TOLUENE	108-88-3	10		Y	N
TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		Y	N
TOLUIDINE, [ORTHO-]	95-53-4	4		Y	N
TOXAPHENE	8001-35-2	0.01		Y	N
TRICHLOROBENZENE, [1,2,4-]	120-82-1	10		Y	N
TRICHLOROETHANE, [1,1,1-]	71-55-6	10		N	N
TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N
TRICHLOROETHYLENE	79-01-6	10		Y	N
TRICHLOROPHENOL, [2,4,5-]	95-95-4	1		Y	N
TRICHLOROPHENOL, [2,4,6-]	88-06-2	6		Y	N
TRIETHYLAMINE	121-44-8	10		Y	N
TRIFLURALIN	1582-09-8	9		Y	Y
TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5		Y	N
URETHANE [ETHYL CARBAMATE]	51-79-6	0.8		Y	N
VINYL ACETATE	108-05-4	1		Y	N
VINYL BROMIDE	593-60-2	0.6		Y	N
VINYL CHLORIDE	75-01-4	0.2		Y	N
XYLENE, [META-]	108-38-3	10	G	Y	N
XYLENE, [ORTHO-]	95-47-6	10	G	Y	N
XYLENE, [PARA-]	106-42-3	10	G	Y	N
XYLENES (MIXED ISOMERS)	1330-20-7	10	G	Y	N

Legend

Group ID	Aggregate Group Name
A	Asbestos
B	Cresols/Cresylic Acid (isomers and mixtures)
C	2,4 - D, Salts and Esters
D	Dibenzofurans, Dibenzodioxins
E	4, 6 Dinitro-o-cresol, and Salts
F	Lindane (all isomers)
G	Xylenes (all isomers and mixtures)
H	Antimony Compounds
I	Arsenic Compounds
J	Beryllium Compounds
K	Cadmium Compounds
L	Chromium Compounds
M	Cobalt Compounds
N	Coke Oven Emissions
O	Cyanide Compounds
P	Glycol Ethers
Q	Lead Compounds (except elemental Lead)
R	Manganese Compounds
S	Mercury Compounds
T	Fine Mineral Fibers
U	Nickel Compounds
V	Polycyclic Organic Matter
W	Selenium Compounds
X	Polychlorinated Biphenyls (Aroclors)
Y	Radionuclides

Notes

Note 1 The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 years exposure associated with a cancer risk of 1 in 1 million

Appendix A – Screen Action Modeling Levels (SMAL) (continues for two pages)

Chemical	CAS #	SMAL (tons/yr)	Group ID	VOC	PM
ACETALDEHYDE	75-07-0	9		Y	N
ACETAMIDE	60-35-5	1		Y	N
ACETONITRILE	75-05-8	4		Y	N
ACETOPHENONE	98-86-2	1		Y	N
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y
ACROLEIN	107-02-8	0.04		Y	N
ACRYLAMIDE	79-06-1	0.02		Y	N
ACRYLIC ACID	79-10-7	0.6		Y	N
ACRYLONITRILE	107-13-1	0.3		Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N
AMINOBIPHENYL, [4-]	92-67-1	1	V	Y	N
ANILINE	62-53-3	1		Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N
ANTIMONY COMPOUNDS		5	H	N	Y
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y
ANTIMONY TRIOXIDE	1309-64-4	1	H	N	Y
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y
ARSENIC COMPOUNDS		0.005	I	N	Y
ASBESTOS	1332-21-4	0	A	N	Y
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N
BENZENE	71-43-2	2		Y	N
BENZIDINE	92-87-5	0.0003	V	Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N
BERYLLIUM COMPOUNDS		0.008	J	N	Y
BERYLLIUM SALTS		2E-05	J	N	Y
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N
BROMOFORM	75-25-2	10		Y	N
BROMOMETHANE	74-83-9	10		Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y
CALCIUM CYANAMIDE	156-62-7	10		Y	Y
CAPROLACTAM (Delisted)	105-60-2				
CAPTAN	133-06-2	10		Y	Y
CARBARYL	63-25-2	10	V	Y	Y
CARBON DISULFIDE	75-15-0	1		Y	N
CARBON TETRACHLORIDE	56-23-5	1		Y	N
CARBONYL SULFIDE	463-58-1	5		Y	N
CATECHOL	120-80-9	5		Y	N
CHLORAMBEN	133-90-4	1		Y	Y
CHLORDANE	57-74-9	0.01		Y	Y
CHLORINE	7782-50-5	0.1		N	N
CHLOROACETIC ACID	79-11-8	0.1		Y	N
CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	N
CHLOROBENZENE	108-90-7	10		Y	N
CHLOROBENZILATE	510-15-6	0.4	V	Y	Y
CHLOROFORM	67-66-3	0.9		Y	N
CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N
CHLOROPRENE	126-99-8	1		Y	N
CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y
CHROMIUM COMPOUNDS		5	L	N	Y
CHRYSENE	218-01-9	0.01	V	Y	N
COBALT COMPOUNDS		0.1	M	N	Y
COKE OVEN EMMISIONS	8007-45-2	0.03	N	Y	N
CRESOL, [META-]	108-39-4	1	B	Y	N
CRESOL, [ORTHO-]	95-48-7	1	B	Y	N
CRESOL, [PARA-]	106-44-5	1	B	Y	N
CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N
CUMENE	98-82-8	10		Y	N
CYANIDE COMPOUNDS		0.1	O	Y	N
DDE	72-55-9	0.01	V	Y	Y
DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N
DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N
DIAZOMETHANE	334-88-3	1		Y	N
DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N
DIOXINS/FURANS		6E-07	D,V	Y	N
DIBENZOFURAN	132-64-9	5	V	Y	N
DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01		Y	N
DIBROMOETHANE, [1,2-]	106-93-4	0.1		Y	N
DIBUTYL PHTHALATE	84-74-2	10		Y	Y
DICHLOROBENZENE, [1,4-]	106-46-7	3		Y	N
DICHLOROBENZIDENE, [3,3-]	91-94-1	0.2	V	Y	Y
DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N
DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N
DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		Y	N
DICHLOROMETHANE	75-09-2	10		N	N
DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y
DICHLOROPROPANE, [1,2-]	78-87-5	1		Y	N
DICHLOROPROPENE, [1,3-]	542-75-6	1		Y	N
DICHLORVOS	62-73-7	0.2		Y	N
DIETHANOLAMINE	111-42-2	5		Y	N
DIETHYL SULFATE	64-67-5	1		Y	N
DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P	Y	N
DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V	Y	Y
DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V	Y	Y
DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
DIMETHYL FORMAMIDE	68-12-2	1		Y	N
DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008		Y	N
DIMETHYL PHTHALATE	131-11-3	10		Y	N
DIMETHYL SULFATE	77-78-1	0.1		Y	N
DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1		Y	N
DIMETHYLANILINE, [N-N-]	121-69-7	1		Y	N
DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y
DINITROPHENOL, [2,4-]	51-28-5	1		Y	N
DINITROTOLUENE, [2,4-]	121-14-2	0.02		Y	N
DIOXANE, [1,4-]	123-91-1	6		Y	N
DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	V	Y	Y
DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V	Y	N
EPICHLOROHYDRIN	106-89-8	2		Y	N
ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	N
ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
ETHYL ACRYLATE	140-88-5	1		Y	N
ETHYL BENZENE	100-41-4	10		Y	N
ETHYL CHLORIDE	75-00-3	10		Y	N
ETHYLENE GLYCOL	107-21-1	10		Y	N
ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2				
ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P	Y	N
ETHYLENE IMINE [AZIRIDINE]	151-56-4	0.003		Y	N
ETHYLENE OXIDE	75-21-8	0.1		Y	N
ETHYLENE THIOUREA	96-45-7	0.6		Y	Y
FORMALDEHYDE	50-00-0	2		Y	N
GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N
GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P	Y	N
HEPTACHLOR	76-44-8	0.02		Y	N
HEXACHLOROBENZENE	118-74-1	0.01		Y	N
HEXACHLOROBUTADIENE	87-68-3	0.9		Y	N
HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N
HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N
HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N
HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N

APPENDIX B

Abbreviations and Acronyms

% .....percent
°F .....degrees Fahrenheit
acfm.....actual cubic feet per minute
BACT.....Best Available Control Technology
BMPs.....Best Management Practices
Btu.....British thermal unit
CAM .....Compliance Assurance Monitoring
CAS.....Chemical Abstracts Service
CEMS .....Continuous Emission Monitor System
CFR.....Code of Federal Regulations
CO .....carbon monoxide
CO_2.....carbon dioxide
CO_2e.....carbon dioxide equivalent
COMS.....Continuous Opacity Monitoring System
CSR.....Code of State Regulations
dscf.....dry standard cubic feet
EIQ.....Emission Inventory Questionnaire
EP.....Emission Point
EPA.....Environmental Protection Agency
EU .....Emission Unit
fps.....feet per second
ft.....feet
GACT .....Generally Available Control Technology
GHG.....Greenhouse Gas
gpm .....gallons per minute
gr .....grains
GWP .....Global Warming Potential
HAP.....Hazardous Air Pollutant
HVLP .....High Velocity Low Pressure
hr.....hour
hp .....horsepower
lb.....pound
lbs/hr.....pounds per hour
MACT.....Maximum Achievable Control Technology
$\mu g/m^3$.....micrograms per cubic meter
m/s .....meters per second
Mgal .....1,000 gallons
MW .....megawatt
MHDR.....maximum hourly design rate
MMBtu ....Million British thermal units
MMCF .....million cubic feet
MSDS.....Material Safety Data Sheet
NAAQS ....National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NO_x.....nitrogen oxides
NSPS .....New Source Performance Standards
NSR .....New Source Review
PM.....particulate matter
$PM_{2.5}$.....particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10} .....particulate matter less than 10 microns in aerodynamic diameter
ppm .....parts per million
PSD.....Prevention of Significant Deterioration
PTE .....potential to emit
RACT.....Reasonable Available Control Technology
RAL.....Risk Assessment Level
SCC .....Source Classification Code
scfm .....standard cubic feet per minute
SDS.....Safety Data Sheet
SIC.....Standard Industrial Classification
SIP .....State Implementation Plan
SMAL.....Screening Model Action Levels
SO_x.....sulfur oxides
SO_2.....sulfur dioxide
tph .....tons per hour
tpy.....tons per year
VMT.....vehicle miles traveled
VOC .....Volatile Organic Compound

Emission Unit	Description	Installation's Designation	MHDR (MMBtu/hr input)	Combined MHDR (MMBtu/hr input)	MHDR (MMcf/hr)	Pollutant	CAS	HAP?	Emission Factor (lb / mmcf)	Emission Factor Source (SCC)	Available Pollutant (lb/hr)	Control Device	PTE (lb/hr)
			3.937	3.94	0.004	PM filterable			7.6		0.0293	none	0.0293
						PM10			7.6		0.0293	none	0.0293
						PM2.5			7.6		0.0293	none	0.0293
						SOx			0.6		0.0023	none	0.0023
						NOx			100		0.3860	none	0.3860
						VOC			5.5		0.0212	none	0.0212
						CO			84		0.3242	none	0.3242
						Combined HAPs			1.888		0.0073	none	0.0073
						POM aggregate group			6.98E-04		2.69E-06	none	2.69E-06
					pom	2-Methylnaphthalene	91-57-6	y	2.40E-05		9.264E-08	none	9.26E-08
					pom	3-Methylchloranthrene	56-49-5	y	1.80E-06		6.948E-09	none	6.95E-09
					pom	7,12-Dimethylbenzanthracene	57-97-6	y	1.60E-05		6.176E-08	none	6.18E-08
					pom	Acenaphthene	83-32-9	y	1.80E-06		6.948E-09	none	6.95E-09
					pom	Acenaphthylene	203-96-8	y	1.80E-06		6.948E-09	none	6.95E-09
					pom	Anthracene	120-12-7	y	2.40E-06		9.264E-09	none	9.26E-09
					pom	Benzanthracene	56-55-3	y	1.80E-06		6.948E-09	none	6.95E-09
						Benzene	71-43-2	y	2.10E-03		8.106E-06	none	8.11E-06
					pom	Benzo(a)pyrene	50-32-8	y	1.20E-06		4.632E-09	none	4.63E-09
					pom	Benzo(b)fluoranthene	205-99-2	y	1.80E-06		6.948E-09	none	6.95E-09
					pom	Benzo(g,h,i)perylene	191-24-2	y	1.20E-06		4.632E-09	none	4.63E-09
					pom	Benzo(k)fluoranthene	205-82-3	y	1.80E-06		6.948E-09	none	6.95E-09
						Butane	106-97-8		2.10E+00		8.106E-03	none	8.11E-03
					pom	Chrysene	218-01-9	y	1.80E-06		6.948E-09	none	6.95E-09
					pom	Dibenzo(a,h)anthracene	53-70-3	y	1.20E-06		4.632E-09	none	4.63E-09
						Dichlorobenzene	25321-22-6	y	1.20E-03		4.632E-06	none	4.63E-06
						Ethane	74-84-0		3.10E+00		1.197E-02	none	1.20E-02
					pom	Fluoranthene	206-44-0	y	3.00E-06		1.158E-08	none	1.16E-08
					pom	Fluorene	86-73-7	y	2.80E-06		1.081E-08	none	1.08E-08
						Formaldehyde	50-00-0	y	7.50E-02		2.895E-04	none	2.89E-04
						Hexane	110-54-3	y	1.80E+00		6.948E-03	none	0.0069
					pom	Indeno(1,2,3-cd)pyrene	193-39-5	y	1.80E-06		6.948E-09	none	6.95E-09
					pom	Naphthalene	91-20-3	y	6.10E-04		2.354E-06	none	2.35E-06
						Pentane	109-66-0		2.60E+00		1.004E-02	none	1.00E-02
					pom	Phenanathrene	85-01-8	y	1.70E-05		6.562E-08	none	6.56E-08
						Propane	74-98-6		1.60E+00		6.176E-03	none	6.18E-03
					pom	Pyrene	129-00-0	y	5.00E-06		1.930E-08	none	1.93E-08
						Toluene	108-88-3	y	3.40E-03		1.312E-05	none	1.31E-05
						Arsenic	7440-38-2	y	2.000E-04		7.720E-07	none	7.72E-07
						Barium	7440-39-3		4.40E-03		1.698E-05	none	1.70E-05
						Beryllium	7440-41-7	y	1.20E-05		4.632E-08	none	4.63E-08
						Cadmium	7440-43-9	y	1.10E-03		4.246E-06	none	4.25E-06
						Chromium	7440-47-3	y	1.40E-03		5.404E-06	none	5.40E-06
						Cobalt	7440-48-4	y	8.40E-05		3.242E-07	none	3.24E-07
						Copper	7440-50-8		8.50E-04		3.281E-06	none	3.28E-06
						Manganese	7439-96-5	y	3.80E-04		1.467E-06	none	1.47E-06
						Mercury	7439-97-6	y	2.60E-04		1.004E-06	none	1.00E-06
						Molybdenum	7439-98-7		1.10E-03		4.246E-06	none	4.25E-06
						Nickel	7440-02-0	y	2.10E-03		8.106E-06	none	8.11E-06
						Selenium	7782-49-2	y	2.40E-05		9.264E-08	none	9.26E-08
						Vanadium	7440-62-2		2.30E-03		8.878E-06	none	8.88E-06
						Zinc	7440-66-6		2.90E-02		1.119E-04	none	1.12E-04
						CO2			120,000		463.1765	none	463.176
						Methane			2.3		0.0089	none	0.0089
						N2O			2.2		0.0085	none	0.0085
						GHG (mass)							
						GHG (CO2e)							

1-02-006-02 industrial boiler, natural gas, 10-100MMBtu and 1-02-006-03 < 10MMBtu

Natural Gas HHV (Btu/cf)
1,020

100yr GWP 40 CFR 98 Table A-1, Jan 1 2014

CO2	1
CH4	25
N2O	298

Natural gas HHV of 1,020 Btu/cf cited from AP-42 Section 1.4, July 1998.
Dichlorobenzene group CAS 25321-22-6 conservatively assumed as 100% 1,4-dichlorobenzene CAS 106-46-7.
HAPs updated per "Air Pollution Control Program Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels" Revision 10, 5/3/2012

PTE (tpy)		
0.13		0.010707096
0.13		
0.13		
0.01		
1.69		
0.09	0.007749	
1.42		
0.031918	0.00266	
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.04		
0.00		
0.00		
0.00		
0.05		
0.00		
0.00		
0.00		
0.03043		
3.04E-08		
0.00		
0.04		
0.00		
0.03		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
0.00		
4.90E-04		
2028.71		
0.04		
0.04		
2,028.789		
2,040.77		

EMISSION CALCULATIONS TAB WITH COMMENTS

2017-08-014 Altec Industries, Inc.

Project potential to emit (boom winders, each)

	Application Time (hrs)	Boom Resin used (lbs)	Resin used (lbs/hour)
Large Booms	5	250	50
Small booms	2	50	25

	Density (lb/gal)	Usage Ratio	Usage rate (lbs/hour)	Usage rate (gallons/hour)
Boom Resin	9.68	1	50	5.17
Curing Agent	10.10	0.875	43.75	4.33
Defoamer	7.30	0.023	1.15	0.16

Lindau Chemical HAP emissions

	Curing agent mass %	Resin mass %	Weight loss	Total Pounds Applied[1]	lb/hour[2]	Ton/year
VOC	80%	100%	1.53%	94.90	1.45	6.36
Phthalic Anhydride	5%	0%	0.01%		0.009	0.041

[1]Total Pounds applied is sum of Boom Resin + Curing Agent + Defoamer usage rates

[2]VOC and Pht. Anh emissions are weight loss x total pounds applied

Mass Balance HAP emissions

	Coating	Mass %	Coating usage per hour	lb/hour	Ton/year
Epichlorohydrin	boom resin[1]	0.001%	50	0.0005	0.0022
Benzene	defoamer	0.000854%	1.15	0.00001	0.00004
Cumene	defoamer	2.50%	1.15	0.03	0.13
Toluene	defoamer	0.0854%	1.15	0.001	0.004

[1]The resin contains Epoxy 270; to clarify, Epoxy 270 is not a POM (and therefore not a HAP)

Natural Gas Make-Up Heater

	Natural Gas Fuel Rate	VOC tpy	Toluene tpy	Benzene tpy	HAP tpy
MUA-46	3.937	0.093	0.000057	0.000036	0.032

EMISSION CALCULATIONS TAB WITH COMMENTS

Potential Emissions (FR-1, FR-2, FR-3, FR-4) - Applicant Calculated using Tanks 4.09d

	Capacity (gallons)	Contents	Throughput (gal/year)	Density (lb/gal)	VOC working loss (lb/hr)	VOC breathing loss (lb/hr)	working tpy	breathing tpy	ton/gal
FR-3 (vertical fixed roof)	6,000	resin	226,235	9.68	0.0001	Constant Temperature, Mostly Constant Pressure	0.00044	Constant Temperature, Mostly Constant Pressure	1.94E-09
FR-4 (vertical fixed roof)	6,000	curing agent	189,776	10.10	4.57E-07		0.00000		1.05E-11
FR-1 (vertical fixed roof)	6,000	fiberglass resin	48,594	9.073	0.00137		0.00601		1.24E-07
FR-2 (vertical fixed roof)	6,000	fiberglass resin	48,594	9.073	0.00137		0.00601		1.24E-07

	HAP[1]	VOC mass percent	HAP mass percent	mass percent of HAPs within VOC	lb/hr working	tpy working	lb/hr breathing	tpy breathing	ton/gal
FR-3	Epichlorohydrin		0.001%		1.00E-04	0.000438		0	1.94E-09
FR-4	Phthalic Anhydride	80%	5.00%	n/a	4.57E-07	0.000002		0	1.05E-11
FR-1	Styrene	45.91%	44.295%	n/a	1.32E-03	0.0058		0	1.19E-07
FR-2	Styrene	45.91%	44.295%	n/a	1.32E-03	0.0058		0	1.19E-07

[1]While Phthalic Anhydride and Styrene emissions were calculated from Tanks 4.09d, Epichlorhydrin was calculated as mass percent x VOC tank emissions

Projected Actual PB-46 coating usage - 40 tpy VOC and 10/25 HAP limits instead

Mixed Paint/Primer	density (lb/gal)	VOC	Solids	ethylbenzene	HDI	xylene	toluene	butyl acetate
Altec White Paint	10.86	20.14%	68.90%	0.00%	**0.10%**	0.00%	0.00%	0.00%
Jet Black Paint	8.46	27.14%	59.46%	0.00%	**0.13%**	0.00%	0.00%	0.00%
LV260 Primer	13.00	20.97%	65.84%	**0.94%**	0.00%	**1.27%**	0.00%	0.00%
Lesonal Primer	11.41	23.52%	54.35%	**0.98%**	0.00%	**1.45%**	**0.37%**	0.00%
NAV1A87N - LV650 RTS	10.22	34.22%	65.79%	**0.31%**	**0.056%**	**1.69%**	**0.28%**	**9.32%**

		VOC (lb/gal)	Solids (lb/gal)	Ethylbenzene (lb/gal)	HDI (lb/gal)	xylene (lb/gal)	toluene (lb/gal)	tyl acetate (lb/gaL)	
Altec White Paint		2.187	7.483	0.000	**0.0109**	0.000	0.000	0.000	
Jet Black Paint		2.296	5.030	0.000	**0.0110**	0.000	0.000	0.000	
LV260 Primer		2.726	8.559	**0.123**	0.000	**0.165**	0.000	0.000	<----Potential to emit (lb/gal)
Lesonal Primer		2.683	6.200	**0.112**	0.000	**0.165**	**0.042**	0.000	
NAV1A87N - LV650 RTS		3.497	6.724	**0.032**	**0.006**	**0.173**	**0.029**	**0.953**	

		VOC (lb/gal)	Solids (lb/gal)	Ethylbenzene (lb/gal)	HDI (lb/gal)	xylene (lb/gal)	toluene (lb/gal)	tyl acetate (lb/gaL)	
Altec White Paint		2.41	8.231	0.000	**0.012**	0.000	0.000	0.000	
Jet Black Paint		2.53	5.533	0.000	**0.012**	0.000	0.000	0.000	
LV260 Primer		3.00	9.415	**0.135**	0.000	**0.181**	0.000	0.000	<----Potential With 10% Safety factor
Lesonal Primer		2.95	6.820	**0.123**	0.000	**0.182**	**0.046**	0.000	

Table 1	VOC (lb/gal)	Solids (lb/gal)	Ethylbenzene (lb/gal)	HDI (lb/gal)	xylene (lb/gal)	toluene (lb/gal)	tyl acetate (lb/ga	
Paint/primer limits	3.0	10	0.135	0.012	0.181	0.046	n/a	<-----Proposed Limits

emissions (worst case)
(doesn't include navy paint)

EMISSION CALCULATIONS TAB WITH COMMENTS

Special Condition would Read:
"Altec shall not exceed the lb/gal compositions listed in Table 1 for all primary paints, secondary paints, primary paint primers, and secondary paint primers. If an alternative paint or primer contains HAPs not listed in Table 1, Altec shall seek Missouri Department of Natural resrouces for approval before usage of the new coating"

Coating usage	2.2	gal/hr
Max coating hours	1095	hr/yr
HDI emission factor	0.076	lb/lb
PM filter efficiency	100%	
PM10 filter efficiency	99.9%	
PM2.5 filter efficiency	47.3%	
PM particle size	100%	
PM10 particle size	40.7%	
PM2.5 particle size	9.92%	
NAV1A87N yearlyusage	55	gallons

(takes 8 hours to coat)

Based upon Table 2 in study titled, "Size Distribution of Chromate Paint Aerosol Generated in a Bench-Scale Spray booth".

Coating Emissions (lb/hour)	VOC (lb/hour)	Solids (lb/hour)	Ethylbenzene (lb/hour)	HDI (lb/hour)	xylene (lb/hour)	oluene (lb/hour	tyl acetate (lb/hour)
Altec White	6.60	22.00	0.0	0.002	0.0	0.0	n/a
Jet Black Paint	6.60	22.00	0.0	0.002	0.0	0.0	n/a
LV260 Primer	6.60	22.00	0.30	0.0	0.40	0.0	n/a
Lesonal Primer	6.60	22.00	0.30	0.0	0.40	0.10	n/a
NAV1A87N - LV650 RTS	--	--	--	--	--	--	--

Coating Emissions (tpy)	VOC tpy	Solids tpy	Ethylbenzene tpy	HDI tpy	xylene tpy	toluene tpy	butyl acetate tpy
Altec White	3.61	12.05	0.00	**0.001**	0.00	0.00	n/a
Jet Black Paint	3.61	12.05	0.00	**0.001**	0.00	0.00	n/a
LV260 Primer	3.61	12.05	0.16	0.00	0.22	0.00	n/a
Lesonal Primer	3.61	12.05	0.16	0.00	0.22	0.06	n/a
Total (uncontrolled)	7.2	24.1	0.16	0.00	0.22	0.06	
NAV1A87N - LV650 RTS	0.096	0.185	8.71E-04	**1.57E-04**	4.75E-03	7.87E-04	n/a
Total (controlled) + NAV	VOC: 7.32	PM 1.27		PM_{10} 1.28		$PM_{2.5}$ 1.27	

Note: HDI for sample coatings adds to greater than the SMAL

Total emissions from sample materials

Total VOC	20.05	tpy
Total Ethylbenzene	0.16	tpy
Total Toluene	0.06	tpy
Total Benzene	1.22E-04	tpy
Total Cumene	0.25	tpy
Total xylene	0.22	tpy
Total HDI	9.61E-05	tpy
Total Epichlorohydrin	4.38E-03	tpy
Total Phthalic Anhydride	8.21E-02	tpy
Total Styrene	1.16E-02	tpy
Total PM	1.27	tpy
Total PM_{10}	1.28	tpy
Total $PM_{2.5}$	1.27	tpy

> SMAL -- > Requires limit

Possible Limits for pollutants for alternative coats

VOC permit limit	27.0796	tpy	40 - sum of storage tanks - 2* boom winding - MUA - military coatings
Ethylbenzene limit	9.9991	tpy	10 - military coatings
Toluene limit	9.991	tpy	10 - 2* boom winding - MUA - military coatings
Benzene limit	1.99988	tpy	2 - 2* boom winding - MUA
Cumene limit	9.748	tpy	10 - 2* boom winding
xylene limit	9.995	tpy	
HDI limit	0.02	tpy	
Epichlorohydrin limit	1.99562	tpy	10 - 2* boom winding
Phthalic Anhydride limit	4.836	tpy	5 - 2* boom winding
Styrene limit	0.98841	tpy	
PM limit	25	tpy	Should PM from military coatings be subtracted?
PM10 limit	15	tpy	Should PM10 from military coatings be subtracted?
PM2.5 limit	10	tpy	Should PM2.5 from military coatings be subtracted?

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Eric R. Greitens, Governor
Carol S. Comer, Director

MAY 2 9 2018

Mr. Bruce Stainbrook
Corporate Environmental Manager
Altec Industries, Inc.
2106 South Riverside Road
St. Joseph, MO 64507

RE: New Source Review Permit - Project Number: 2017-09-044

Dear Mr. Stainbrook:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: http://dnr.mo.gov/regions/. The online CAV request can be found at http://dnr.mo.gov/cav/compliance.htm.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Hans Robinson at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale for

Susan Heckenkamp
New Source Review Unit Chief

SH:hrj

Enclosures

c: Kansas City Regional Office
PAMS File: 2017-09-044

Permit Number: 052018-009