DAVIS-MONTHAN AFB
SIC CODE, MAJOR GROUP – '42' SPECIAL WAREHOUSING AND STORAGE

AIR QUALITY OPERATING PERMIT 3000

TECHNICAL SUPPORT DOCUMENT (TSD)

I. GENERAL COMMENTS:

A. Company Information

1. Source Name: Davis-Monthan AFB, SIC Code, Major Group – '42' – Special Warehousing and Storage
2. Source Address: 3775 S. 5th Street, Tucson, AZ 85707

B. Background

Davis-Monthan AFB (DMAFB) currently operates under 7 older Class II/III air quality permits. It is considered a synthetic minor source of NOx, CO, SOx, VOC, and HAPs and a true minor for all other pollutants. The activities and operations covered by this permit fall under the following industrial classification:

- SIC Code, Major Group – '42' Special Warehousing and Storage
- North American Industry Classification System (NAICS): 493110

This TSD was updated for the renewal of the previous 5 year permit. The existing permit was issued on June 1, 2004 and expired May 31, 2009. DMAFB continues to operate under the expired permit pursuant to Pima Count Code (PCC) 17.12.165.J and submitted timely renewal applications on November 25, 2008, which were updated on October 16, 2015.

With this renewal, PDEQ plans to terminate permit #1701 and incorporate the voluntary synthetic minor HAPs limitations into the following permits. The allowable HAPs emissions apply base-wide to sources under the common control of DMAFB and have been divided among the permits with corresponding concomitant monitoring and reporting in each permit as summarized in the following table.

Allowable HAPs & Voluntary Limits, Tons Per Year	Stationary Source Air Permits
3.5	Permit #3000: DMAFB, Major Group – 42 – Special Warehousing and Storage
13.0	Permit #3001: DMAFB, Major Group – 45 – Transportation by Air
1.5	Permit #3002: DMAFB, Major Group – 49 – Electric, Gas, and Sanitary Services
1.5	Permit #3004: DMAFB, Major Group – 65 – Real Estate
1.5	Permit #3005: DMAFB, Major Group – 80 – Health Services
1.5	Permit #3006: DMAFB, Major Group – 97 – National Security
22.5 TPY Total [1]	Permit #'s 3000, 3001, 3002, 3004, 3005, 3006 [1]

[1] The HAPs emissions are limited fence-line to fence-line, in accordance with section 112 of the Act within the contiguous or adjacent areas under the common control of the DMAFB. In general, PDEQ considers individual military services including the National Guard, and the Department of Defense agencies not to be under common control, when taken collectively. National Guard units as well as Department of Defense agencies and their operations at DMAFB may be considered to be under separate control, but are viewed as being under common control within each division. PDEQ also considers leased activities "or tenants" at DMAFB under separate control and therefore not regulated as part of DMAFB operations, whereas contract-for-service activities or contractor-operated activities are. Leased activities may be considered by PDEQ to be under common control when they also have a contract-for-service relationship to provide more than 50% of the goods or services to the military installation and should be evaluated on a case-by-case basis. (See Footnote on Page 2, Ref. EPA Guidance Document).

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Permitting History

The Pima County Department of Environmental Quality (PDEQ) received a Title V permit application from DMAFB on May 9, 1995. Later, in April 1996 DMAFB submitted a significant revision to establish voluntary and federally enforceable emission limits on hazardous air pollutants (HAPs) to remain below major source levels under Section 112 of the Act and within the meaning in PCC 17.04.340.A.128.b. This was done in part to avoid federally applicable requirements in 40 CFR Part 63, Subpart GG – National Emission Standards for Aerospace Manufacturing and Rework Facilities. As a result, PDEQ issued Permit # 1701 to DMAFB in August of 1998 limiting the HAP emission to below major source levels and establishing DMAFB as a synthetic minor source of HAP.

Davis-Monthan AFB continued to operate under Permit #1701until the permit was renewed in 2003. At that time DMAFB submitted applications and a strategy to divide the operations and activities into functionally distinct industrial SIC Code Groupings, on the basis of the definition of a major stationary source under 40 CFR §70.2 and EPA Guidance.[2] PDEQ subsequently issued 7 separate synthetic minor stationary source permits for criteria air pollutants in June 2004 (Permit #'s 3000 – 3006), while maintaining the existing synthetic minor HAPs permit (Permit # 1701). Permit # 3003 was later terminated on December 2005 as a result of the removal of a lone diesel generator covered under the permit.

On May 28, 2009, DMAFB submitted a Title V application for the renewal and combination of the Criteria and HAPs permits into one permit. DMAFB later withdrew the Title V application on April 2, 2015 and reapplied on October 16, 2015 for synthetic minor permits under the functionally distinct industrial SIC Code Groupings.

C. Attainment Classification

The DMAFB is located in an area that is in attainment for all pollutants.

II. SOURCE DESCRIPTION

A. Process Description

Davis-Monthan Air Force Base (DMAFB) is a key Air Combat Command (ACC) installation of the United States Air Force (USAF). The base is located approximately five miles south-southeast of downtown Tucson, Arizona. The 355th Fighter Wing (355 FW) is the host unit, providing medical, logistical, mission, and operational support to all assigned units. As the location of the USAF Materiel Command's 309th Aerospace Maintenance and Regeneration Group (AMARG), Davis-Monthan AFB is the aircraft boneyard for excess military and government aircraft. Davis-Monthan AFB is a large multi-faceted installation which is comparable in size and function to a small city. Specifically, the base has operations including, but not limited to: retail markets, hospital and dental clinics, public works, warehouse facilities, utilities, recreational facilities, an airfield, maintenance operations, and auto/wood hobby shops.

The activities and operations covered by this permit are those stationary sources at Davis-Monthan AFB located at the 309th Aerospace Maintenance and Regeneration Group (309th AMRG) "facility" and its supporting units [309th Support Squadron (309th SPTS), the 576th Aerospace Maintenance and Regeneration Squadron (576th AMRS), the 577th Commodities Reclamation Squadron (577th CMRS) and the 578th Storage and Disposal Squadron (578th SDS)])] which fall under the industrial classification SIC Code: Major Group 42 - Special Warehousing and Storage (NAICS 493190).

The permitted activities and operations at the facility includes: aircraft engine testing, abrasive blasting operations, surface coating operations, solvent degreasing/cleaning operations, stationary rotating machinery, fuel storage and dispensing facilities, and emissions from existing and new nonpoint sources (fugitive dust).

[2] Reference: EPA Guidance Document: Major Source Determinations for Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act", dated August 2, 1996.

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B. Operating Capacity and Schedule

The operating schedule at the facility is not limited and the facility and equipment is permitted for operation 7/days/week, 24 hours a day, 365 days a year

C. Air Pollution Control Equipment

The fuel loading and dispensing facilities employ stage I controls where applicable in compliance with Federal, State and Local requirements. Post combustion controls are not required on the aircraft engines or microturbines, and are employed if needed or required to comply with federal requirements for internal combustion engines.

III. REGULATORY HISTORY

DMAFB is currently in compliance with all Pima County Code requirements.

IV. EMISSIONS ESTIMATES

DMAFB conducts activities and operations that have a potential to emit Hazardous Air Pollutants in excess of major source thresholds without voluntarily accepted emission limitations and operating restrictions in this and other permits to limit HAPs emissions to less than major source levels (< 22.5 tons/year).

Emission estimates from gas turbine engine testing at DMAFB were derived using emission factors for the specific engine types developed and presented by the US Air Force in their guidance document "Air Emissions Guide for Air Force Stationary Sources at US Air Force Installations", dated October 2014 and information on the average amount of time engines are tested at each power level in accordance with procedures. An additional 50% allowance over the estimated amount of fuel combusted has been permitted to account for variations from the estimated amounts that may be combusted in these operations.

Emissions from enclosed surface coating operations are VOC limited rather than HAP limited. While the source has demonstrated that the current usage levels projected to 8760 hour/year are currently below the major source threshold for VOC, these operations are not inherently limited. The estimates include allowances for surface coating operations and associated throughput limits or monitoring of emissions. Permitted coating and solvent limits were estimated using a conservative worst case amount of VOC emitted per gallon of coating and solvent used.

In the previous permitting methodology, PDEQ used an overly conservative Gasoline Vapor HAPs/VOC ratio of 25% to estimate HAPs emissions from gasoline storage, loading and dispensing operations and did not provide a HAP limit with a general 10% allowance below the major source threshold. As presented in the NESHAP Gasoline Distribution Industry (Stage I) Document, PDEQ used a ratio higher than the maximum ratio of the samples tested that contained MTBE, which was approximately 4 times the average of 4.8% presented in Table C-4 of that document. Over time, the gasoline marketing industry has evolved away from use of MTBE, and modern fuel formulations have effectively reduced this ratio, now commonly estimated at 5.25% as presented in Volume III: Chapter 11 Gasoline Marketing (Stage 1 and II) Emission Inventory Improvement Program (EIIP). In this permit, PDEQ has included a general 10% allowance below the major source threshold. The HAPs/VOC ratio was calculated using the liquid composition data taken from EPA tanks 4.09d modeling software and the methods presented in section 7.1.4 of AP-42. The difference in the estimated emissions between the previous (25%) and current permitted (3.3%) base-wide fuel vapor HAPs/VOC ratios is approximately 1.6 tons, which remains below the 2.5 ton allowance (22.5 tpy HAPs) provided in the current permitting limits. For this reason PDEQ has accepted the lower HAPs/VOC ratio of 3.3% proposed by DMAFB in the approved PTE document.

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Emission estimates for external combustion (natural gas heaters), internal combustion (rotary and reciprocating engines), solvent cleaning units, and fuel loading, storage, and dispensing were derived using standard emission factors and methods from AP-42 Compilation of Air Pollution Emission Factors – Volume 1: Stationary and Area Sources. In accordance with the federal guidelines, the facility-wide PTE has been calculated using 500 hours for each emergency engine and 8760 hours for non-emergency engine and/or microturbines.

Emissions estimates for miscellaneous chemical/materials issues were derived from current usage levels recorded in the materials inventory system used to track the mass of combined and individual HAP emitted from usage of HAP containing materials at the facility.

The following table outlines DMAFB's potential to emit pollutants

Controlled [1] **Facility-Wide Potential Emissions of Pollutants (tons/yr)**										
Conventional or Criteria Air Pollutant								**NSPS**	**HAPs**	
$PM_{2.5}$	**PM_{10}**	**PM**	**NOx**	**VOC**	**CO**	**SO_2**	**Lead** [2]	**N/A**	**Total**	**Single**
1.75	2.36	2.36	23.04	77.87	37.05	2.24	Negligible	N/A	< 3.5	< .05

[1] Boilers operating 8760 hrs/yr, Emergency engines operating 500 hours, and with voluntary throughput limits for applicable permitted activities and operations. Includes a 65 ton/year VOC emission cap for enclosed surface coating operations.

V. APPLICABLE REQUIREMENTS

40 CFR, Part 60 Standards of Performance for New Stationary Sources

Subpart A General Provisions
Appendix A Test Methods

40 CFR, Part 63 National E missions Standards for Hazardous Air Pollutants for Source Categories

Subpart A General Provisions
Subpart CCCCCC NESHAP for Gasoline Dispensing Facilities

Pima County Code Title 17, Chapter 17.12 – Permits and Permit Revisions

Article I – General Provisions

17.12.010 Statutory Authority
17.12.020 Planning, Constructing, or Operating Without a Permit
17.12.040 Reporting requirements
17.12.045 Test methods and procedures
17.12.050 Performance tests
17.12.080 Permit Display or Posting

Article II – Individual Source Permits

17.12.165 Permit application processing procedures for Class II and Class III permits
17.12.185 Permit contents for Class II and Class III permits
17.12.190 Permits containing synthetic emission limitations and standards
17.12.235 Facility Changes that require a permit revision
17.12.240 Procedures for certain changes that do not require a permit revision Class II or Class III

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17.12.255 Minor Permit Revision

17.12.260 Significant Permit Revision
17.12.270 Permit Reopenings – Revocation and reissuance – Termination
17.12.350 Material permit condition

Article VI – Individual Source Permits

17.12.520 Fees related to Class II and Class III permits

Pima County Code Title 17, Chapter 17.16 – Emission Limiting Standards

Article I – General Provisions

17.16.010 Local rules and standards; Applicability of more than one standard
17.16.020 Noncompliance with applicable standards
17.16.030 Odor limiting standards

Article II – Visible Emission Standards

17.16.040 Standards and applicability (includes NESHAP)
17.16.050 Visibility limiting standard

Article III – Emissions from Existing and New Nonpoint Sources

17.16.055 General
17.16.060 Fugitive Dust producing activities
17.16.070 Fugitive dust emissions standards for motor vehicle operation
17.16.080 Vacant lots and open spaces
17.16.090 Roads and Streets
17.16.100 Particulate materials
17.16.110 Storage Piles

Article IV – New and Existing Stationary Source Performance Standards
17.16.130 Applicability
17.16.165 Standards of performance for fossil-fuel fired industrial commercial equipment
17.16.230 Standards of performance for storage vessels of petroleum liquids
17.16.340 Standards of performance for stationary rotating machinery
17.16.400 Organic solvents and other organic materials
17.16.430 Standards of performance for unclassified sources

Article V – Emissions from New and Existing Portable Sources

17.16.470 Roadway and site cleaning machinery

Pima County Code Title 17, Chapter 17.20 – Emissions Source Testing and Monitoring

17.20.010 Source sampling, monitoring and testing
17.20.040 Concealment of emissions

Pima County Code Title 17, Chapter 17.24 – Emission Source Recordkeeping and Reporting

17.24.020 Recordkeeping for compliance determination

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17.24.050 Reporting as permit requirement

VI. REQUIREMENTS SPECIFICALLY IDENTIFIED AS NON-APPLICABLE

A. 40 CFR Part 63 NESHAP Subpart JJJJJJ has been identified as non-applicable since the boilers will be operated as gas-fired boilers. Should the boilers switch to fuel oil use and become subject to Subpart JJJJJJ in the oil firing subcategory as defined in 40 CFR 63.11237 a significant permit revision will be required and compliance with Subpart JJJJJJ will be required within 180 days of the effective date of the fuel switch.

B. In accordance with 40 CFR 63.6585(f)(3), NESHAP Subpart ZZZZ does not apply to institutional or commercial generators that are not contractually obligated for more than 15 hours a year for emergency demand response and operation where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage, and are not operated for non-emergency purposes to supply power as part of a financial arrangement with another entity.

VII. PERMIT CHANGES and APPLICABILITY DETERMINATIONS

A. Permit and Permit Summary:

The Specific Conditions have been organized into permit sections specific to the equipment and emission source categories at the facility. Some conditions in the previous permit may no longer apply or not be included. Conditions in the previous permit relating to Woodworking operations have been determined to be insignificant and included in the insignificant activities list. PDEQ has also determined that the standards in PCC 17.16.400.C.5 for facilities engaged in the surface coating of miscellaneous metal parts does not apply to the operations at this facility and removed the conditions relating to this standard. Conditions for monitoring the emissions of HAPs from miscellaneous chemical/materials previously contained in Air Permit # 1701 were incorporated and added to the permit in conditions 21 and 37 of the permit. Standards and Conditions relating to portable sources have been added to Section 2 of the permit. A basic fugitive dust control plan and provisions has been added to Section 7 of the Permit.

B. General Applicability (Section 1):

This Section of the permit incorporates provisions relating the statutory authority, permit classification, and provides a summary of the permitted facility sources and the organization of the permit sections.

C. Facility-Wide Operations (Section 2):

This Section incorporates facility wide provisions applicable to all sources at the facility and is used to streamline provisions applicable to the specific sources and operations in other Sections of the permit. The facility-wide provisions include the following: voluntary emission limitations, general control standards, materials handling standards, odor limiting standard, opacity limit, visibility limiting standard, authorization to conduct fugitive dust producing activities, portable sources, and asbestos requirements for demolition and renovation activities. This Section also includes the facility-wide provisions for monitoring, recordkeeping, reporting requirements, facility changes, and testing requirements.

D. Special Warehousing Operations (Section 3):

This Section contains voluntary emission limits conditions for aircraft engine testing, abrasive blasting operations, solvent degreasing/cleaning operations, and miscellaneous chemical materials/issues.

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E. Fossil Fuel Fired Industrial and Commercial Equipment (Boilers and Heaters) (Section 4):

This Section incorporates applicable PCC requirements and voluntary emission limits for boilers, heaters, and fuel fired equipment to avoid certain requirements in PCC 17.16.165, 40 CFR Part 60, NSPS Subpart Dc and 40 CFR Part 63, NESHAP Subpart JJJJJJ for certain classes of boilers. The specific applicability provisions for the boilers and heaters are included in Section 8 and indicated in the equipment list in Attachment 2. The listed boilers and heaters in the equipment list are limited to firing natural gas. The specific definition for natural gas in this Section is taken from the NESHAP standard and is a broad definition that also includes LPG or Propane for use in temporary boilers or as an alternate fuel if required.

F. Stationary Rotating Machinery (Section 5):

This Section incorporates specific conditions for stationary rotating machinery. The permitted stationary rotating machinery or internal combustion engines are not subject to NSPS or NESHAP requirements. SIC Code – Major Group 42 falls within the industrial classification that is exempt from NESHAP area source rules provided they qualify for exemption in accordance with 40 CFR 63.6585(f)(3).

G. Fuel Storage, Loading, and Dispensing Facilities (Section 6):

This Section incorporates voluntary emission limits for storage tanks, fuel loading, and dispensing facilities including specific state and federal requirements for gasoline dispensing facilities.

H. Emissions from Existing and New Nonpoint Sources (Section 7):

Section 7 of this permit contains standards including reasonable precautions that apply to sources of fugitive dust or particulate matter which due to a lack of an identifiable emission point or plume are classified as nonpoint sources. These sources include but are not limited to equipment and activities employed during land clearing leveling, grading or trenching; motor vehicle operation on vacant lots and open areas; roads and streets; particulate material handling operations; and dust producing material storage piles.

I. Specific Applicability Provisions (Section 8):

This Section of the permit includes specific conditions on the applicability of permitted facility sources to the source categories, affected facilities, equipment, emission sources, installations, activities and operations at the facility and applicable operating limitations and requirements.

VII. Periodic Monitoring

This is a Class II permit and as such does not include the mandatory submittal of a semiannual summary report of required monitoring or an annual compliance certification to the Control Officer. The permit requires the facility to maintain the required periodic monitoring records and/or reports on site.

IX. Control Technology Determination

No control technologies needed to be determined; the source is not subject to RACT, BACT or LAER.

X. Exclusion of PCC Particulate Matter Discharge Rate Standards

The applicable PCC rules for the maximum particulate discharge rates are not normally included for Class II area source permits as explained below.

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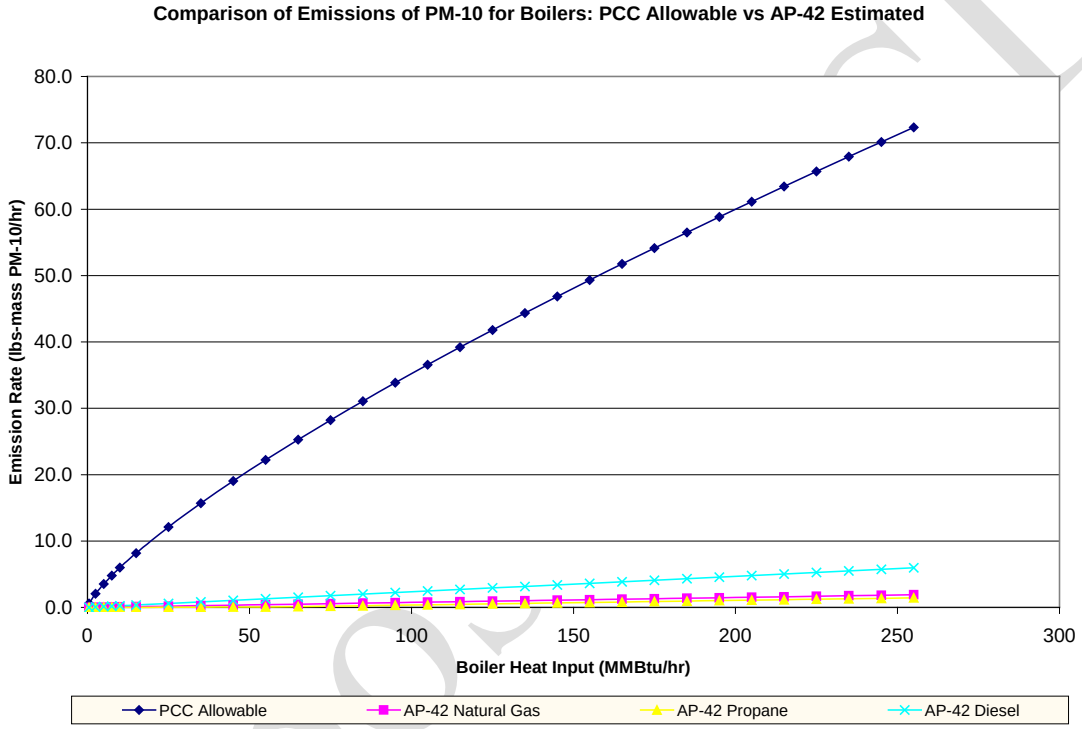
- For particulate matter sources, the calculated maximum particulate matter discharge rate, as provided in Title 17, yields maximum rates that far exceed the emissions expected from most typical area sources. For example a 200 ton/hour process source, which is typical for an average construction aggregate, screening operation, would be limited to a maximum particulate matter discharge rate of 40.4 lbs/hour or 177 tons/year. This limit far exceeds estimated emissions from typical sources using EPA AP-42 emission factors and the source is far more likely to exceed opacity and visibility limiting standards well before reaching this limit.

- With regard to fuel burning equipment, PCC 17.16.165.C limits the emissions of particulate matter from commercial and industrial fossil-fuel fired equipment (including but not limited to boilers). This limit is not normally included in permits because allowable emissions are consistently over an entire order of magnitude higher than EPA AP-42 estimated potential emissions. The chart below, illustrates the point.



Comparative Chart of Allowable Particulate Emissions Under Pima County Code, Title 17, and Estimated Potential Emissions based on EPA AP-42 Estimates for External Combustion Sources. Allowable emissions are consistently over ten times estimated potential emissions. Therefore, it is not necessary to include the standard in the permit explicitly, but by reference in Attachment 1.

XI. Exclusion of PCC Sulfur Dioxide Emission Standards

Compliance with the fuel sulfur limitation requirements in the permit shall ensure compliance with the Sulfur Dioxide Standards of PCC 17.16.165.E and 17.16.340.F; which limit the emission of SO_2 to 1.0 pound per million BTU of heat input when burning low sulfur fuel. The definition of low sulfur fuel (PCC 17.04.340.A. "Low Sulfur Fuel") is fuel oil containing less than 0.9 percent sulfur by weight. "High Sulfur Fuel" is defined as fuel oil containing 0.9% wt. or more Sulfur. In accordance with EPA AP-42 Appendix A, page A-5, the heating value of diesel fuel is estimated at 137,000 BTU per gallon. Thus, 1 million BTU of heat input is equivalent to 7.3 gallons of diesel. At 7.05 lbs per gallon, 51.47 lbs of diesel will produce 1 million BTU. At 0.9% 51.47 lbs of diesel contains 0.46 lbs of sulfur. Combined with Oxygen to form SO2, and assuming 100% of the sulfur in the fuel forms SO2, this would yield 0.92 lb SO2 per 1MMBtu. Thus, low sulfur fuel oil will produce 0.92 lbs of SO2 per million BTU of heat input. This is roughly 8% less than the prescribed 1.0 pound SO2 per million BTU limit.

Proposed

An excess emissions report is required to be submitted to the control officer should the fuel oils fired in fuel burning equipment, to include non NSPS / non NESHAP rotating machinery, contain 0.9% wt. Sulfur or greater since the permit explicitly prohibits the use of high sulfur oil by the Permittee.

Jet fuel, natural gas, gasoline, and No. 1 and 2 distillate fuel oils and diesel delivered to Pima County consistently show sulfur levels below this limit as shown in fuel supplier certifications which verify the sulfur content of the fuel fired. The equipment specific sulfur content limitations in the permit and the prohibition to use high sulfur oil allow for the omission of PCC 17.16.165.E and PCC 17.16.340.F These rules are incorporated by reference in Attachment 1 of the permit.

XI. Exclusion of PCC Per Gallon VOC limits in PCC 17.16.400.C.5

PDEQ has determined that condition II.F.5 in the previous permit (PCC 17.400.C.5 does not apply to the Permittee because the facility does not meet the definition of a facility engaged in the industrial coating of miscellaneous metal parts and products under SIC Code Major Groups 33 through 39.

Proposed TSD