

DAVIS-MONTHAN AFB
SIC CODE, MAJOR GROUP – ‘65’ REAL ESTATE

AIR QUALITY OPERATING PERMIT 3004

TECHNICAL SUPPORT DOCUMENT (TSD)

I. GENERAL COMMENTS:

A. Company Information

1. Source Name: Davis-Monthan AFB, SIC Code, Major Group – ‘65’ – Real Estate
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 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 – ‘65’ Real Estate
- North American Industry Classification System (NAICS): 531120

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 a 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 Total¹	Permit #'s 3000, 3001, 3002, 3004, 3005, 3006¹

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).

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 #1701 until 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 base-wide facilities providing service to base personnel including the base gym, grounds maintenance operations, personnel hobby shops, boilers and hot water heaters, and a solid waste landfill which was historically used for base demolition and construction waste and those stationary sources comprising operations at Davis-Monthan AFB which fall under the industrial classification SIC Code: Major Group 65 – Real Estate (NAICS 531120).

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.

B. Operating Capacity and Schedule

The operating schedule at the facility is not limited and the equipment is permitted for operation 7/days/week, 24 hours a day, 365 days a year subject to the fuel and hour limitations in the equipment list.

C. Air Pollution Control Equipment

A granular activated carbon air pollution control device (APC) is required to be operated and maintained on a closed landfill vent to reduce and control the amount of VOC and HAPs discharged to the ambient air.

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 for external combustion (boilers & heaters), and gasoline fuel storage and dispensing facilities were derived using standard emission factors and methods from AP-42 Compilation of Air Pollution Emission Factors – Volume 1: Stationary and Area Sources and/or factors in the Air Emissions Guide for Air Force Stationary Sources, October 2014. Estimates for the landfill vent and APC, surface coating operations, and miscellaneous chemical/materials issues were derived using mass balance methods and historical use data. The PTE has been calculated using the permitted voluntary fuel throughput limitations and emission estimates provided in the application along with synthetic HAP emission limitations.

The permit also requires Permittee to maintain additional records for miscellaneous chemical/materials issues for sources covered by this permit (SIC major group ‘65’) and to maintain a materials inventory system to track the mass of combined and individual HAP emitted from materials issues using mass balance methods.

The following table outlines DMAFB’s potential to emit pollutants.

<i>Controlled¹ Facility-Wide Potential Emissions of Pollutants (tons/yr)</i>										
Conventional or Criteria Air Pollutant								NSPS	HAPs	
PM _{2.5}	PM ₁₀	PM	NO _x	VOC	CO	SO ₂	Lead ²	N/A	Total	Single Formaldehyde
2.25	2.25	2.25	29.62	12.85	24.88	0.18	Negligible	N/A	< 1.5	< 0.533

¹ PTE is calculated on the operation of the external combustion equipment for 8760 hour/year, voluntary limitation on the gasoline throughput through the dispensing facilities of 20, 000 gallons, and PTE estimates for the landfill vent, surface coating and solvent degreasing operations, and miscellaneous chemical/materials use (HAP). The PTE includes an allowance for up to 10 tons of VOC from enclosed surface coating operations without revision.

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 Emissions Standards for Hazardous Air Pollutants for Source Categories

Subpart A General Provisions
Subpart CCCCC 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 Permit 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
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 IV – New and Existing Stationary Source Performance Standards

- 17.16.130 Applicability
- 17.16.230 Standards of performance for storage vessels of petroleum liquids
- 17.16.165 Standards of performance for fossil-fuel fired industrial and commercial equipment
- 17.16.400 Organic solvents and other organic materials
- 17.16.430 Standards of performance for unclassified sources

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
- 17.24.050 Reporting as permit requirement

VI. REQUIREMENTS SPECIFICALLY IDENTIFIED AS NON-APPLICABLE

The solid waste landfill ceased operations in 1976, and was never subject to the requirement for a control system under 40 CFR Part 60, Subpart Cc. The landfill was capped in 1999-2001 with a low-permeability soil cover and has not accepted waste at any time since November 8, 1987, and additional design capacity is not available for future waste disposal and therefore not subject to the requirements 40 CFR 60, Subparts Cc, Cf, WWW, XXX, or 40 CFR Part 63, Subpart AAAA.

In accordance with PCC 17.04.340.A.(114) PDEQ has determined that the emissions from the diesel dispensing and storage operations as well as the woodworking shop particulate cyclone control which falls under SIC Code Major Group 65 are insignificant activities and not otherwise subject to any applicable requirements.

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 to voluntarily limit the emissions of HAPs from sources covered by this permit previously contained in Air Permit #1701 have been incorporated into the permit. The permit limits the fuel for external combustion sources to natural gas. Additional monitoring for gasoline throughput and dispensing for maintenance and the golf course activities, operation of APC on a closed landfill vent, surface coating and solvent use operations, miscellaneous chemicals/materials usage and portable sources that may become stationary sources have also been included in 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. Permit-Wide Operations (Section 2):

This Section incorporates permit-wide provisions applicable to all sources covered under this permit and is used to streamline provisions applicable to the specific sources 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, disposition of portable sources, miscellaneous chemical/materials use, 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. Fossil Fuel Fired Industrial and Commercial Equipment (Boilers and Heaters) (Section 3):

This Section incorporates applicable PCC requirements for boilers, heaters, and fuel fired equipment and, if applicable, to avoid certain requirements in PCC 17.16.165, 40 CFR Part 60, NSPS Subpart Dc and 40 CFR Part 63, NESHAP Subpart JJJJJ for certain classes of boilers. The specific applicability provisions for the boilers and heaters are included in Section 6 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 for use in temporary boilers or as an alternate fuel if required.

E. Fuel Storage and Dispensing Facilities (Section 4):

This Section incorporates voluntary throughput limits on the amount of gasoline stored, loaded, and dispensed from gasoline storage and dispensing facilities covered by the permit and includes specific local, and federal requirements for gasoline dispensing facilities.

F. Landfill Vent & APC (Section 5):

This Section incorporates operating limitations for the landfill vent APC to operate and maintain a GAC control device to reduce the discharge of HAPS to the ambient air from the vent.

G. Surface Coating and Solvent Degreasing/Cleaning Operations

This Section incorporates emission standards and monitoring requirements for surface coating and solvent use in surface coating and solvent degreasing/cleaning operations.

H. Specific Applicability Provisions (Section 6):

This Section of the permit includes specific conditions on the applicability of the permitted facility sources to local and federally applicable rules and relates the specific applicability of equipment and operations to source categories in each Section of the permit.

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

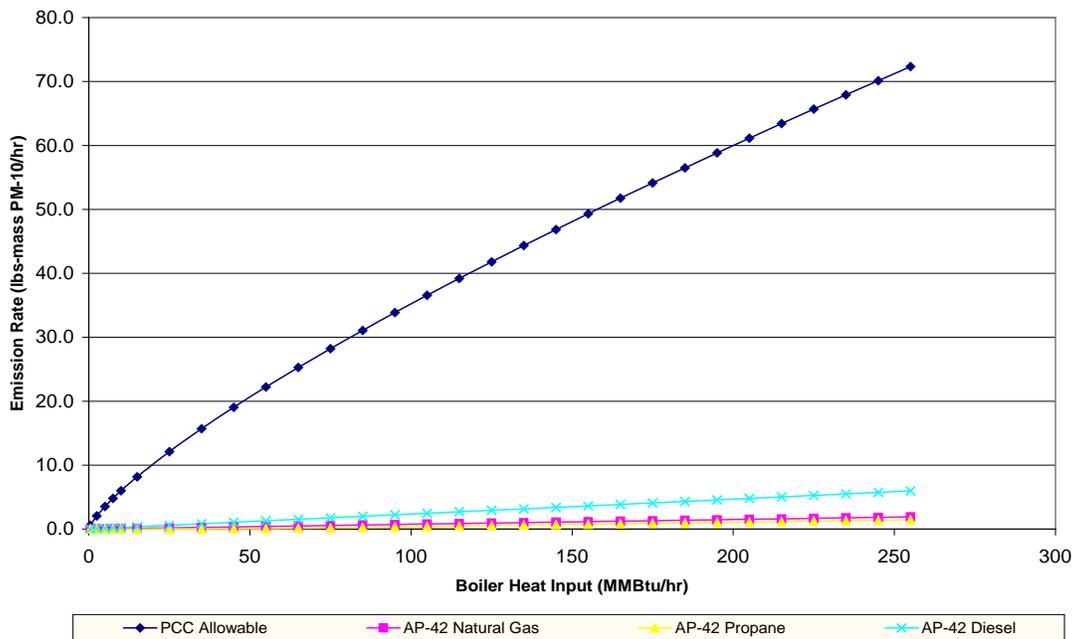
No control technologies needed to be determined; the source is not subject to RACT, BACT or LAER.

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.

- 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.

Comparison of Emissions of PM-10 for Boilers: PCC Allowable vs AP-42 Estimated



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 SO₂ 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.

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.

Natural gas (and LPG), Gasoline, Jet fuel, No. 1 and 2 Distillate Fuel Oil, 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.