PERMITTING NEW AND EXISTING STATIONARY SOURCES GUIDE

PERMITTING NEW AND EXISTING STATIONARY EMISSIONS SOURCES ON AIR FORCE INSTALLATIONS

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Based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

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ACRONYMS

(Words formed from the initial letters of a name or parts of a series of words.)

AAFES	Army & Air Force Exchange Service
AFCEC	Air Force Civil Engineer Center
AFMAN	Air Force Manual
APIMS	Air Program Information Management System
ARAR	Applicable or Relevant and Appropriate Requirements
CARB	California Air Resources Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CONUS	Continental United States
ECOM	External Combustion Engine
FESOP	Federally Enforceable State Operating Permit
FIRE	Factor Information Retrieval System
HAP	Hazardous Air Pollutant
ICOM	Internal Combustion Engine
LAER	Lowest Achievable Emissions Rate
MAJCOM	Major Command
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NESHAP	National Emission Standards for Hazardous Air Pollutants
OCONUS	Outside Continental United States
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SME	Subject Matter Expert
USAF	United States Air Force

BREVITY CODES

(Shortened form of a frequently used group of words, phrases, or sentences consisting of entirely upper-case letters. Each letter is spoken individually.)

AEI	Air Emissions Inventory
AFB	Air Force Base
AFI	Air Force Instruction
CAA	Clean Air Act
CAAA	Clean Air Act Amendments (of 1990)
CE	Civil Engineering
CEV	Civil Engineering Environmental
CFR	Code of Federal Regulations
CP	Criteria Pollutant
DLA	Defense Logistics Agency
DoD	Department of Defense
DOE	Department of Energy
EF	Emission Factor
EPA	Environmental Protection Agency
GHG	Greenhouse Gases
GSA	General Services Administration
NSPS	New Source Performance Standards
NSR	New Source Review
PM	Particulate Matter – Aerodynamic diameter unspecified
PM_{10}	Particulate Matter – Aerodynamic diameter < 10 micrometers
$PM_{2.5}$	Particulate Matter – Aerodynamic diameter < 2.5 micrometers
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
US	United States
USDA	United States Department of Agriculture
VOC	Volatile Organic Compound

ABBREVIATIONS

(Shortened form of a word or phrase)

CO	Carbon Monoxide
CO_2	Carbon Dioxide
hp	Horse Power
hr	Hour(s)
kg	Kilogram
kW	Kilowatt(s)
L	Liter
lb	Pound(s)
MMBtu	Million British Thermal Units
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
O_3	Ozone
Pb	Lead
tpy	Tons per Year

COMMON TERMS

Area Source: A minor source of HAPs

Major Source: A group of emissions units having actual or potential emissions in excess of one or more applicable major source thresholds

Emissions Source: A group of emissions units aggregated for the purpose of air quality permitting

Emissions Unit: Commonly thought of as an individual piece of equipment, or grouping of similar pieces of equipment

Minor Source: A source which has actual and potential emissions below the applicable major source threshold

Title V: The portion of the CAA governing air operating permits, however the terms is commonly used to describe a facility or emissions source as being classified as a major source of air pollution

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1 GUIDE INTRODUCTION

This document, *Permitting of New and Existing Sources Guide* is intended to provide the reader with an overview of; permitting requirements for stationary emissions sources, calculating air emissions estimates, types of air permits, regulations that impact the permitting process and tailoring permits to limit the impact of regulations at Air Force (AF) Bases. This guide is not intended to address all potential permitting requirements or processes due to the wide variety of regulations and procedures that exist among all States and Local/Regional air districts/regulatory agencies.

Additionally, this guide is not intended to replace other air quality guidance documents developed and maintained by the **Air Force Civil Engineering Center (AFCEC)**. As such, this guide will only provide a cursory overview of those processes, however it will reference the appropriate guide(s) where applicable. Knowledge and understanding of the material contained withing the list of guides below is necessary to successfully develop a new, or update and revise an existing air quality operating permit. A solid foundation in these topics is of the utmost importance and cannot be stressed enough.

- *Air Emissions Guide for USAF Stationary Sources*
- *USAF Potential to Emit (PTE) Guide*

Further, the *Air Force New Source Review Permitting Guide* has been developed to assist air quality personnel with the advanced task of executing and evaluating New Source Review (NSR) and Prevention of Significant Deterioration (PSD) applicability determinations. For the novice, a full understanding of this activity is secondary to the fundamental skills outlined above and should not be undertaken without additional technical support.

Please note that AFCEC Air Quality guides are updated and revised regularly, and users should verify that they are referencing the most recent edition.

In addition to AFCEC Air Quality guides, the EPA has published guidance memos which provide insights to the intent of the regulations governing air permitting. These memos are valuable when evaluating an Air Force installation and the proper way(s) to develop operating permits. These memos, as well as the AFCEC Air Quality guides can be found on the AFCEC Air Quality EDASH site. EPA guidance memos discussed in this document include:

- 1996 Seitz Memo
- 2018 Meadowbrook Letter
- Ameresco Letter
- Jacques Letter

As this guide is unable to address the requirements and procedures of every regulatory agency, it is highly recommended that installation environmental management flight personnel coordinate with their AFCEC Installation Support Section (ISS) counterparts to request assistance if needed. Additionally, due to the time constraints placed on some permit requirements, coordination with local regulatory agencies early in the process of permit development or renewal can be key to meeting critical mission requirements and construction deadlines.

Air quality permits can be a very complicated and nuanced subject which is both difficult to learn and challenging to find concise, stepwise explanations of the activities and logic involved. As such, this guide has been organized to enable to novice reader to start at the beginning and build a basis of understanding of fundamentals as the document progresses before moving on to more advanced topics. Most of the concepts presented here do not exist in isolation and must be considered within the context of those addressed in other chapters. Additionally, the examples included in this document attempt to address many of the lessons learned through some of the more complicated technical analyses performed while providing technical support to Air Force installations across the enterprise.

1.1 Background

As awareness of the health hazards posed by air pollution increased, the need for further research and regulation gave rise to the Clean Air Act (CAA). The CAA of 1963 implemented regulations which were intended to address the then growing problem of air pollution within the United States. Multiple amendments were made to the CAA in subsequent years, with the most significant promulgated in 1990; known in its totality as the Clean Air Act Amendments (CAAA).

The 1970 amendments to the CAA established the National Ambient Air Quality Standards (NAAQS) for six air pollutants known as “Criteria Pollutants” (CP); States were subsequently required under Title I to develop State Implementation Plans (SIP) to address atmospheric concentrations of these compounds by 1975, which must be approved by the Federal EPA. SIPs detail the actions that a state will take to ensure that they “attain” the levels defined in the NAAQS and steps to be taken when areas do not meet those standards. Title 1 also required States to develop and implement preconstruction permitting programs for both major and minor new sources under the New Source Review (NSR) program.

Amendments promulgated in 1990 further expanded restrictions on Hazardous Air Pollutants (HAPs) as well as put in place requirements for permitting programs to limit air pollution emissions. Title V of the CAAA established limits on emissions of certain pollutants and put requirements in place such that facilities having the Potential To Emit (PTE) in excess of those levels are designated as a “Major Source” and therefore must obtain air permits.

States are the primary authority for regulating the air pollution within their borders and most states have ben delegated authority by the EPA for enforcing compliance with their own permitting programs under Title V. To have this authority delegated to them States were required to develop, implement and gain approval of their permitting programs for both the Title V and NSR programs. In cases where the State has not been delegated authority, the Federal EPA retains that authority under Part 71 (40 CFR Subchapter C).

The construction of new sources are regulated under one regulation having two distinct functions. For sources that are or will become major sources of a nonattainment air pollutant, new sources are reviewed under major source nonattainment NSR while major new sources of attainment pollutants are regulated under Prevention of Significant Deterioration (PSD). The actual permitting process of new sources can be further broken-down into three permitting levels, non-major NSR, major nonattainment NSR and PSD for major sources of attainment pollutants. These requirements will be discussed in more detail in the construction permitting section of this document (Chapter 9.2).

There are other regulations/plans that must be considered when permitting new or existing emissions units. One of the most common regulations impacting and incorporated into air permits are the National Emission Standards for Hazardous Air Pollutants (NESHAP) and associated New Source Performance Standards (NSPS). These regulations are found in 40 CFR Parts 63 and 60 respectively and as the name suggest address emissions of HAPs from both existing and new emissions sources.

1.2 Pollutants

An air pollutant is something which when emitted to the air degrades the quality of the air and/or results in detrimental effects to the health and welfare of anyone or thing exposed to it. Pollutants come in many forms and can something as simple as dust from a dry road, emissions from internal combustion engines which contribute to ground level ozone or noxious, highly toxic or carcinogenic chemicals emitted from industrial manufacturing.

1.2.1 Regulated Pollutants

40 CFR 70.2 defines a regulated pollutant as:

> "Regulated air pollutant means the following:
> (1) Nitrogen oxides or any volatile organic compounds;
> (2) Any pollutant for which a national ambient air quality standard has been promulgated;
> (3) Any pollutant that is subject to any standard promulgated under section 111 of the Act;
> (4) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act; or

(5) Any pollutant subject to a standard promulgated under section 112 or other requirements established under section 112 of the Act, including sections 112(g), (j), and (r) of the Act, including the following:

(i) Any pollutant subject to requirements under section 112(j) of the Act. If the Administrator fails to promulgate a standard by the date established pursuant to section 112(e) of the Act, any pollutant for which a subject source would be major shall be considered to be regulated on the date 18 months after the applicable date established pursuant to section 112(e) of the Act; and

(ii) Any pollutant for which the requirements of section 112(g)(2) of the Act have been met, but only with respect to the individual source subject to section 112(g)(2) requirement."

From this list we obtain the compounds which are regulated under the CAAA:

- Nitrogen Oxides (NOx)
- Volatile Organic Compounds (VOC)
- Carbon Monoxide (CO)
- Particulate Matter (PM) [PM_{10} and $PM_{2.5}$]
- Sulfur Oxides (SOx)
- Lead (Pb)
- Ozone (O_3)
- Class I and Class II Ozone Depleting Substances (ODS)
- Hazardous Air Pollutants (HAPs)

Examining the list above shows that the first six pollutants identified are the "criteria pollutants" regulated under the CAAA. Additionally, HAPs, O_3 and Class I and Class II ODS substances are included in this list. Emissions of O_3 and ODS substances are generally minimal and not typically important to air operating permits, except for certain cases where State or Local regulatory agencies have put additional requirements in place.

1.2.2 Criteria Pollutants

Criteria pollutants are those which a NAAQS has been established as stated in the previous section, CPs are:

- Nitrogen Oxides (NO_x)
- Volatile Organic Compounds (VOC)
- Carbon Monoxide (CO)
- Particulate Matter (PM) [PM_{10} and $PM_{2.5}$]
- Sulfur Oxides (SO_x)
- Lead (Pb)

Additionally, the EPA has further categorized particulate emissions into "coarse" (PM_{10}) and "fine" ($PM_{2.5}$) particles. These categories indicate the size of the particles and have an aerodynamic diameter of less than or equal to 10 micrometers or 2.5 micrometers respectively. As such, emissions of PM must be calculated so that both PM_{10} and $PM_{2.5}$ can be accounted for.

1.2.3 Hazardous Air Pollutants

In 1990, the EPA identified 189 pollutants known to cause cancer and other serious health impacts and classified them as **Hazardous Air Pollutants (HAP)**. HAPs, also known as "air toxics" are regulated under Section 112 of the CAA and include not only specific chemicals, but also groups or, "compounds" which are comprised of chemicals containing specific elements or traits. Since 1990 this list has been updated to include new and remove unnecessary chemicals/compounds as science has evaluated the risk that the pose. HAPs include both organic compounds emitted as a liquid droplet or vapor and inorganic compounds, which are typically emitted as solid particulates.

Due to the serious risk that HAPs pose to human health, emissions of these compounds are much more tightly regulated compared to CPs. **National Emissions Standards for Hazardous Air Pollutants (NESHAP)** were promulgated to limit emissions of HAPs from a variety of emissions sources, those controls were further expanded and included in the **New Source Performance Standards (NSPS)** for certain emissions sources as well.

1.2.4 Common Emission Sources

Common source of emissions of CPs and HAPs are included in Table 1-1 below. These examples are only general and are not inclusive of all sources of air emissions.

Table 1-1. Pollutants and Common Emissions Sources

Pollutant	Common Sources
Ozone	Primarily forms in the atmosphere from reaction of NOx and VOC in the presence of sunlight
Carbon Monoxide	Byproduct of combustion; boilers, engines, etc.
Nitrogen Dioxide	Byproduct of combustion; boilers, engines, etc.
Sulfur Dioxide	Byproduct of combustion of fuel containing sulfur; boilers, engines, etc.
Particulate Matter	Abrasive cleaning, painting, cooling towers, combustion byproduct; boilers, engines, etc.
Lead	Abrasive cleaning, munitions
Volatile Organic Compounds	Fuel storage, transfers and dispensing, painting, degreasing, solvent usage, combustion byproduct; boilers, engines, etc.

Pollutant	Common Sources
Hazardous Air Pollutants	Fuel storage, transfers and dispensing, painting, degreasing, solvent usage, combustion byproduct; boilers, engines, etc.

1.2.5 State-specific Pollutants

Although the list of HAPs is defined at the Federal level, some states have taken additional steps and identified and regulated other chemicals as pollutants of concern. California, Texas and other states have adopted these expanded lists of chemicals and simply call them air toxics. In addition to CPs and HAPs, these state-specific pollutants must also be evaluated when performing any permitting action.

1.3 Fugitive Emissions Sources

A key concept to air emissions is understanding the difference between "fugitive" and "point source" emissions. 40 CFR 70.2 defines fugitive emissions as follows:

> "Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening."

The difference between fugitive and non-fugitive (point) emissions is simply that point source emissions pass through a smokestack or other similar type of ducting while fugitive emissions do not. For example, emissions from painting operations in a booth would be considered a point source as the emissions exit through a stack, while painting outside of a booth would be considered to be fugitive.

This distinction will become more important later when evaluating whether a source is a major or minor source.

1.4 Additional Reading

More detail regarding pollutants and their sources is available in the AFCEC *Air Emissions Guide for USAF Stationary Sources*.

2 SOURCE CLASSIFICATION

2.1 Major Source Definition

The first step in understanding air operating permits is to become familiar with the EPA's definition of a Major Air Emissions source; simply known as a Major Source in this context. The definition of the term Major Source is contained in 40 CFR 70.2, which states the following (emphasis added):

> "Major source means any stationary source (or any group of stationary sources that are located on one or more continuous or adjacent properties, and are under common control of the same person (or persons under common control)) belonging to a single major industrial grouping and that are described in paragraph (1), (2), or (3) of this definition. For the purposes of defining "major source," a stationary source or group of stationary sources shall be considered part of a single industrial grouping if all of the pollutant emitting activities at such source or group of sources on contiguous or adjacent properties belong to the same Major Group (i.e., all have the same two-digit code) as described in the Standard Industrial Classification Manual, 1987…."

The CFR continues to provide emissions limits based on the type of pollutant; paragraphs (1)(i) and (ii) for HAPs and radionuclides and (2) for CPs. (emphasis added)

> (1) A major source under section 112 of the Act, which is defined as:
> (i) For pollutants other than radionuclides, any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, in the aggregate, 10 tons per year (tpy) or more of any hazardous air pollutant which has been listed pursuant to section 112(b) of the Act, 25 tpy or more of any combination of such hazardous air pollutants, or such lesser quantity as the Administrator may establish by rule.
>
> (2) A major stationary source of air pollutants, as defined in section 302 of the Act, that directly emits, or has the potential to emit, 100 tpy or more of any air pollutant subject to regulation (including any major source of fugitive emissions of any such pollutant, as determined by rule by the Administrator). The fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source for the purposes of section 302(j) of the Act, unless the source belongs to one of the following categories of stationary source:
>
> (The referenced list of sources was not included here as these are not activities performed on Air Force installations.)

2.2 Major Source Evaluation Criteria

Based on the definition above, the EPA has provided a set of criteria for determining what is a Major Source. These are a:

1. Stationary Source
2. Located on one or more continuous or adjacent properties
3. Under common control of the same person or persons under common control
4. Belong to a single major industrial group (SIC Code)

And

5. Emits or has the potential to emit 100 tpy or more of any regulated air pollutant (for CPs and precursors)

Or

6. Emits or has the potential to emit 10 tpy of a single HAP, or 25 tpy of all HAPs

It is important to note that under this definition, an emissions source can be a major source for CPs and/or HAPs independent of the other. More specifically, a major source for CPs is not necessarily also a major source for HAPs. Separate applicability determinations must be performed for both categories of pollutant to properly classify a facility.

Generally, Air Force installations are significantly more likely to be a major source for CPs than they are for HAPs. Additionally, being classified as a major source for HAPs results in significantly more regulations becoming applicable to the facility. As such, environmental flight personnel which believe that they have become a major source for HAPs should seek technical support from their AFCEC ISS counterparts prior to undertaking any relevant permitting actions.

2.3 Minor Source Definition

Although a major source is well defined in 40 CFR 70.2, a minor source is not. As such, any source that is not a major source is therefore a minor source. This assertion is supported by 42 United States Code (USC) sections 7602 for CPs and 7412 for HAPs, which states the following: (emphasis added)

> 7602 (x) Small Source.—The term "small source" means a source that emits less than 100 tons of regulated pollutants per year, or any class of persons that the Administrator determines, through regulation, generally lack technical ability or knowledge regarding control of air pollution.
>
> 7412 (2) The term "area source" means any stationary source of hazardous air pollutants that is not a major source. For purposes of this section, the term "area source" shall not include motor vehicles or nonroad vehicles subject to regulation under subchapter II of this chapter.

2.4 Minor Source Evaluation Criteria

Identifying minor sources of air pollution is the same as determining what is a major source. If a source does not meet the definition of major source, it is therefore a minor source. For CPs, we will simply refer to them as a minor source, while for HAPs, a source that is not a major source is also referred to as an “area source.”

2.5 Synthetic Minor Source

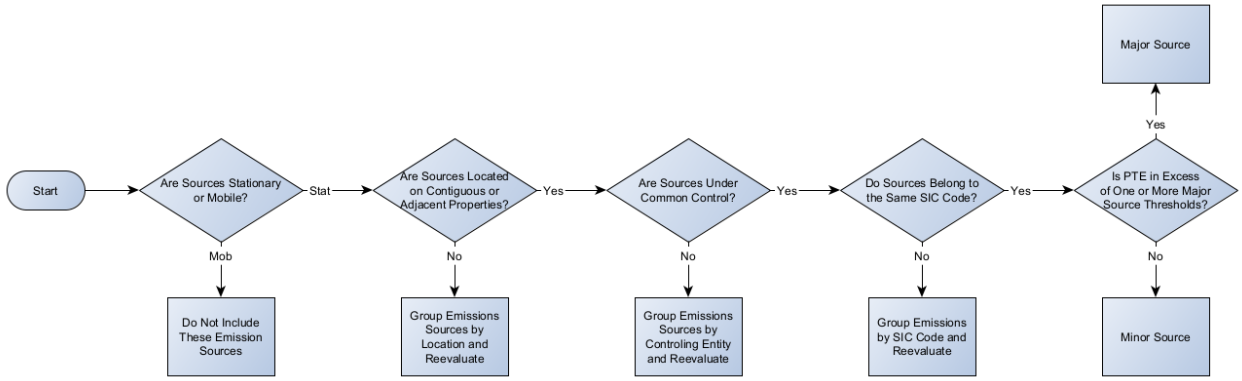
A third category of emissions source is the synthetic minor source, which are defined as a major source which has opted to limit its operations and therefore PTE to less than that of a major source. These operating limits are developed so as to be "Federally enforceable"; operating limits which are Federally enforceable are those for which firm, quantifiable boundaries for operation can be put into place. For example, a base may wish to limit the number of gallons of diesel fuel that its emergency generators are allowed to consume in a year. This non-subjective metric is one that can easily be quantified and shown to limit emissions so that the installations PTE remains below major source thresholds. Conversely, attempting to establish a simple limit on emissions of a criteria pollutant without that firm, measurable limit would not be adequate to establish a source as a synthetic minor instead of a major source.

2.6 Synthetic Minor Source Evaluation Criteria

A simple flow diagram summarizing this process is included in the Figure 2-1 below.

The following chapters of this guide will discuss and provide a path to evaluate each of the six criteria identified in 40 CFR 70.2 and will expand on Figure 2-1.

Figure 2-1. General Emissions Source Classification



3 STATIONARY SOURCES

As discussed in the previous chapter, 40 CFR 70.2 outlines a series of parameters which must be evaluated when determining whether a group of emissions sources constitutes a major source or not. The first step in this process is to determine whether sources are stationary and must be included in the analysis, or mobile and should be excluded.

3.1 Stationary Source Definition

Per the definition in 40 CFR 70.2, to be classified as a major source, emissions must be generated by stationary emissions units, which are defined in the same CFR section: (emphasis added)

> Emissions unit means any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant, or any pollutant listed under section 112(b) of the Act….
>
> Stationary source means any building, structure, facility, or installation that emits or may emit any regulated air pollutant, or any pollutant listed under section 112(b) of the Act.

The CAA itself defines a stationary source in 42 U.S.C. §7411 as:

> "The term "stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant…"

It is important to understand the distinction and use of the terms, "emissions source" and "emissions unit." Although a piece of equipment may commonly be referred to as an emissions source, the regulatory definition included above states that an emissions source is a group of emissions units. To avoid confusion, it is advisable to not use these terms interchangeably and reference pieces of equipment or processes as emissions units and groups of emissions units as emissions sources. In most cases, an emissions source is a series of emissions units which have been grouped together under the same permit.

Although this definition is seemingly straight forward, it has been somewhat complicated by the definition of a non-road engine in 40 CFR 1068. This is important when permitting stationary sources since mobile/non-road sources can become stationary sources and thereby subject to air permitting and other requirements. 40 CFR 1068 states: (emphasis added)

> Nonroad engine means:
> (1) Except as discussed in paragraph (2) of this definition, a nonroad engine is an internal combustion engine that meets any of the following criteria:
>
> (i) It is (or will be) used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers).
> (ii) It is (or will be) used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers).
> (iii) By itself or in or on a piece of equipment, it is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(2) An internal combustion engine is not a nonroad engine if it meets any of the following criteria:

(ii) The engine is regulated under 40 CFR part 60, (or otherwise regulated by a federal New Source Performance Standard promulgated under section 111 of the Clean Air Act (42 U.S.C. 7411)). Note that this criterion does not apply for engines meeting any of the criteria of paragraph (1) of this definition that are voluntarily certified under 40 CFR part 60.

(iii) The engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. For any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced, include the time period of both engines in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. See §1068.31 for provisions that apply if the engine is removed from the location.

As we can see from the non-road definition above, a self-propelled source can never become a stationary source, while a portable (non-self-propelled) can. This kind of equipment is common on Air Force installations and consists of Equipment Authorized Inventory Data (EIAD) generators, light carts and other similar equipment and represents a threat to maintaining compliance with CAAA regulations. Portable units have caused violations to be levied against facilities for failure to permit them after being deemed to have become stationary sources upon being left in place for 12 months or more. Note that maintaining generators and other equipment in storage areas does not constitute use and is not a risk or being classified as a stationary source. It is only when a unit is placed into service and it, or another functionally equivalent piece of equipment remains at the location.

3.2 Stationary Source Criteria

Based on these definitions, a stationary source is therefore on that meets the following criteria:

1. Is a building, structure, facility, or installation which emits or may emit any air pollutant,
2. Is stationary,
3. Is not a non-road engine as defined in 40 CFR 1068 (used to propel a piece of mobile equipment), and
4. Is a portable engine which stays in the same location for 12 months or more, or is located a seasonal source

When evaluating stationary vs. mobile emissions sources, care must be taken to ensure proper classification of these sources and subsequent improper inclusion/exclusion in operating permits or air emissions inventories.

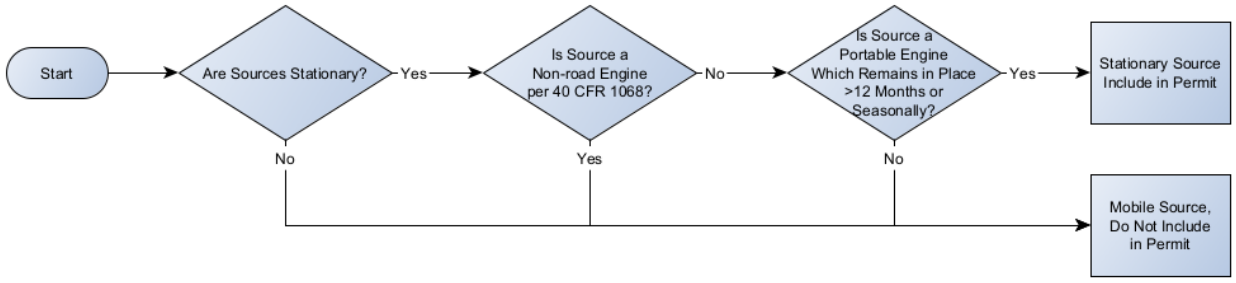
For example, the engine(s) in a piece of self-propelled equipment that remains in the same place for more than a year would not constitute a stationary source. This is due to the fact that the equipment is self-propelled. Alternatively, a portable piece of equipment, like a trailer mounted generator would constitute a stationary source if left in place. The important distinction is self-propelled vs. portable, with a portable unit being incapable of moving under its own power and requiring use of another piece of equipment to be moved.

Additionally, although the emissions from the engine(s) in the self-propelled equipment example above would not be considered stationary, the emissions from the activity that they perform likely would. For example, if the equipment in question produces air emissions in some other way, like crushing rocks (particulate emissions), the emissions from that activity would be considered a stationary source and must therefore be properly classified and permitted as necessary.

3.3 Stationary Source Evaluation

A simple flow diagram summarizing this process is included in the Figure 3-1 below.

Figure 3-1. General Stationary Source Classification



3.4 Mobile and Stationary Source Additional Reading

For additional information on mobile and stationary sources, please see the following AFCEC guides:

- *Air Emissions Guide for USAF Stationary Sources*
- *Air Emissions Guide for USAF Mobile Sources*
- *Air Emissions Guide for USAF Transitory Sources*

4 FACILITY: CONTIGUOUS AND ADJACENT

The next criteria to be evaluated is what determines what constitutes a "Facility." United States Air Force (USAF) installations are a conglomeration of a multitude of organizations, missions and activities and because of this diversity are analogous to a small city. With the size of many DoD facilities and multitude of Geographically Separated Units (GSU), determining how to group or not group those properties based on their respective locations to one another for the purposes of air permitting is an important step.

4.1 Definition

As discussed in a previous chapter, a stationary source is, "any building, structure, facility, or installation that emits or may emit any regulated air pollutant or any pollutant."

The definition of major source further expands on this and includes some additional criteria, "Major source means any stationary source (or any group of stationary sources that are located on one or more continuous or adjacent properties…"

The CAA does not specifically define contiguous or adjacent as it relates to air permitting, however guidance was provided to the DoD when making major source determinations. In 1996, the EPA published a memorandum titled, "Major Source Determinations for Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act (Act)." Known as, "The Seitz Memo", this guidance provides the basis for air permitting at AF installations and assists with determining the appropriate aggregation or disaggregation of emissions sources for the purpose of obtaining an air operating permit. The EPA provides a summary of their intent and interpretation of the CAAA in the memo and state;

> "The EPA believes it is appropriate to think of military installations as combinations of functionally distinct groupings of pollutant-emitting activities that may be identified and distinguished the same way that industrial and commercial sources are distinguished, that is, on the basis of a "common sense notion of a plant."

The EPA provided further guidance in a letter to Regional Administrators on 26 Nov 2019 titled, "Interpreting "Adjacent" for New Source Review and Title V Source Determinations in All Industries Other Than Oil and Gas." In this letter the EPA states the following: (emphasis added)

> "Therefore, in sum, for purposes of making source determinations for NSR and title V, EPA interprets the term 'adjacent' to entail physical proximity between properties. From this point forward, EPA will consider properties that do not share a common boundary or border, or are otherwise not physically touching each other, to be 'adjacent' only if the

properties are nevertheless nearby, side-by-side, or neighboring (with allowance being made for some limited separation by, for example, a right of way). This is inherently a case-specific inquiry where determining the appropriate distance at which two properties are proximate enough to reasonably be considered 'adjacent' may vary depending on the nature of the industry involved. Therefore, EPA is not here establishing or recommending a 'bright line,' or specifying a fixed distance, within which two or more properties will be deemed (or presumed) by EPA to be in close enough physical proximity to be considered 'adjacent.' In each case, this determination should ultimately approximate the 'common sense notion of a plant.' Moreover, importantly, for those properties not in physical proximity to each other, EPA will not invoke the existence of some functional interrelationship to establish 'adjacency.'"

4.2 Determination

Being contiguous or adjacent limits the scope of what constitutes a facility generally to a single continuous piece of land, pieces of land which are directly next to each other, or are within a short distance of one another. An example of contiguous facilities would be two Department of Defense (DoD) installations which share a fence line.

Although the term "contiguous" is straight forward, "adjacent" is more subjective, leaves room for interpretation and requires further clarification. In its 2019 guidance letter, the EPA states, "…allowance being made for some limited separation by, for example, a right of way." As such, it is safe to assume that being simply divided by a road, railway or other similarly short distance would not justify segregation into separate facilities.

In cases where multiple facilities are under control of the same Air Force organization but separated by only a very short distance, coordination with the applicable regulatory agency should be considered to ensure legal sufficiency for any determinations made which would result in disaggregation of into multiple facilities. Greater distances increase the likelihood of being classified as separate sources, however it should be noted that the interpretation of adjacency must be carefully considered as different regulatory agencies may not interpret this in the same way.

5 COMMON CONTROL

The next factor when determining what constitutes a facility for the purpose of air quality permitting is Common Control. In the simplest terms, common control can be thought of an organizational chart and summarized by asking, "who has the power to direct emissions producing activities?"

5.1 Definition

Common control is not formally defined within the CAAA, however multiple guidance memos and letters have been published by the EPA on this subject. The Seitz memo states: (emphasis added)

> "There are four separate military services within the DOD: the Army, the Navy, the Air Force, and the Marine Corps. The administrative functions of these services, including management control over facility operations, are the province of the separate military services. Effectively, there is no 'control' relationship among these services regarding facility operation below the Secretary of Defense. In addition, there are a number of defense agencies and defense field activities established by the Secretary of Defense as necessary to perform a supply or service activity common to more than one military department. Overall supervision of each agency or field activity is assigned to the Office of the Secretary of Defense or to the Chairman of the Joint Chiefs of Staff."
>
> "When different military services control separate groups of pollutant-emitting activities at a single military installation, the Agency believes it is appropriate to consider these activities not to be under common control when making major source determinations."

At this high level, the EPA states that the individual DoD agencies are not under common control with each other and should be considered as separate sources. Additionally, due to the organizational structure of the National Guard and its position as a State agency under control of each governor, it is also considered to not be under common control with its active duty counterpart organizations.

The Seitz memo includes the following caveat regarding common control: (emphasis added)

> "Nevertheless, while separate military controlling entities may be treated as under separate control, determinations for military installations should be made only after examining the specific operations and interactions at those sites. Consequently, there may be situations in which the air pollution control agency or the permitting authority determines that it is appropriate to consider a military installation a single 'source,' notwithstanding the presence of multiple controlling entities at that military installation. Nothing in this guidance precludes such a finding by an agency or permitting authority."

Figures 1 and 2 of the Seitz memo include a list of DoD entities which are not considered under common control and those which are under common control with each other, respectively. These lists are included below for reference.

Table 5-1. Military Controlling Entities That May Be Considered Under Separate Control

Air Force
Army
Defense Agencies (See Table 5-2)
Marine Corps
National Guard
Navy

Table 5-2. Defense Agencies That Are Considered Under Common Control*

Advanced Research Projects Agency	Defense Legal Services Agency
Ballistic Missile Defense Organization	Defense Logistics Agency
Central Imagery Office	Defense Mapping Agency
Defense Commissary Agency	Defense Security Assistance Agency
Defense Finance & Accounting Service	Defense Nuclear Agency
Defense Information Systems Agency	General Defense Intelligence Program Support Staff
Defense Intelligence Agency	National Security Agency Central Security Service
Defense Investigative Service	On-Site Inspection Agency

* As reorganization of DoD agencies occur, the names in this table may be obsolete.

5.2 Common Control Determinations

Within each Air Force base, the delineation of who has control over an organization is simple, as is the case with DoD agencies such as the Army and Air Force Exchange Service (AAFES), the Defense Commissary Agency (DeCA), the Defense Information Systems Agency (DISA) and the Defense Health Administration (DHA). Those organizations and others like them report to a different chain of command which does not include the base Commander. Similarly, Air Force installations often host other tenants which are not part of or affiliated with the DoD and should also not be included as part of an installations air permit. An example of some of these organizations includes, but is not limited to, Bureau of Prisons (BoP), State or Federal environmental protection agencies and local utility providers.

In all cases, installation environmental management flight personnel should be familiar with the host-tenant arrangements that are in place as they may dictate a certain level of environmental compliance support from the base to the tenant and vice versa. Similarly, situations exist where although a tenant (for example AAFES) may operate a group of sources (fuel dispensers) the host installation may own some of the equipment (underground fuel tanks). Those cases must be carefully analyzed to determine if the tenant provides support to the installations primary mission

to determine if a "support facility" relationship exists. In the case of AAFES or DeCA, it is easy to show that their function does not support the national security mission at an Air Force base and therefore are not support facilities.

In other cases, common control must be more carefully scrutinized; as in when tenant Air Force organizations are present on an installation, however, do not fall within the chain of command of the Base Commander. A similar situation occurs in joint base environments where one agency provides civil engineering support to another DoD agency which is co-located. In these instances, although the tenant organization is separated into its own group of emissions sources, their actual or potential emissions may require that they be permitted as their own source. Again, since regulators have discretion over how to interpret and implement portions of the CAAA, careful analysis, decision making, regulatory coordination and recordkeeping must be performed to ensure technical and legal sufficiency for any air permitting decisions made. If questions arise, installation environmental management flight personnel should contact their ISS counterpart to obtain technical support and assistance.

5.3 Support Facilities

Another concept to consider when analyzing common control is that of "support facilities." In general, a support facility is a unit or organization which provides a service to a base or an organization located on a base which supports their primary mission. On April 30th, 2018, the EPA published a letter to Meadowbrook Energy LLC which further discusses the notion of common control with specific reference to support facilities. In this letter they expand on what was stated in the 1996 Seitz memo regarding support facilities, their function and appropriate permitting of them. An example of this could be a series of generators owned by the AF, however operated by a contractor where the AF is the sole recipient of the electricity generated by those engines.

Although potentially not under common control of the installation commander, support facilities must be considered part of the facility for permitting due to the interrelationship of the bases primary mission on emissions from the support facility. Conversely, if an AF base is providing support to a non-AF entity which influences the bases operation and therefore air emissions, they may too be considered jointly to be a single source. As such, support facility considerations can have a significant impact on the permitting status of an installation and therefore those relationships must be carefully considered when evaluating a bases PTE.

In instances where an emissions source provides support to multiple primary activities under different SIC codes, the support facility must be evaluated to determine where the majority of its output goes. This determination will dictate which primary function the support facility will be grouped with when making a major source determination. Conversely, in cases where there is no

functional and therefore emissions interrelationship between the organizations, there may be an opportunity to disaggregate them for the purpose of air quality permitting.

Similarly, when an Air Force base hires a support contractor to provide a service to the installation, these activities also meet the definition of support facility. Therefore, contract for service activities must be considered as part of the installation because their emissions are a direct result of the support provided to the installation. As such, these contracted services must be included in the installations major source determination or air operating permit(s).

The EPA published a guidance letter on April 30, 2018 known as the Meadowbrook letter which provides additional guidance and clarity on this topic. In the letter they state the following:

> "In practice, evaluating common control will necessarily be a fact-specific inquiry. However, EPA believes the most relevant considerations should be whether entities have the power to direct the actions of other entities to the extent that they affect the applicability of and compliance with permitting requirements: e.g., the power to direct the construction or modification of equipment that will result in emissions of air pollution; the manner in which such emission units operate; the installation or operation of pollution control equipment; and monitoring, testing, recordkeeping, and reporting obligations. On the other hand, common control considerations should not focus on the power to direct aspects of an entity's operations that are wholly unrelated to air pollution permitting requirements. If one entity has power or authority over some aspect of another entity's operations that would have no impact on pollutant-emitting activities of the stationary source subject to permitting requirements, EPA does not consider that fact to be relevant to determining whether the two entities should be considered a single source for air quality permitting purposes (e.g., one entity providing security for both its facility and for an adjacent facility belonging to another entity)."

5.4 Support Facility Determination

When evaluating whether a support facility arrangement exists and whether those emissions must be included as part of an installations permitting efforts the primary question is, "does the activity of the base impact the emissions of the emissions source in question?" As stated in the Meadowbrook letter, "…the agency believes clarity and consistency can be restored to source determinations if the assessment of 'control' for title V and NSR permitting purposes focuses on the power or authority of one entity to dictate decisions of the other that could affect the applicability of, or compliance with, relevant air pollution regulatory requirements."

When questions arise regarding common control and proper disaggregation of Air Force installations, it is recommended that installation personnel contact their ISS counterparts for

technical support and coordinate with their regulatory agency prior to initiating any permitting actions utilizing this strategy.

6 INDUSTRIAL GROUPING

The final consideration of what constitutes a facility for the purpose of air quality permitting is Industrial Grouping. The 1996 Seitz memo states the following:

> "The EPA believes it is appropriate to think of military installations as combinations of functionally distinct groupings of pollutant-emitting activities that may be identified and distinguished the same way that industrial and commercial sources are distinguished, that is, on the basis of a 'common sense notion of a plant.' Thus, the 'industrial groupings' at a military installation would be assigned appropriate 2-digit SIC codes (as if they were nonmilitary facilities) and classified into "primary" and "support" activities. As is now done for nonmilitary sources, support activities at military bases would be aggregated with their associated primary activity regardless of dissimilar 2-digit SIC codes. Consequently, emissions from support facilities would be added to the emissions from the primary activity when determining the major source status of the 'source'."

The Standard Industrial Classification (SIC) system is a method of grouping industrial activities together by their function. This list is maintained by US Department of Labor (DoL) and includes two-digit major industrial classification and four-digit specific classification codes. As stated in the Seitz memo, activities on military installations should be classified by their major, two-digit SIC code and grouped into primary and support functions. Although support functions may not be in the same two-digit SIC grouping as the primary mission that they support, they must be grouped together with those primary missions when determining what constitutes a facility for the purpose of air quality permitting.

In general, most activities on AF bases would be classified under SIC 97, "National Security", however, military bases include other organizations which are better classified under other SIC codes. An example of this would be a large military hospital which would be assigned a two-digit SIC code of 80 for Health Services or classifying a bases flying mission under the two-digit SIC code of 45 for Transportation By Air.

Permitting actions on Air Force installations should evaluate the operations and functions on the facility as if it was an industrial plant. Utilizing this "commonsense notion of a plant" may enable permitting actions to be grouped into functionally distinct groupings. For example, on larger installations, the result can be a single Title V permit governing the industrial portion of the base while non-industrial areas are subject to less stringent minor source permits. Although breaking the installation into functional groups may not alter the results of the major source determination

or permit applicability, it can result in more concise and easier manage permits with fewer recordkeeping requirements.

It is important to note however, that simply because they are not part of the same facility for air permitting, it does not mean that they are exempt from permitting. Segregating a base into multiple facilities is referred to as "disaggregation" and is discussed later in this guide.

Coordination with regulatory agencies is key when evaluating whether this permitting strategy is viable and/or beneficial to the installation. The benefits and risks of this approach must be carefully weighed to ensure that permits are structured to the benefit of the base and that the effort to develop permits under this structure provides value.

6.1 Excluded Activities

In addition to the considerations given to geographic location, common control and industrial grouping, a portion of the activities on military bases should be excluded from permitting since they are not part of the installations primary military mission. Regarding this subject, the 1996 Seitz memo states the following:

> "The EPA also believes that certain personnel-related activities at military installations may appropriately be considered *not* to be support facilities to the primary military activities of a base and, therefore, they can be considered separate sources. Examples of these types of activities include residential housing, schools, day care centers, churches, recreational parks, theaters, shopping centers, grocery stores, gas stations, and dry cleaners. These activities may be treated as separate sources for all purposes for which an industrial grouping distinction is allowed, but they should be separately evaluated for common control, SIC code, and support facility linkages to determine if a major source is present."

As stated above, the EPA believes that these functions on AF bases should be excluded from permitting with the main portion of the base activities (SIC 97). That said, however, those activities must still be evaluated to determine if any should be grouped together and whether a major source exists. Depending on the results of this analysis and the regulatory climate, these secondary functions may require separate permitting actions.

Examples of emissions sources which should be excluded from permitting as part of an AF bases main air permit would include but are not limited to; furnaces and water heaters in base housing, AAFES fuel dispensing, and emergency generators supporting a commissary. Careful consideration must be given to applicable regulations for those emissions sources however.

6.2 Summary: Aggregation / Disaggregation

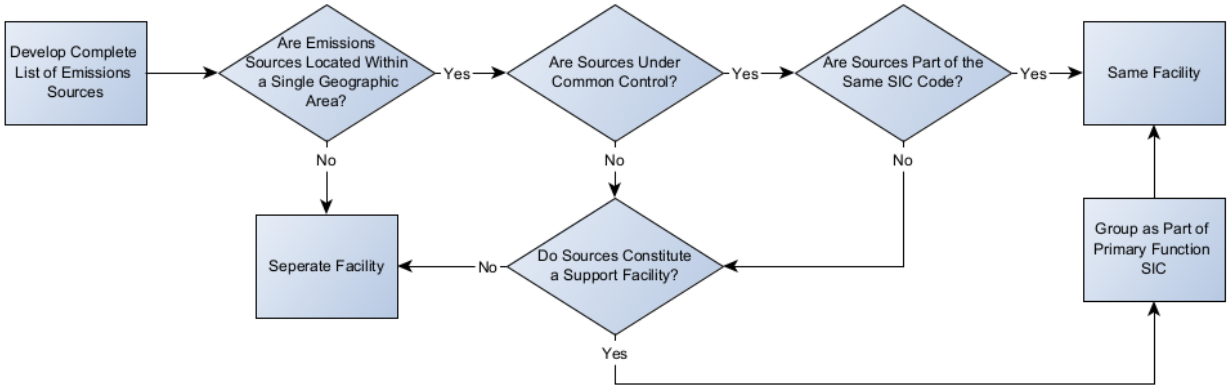
When evaluating how an AF base and how emissions sources should be permitted, proper grouping (aggregation) and separation (disaggregation) of sources is key. As discussed, the primary methods used to aggregate or disaggregate emissions sources are:

- Geographic location: are sources contiguous or adjacent?
- Common control: is operation of emissions sources able to be directed by a single person?
- SIC code: do emissions units support a common primary function?
    - Support facilities: are there emissions units that are not part of the primary function, however provide direct support to it?
- Excluded activities: are there emissions sources which do not support the military function of the installation?

Once a complete list of emissions sources has been developed, the next step is to evaluate and group each emissions source following the general process flow in Figure 2-1 below. As part of this effort installation environmental flight personnel should carefully evaluate the ramifications of aggregating or disaggregating emissions sources. One of the primary concerns when evaluating a strategy for emissions source aggregation/disaggregation is to ensure that the logic used is legally and technically sound. Additionally, consideration must be given to the fact that multiple permits may be necessary if emissions sources are disaggregated and not included in the main installations operating permit. Managing and maintaining multiple operating permits may increase or decrease the level of effort required to track sources and demonstrate regulatory compliance. As such, disaggregation and its impacts on the installations air program must be carefully weighed against the benefits to assure program success.

Failure to ensure adherence to EPA guidance and sound logic could result in regulatory penalties being levied by regulators for circumventing Title V of the CAAA. If in doubt of the proper approach, technical support from the ISS should be requested and/or coordination with the appropriate regulatory agency should be performed to gain concurrence regarding emissions source aggregation/disaggregation.

Figure 6-1. Facility Emissions Source Evaluation



7 POTENTIAL TO EMIT

Once a facility has been evaluated and placed into one or more groups of emissions sources, the next step is to evaluate the PTE for each group.

7.1 PTE Definition

A PTE quantifies the maximum theoretical amount of air pollution that a facility could generate under its current operational configuration and is defined in 40 CFR 70.2 as follows: (emphasis added)

> "Potential to emit means the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation is enforceable by the Administrator…"

In many instances this has been incorrectly interpreted to mean that the PTE for a source is as if it were to operate 24 hours per day, seven days per week, 365 days per year (8,760 hours). Per the definition in 40 CFR 70.2, this is not the case and certain constraints on PTE have been allowed so that these emissions estimates reasonably represent the upper bounds of possible releases.

Additionally, the EPA addressed inclusion of control equipment in PTE calculations in the definition. In summary, the definition states that control equipment shall be included as part of the PTE so long as its operation is "enforceable by the Administrator." As previously discussed, when considering what does/does not qualify as being enforceable, the operation of the equipment and subsequent decrease in emissions must be quantifiable and tangible (limit on hours or throughput, not just emissions). Due to inclusion of this statement, emissions control equipment is only to be

considered in PTE when it is inherent in the design of the equipment. For example, a boiler equipped with a low NOx burner or a generator with a lean burn engine may include emissions reduction from those controls when calculating PTE. Conversely, a dust collector used to collect saw dust from wood working operations which is not physically required to operate while using the associated wood working equipment must not be included. The emissions reductions due to this control equipment is not allowed to be included as part of the PTE because its operation is not inherent to the operation of the wood working equipment. Stated more simply, the wood working equipment can be operated regardless of whether the dust collector is turned on or connected.

The EPA has published general guidance for calculating PTEs, however many of their assumptions result in excessively conservative emissions estimates and possible improper categorization as major sources when this would otherwise not be warranted. A well published example of this is the EPA's use of 500 hours per year for emergency generators and fire pumps. Statistical analysis by the AFCEC of emergency generator and fire pump operation shows that >98% confidence in PTE limits of 160 hours and 40 hours respectively for those sources. This is a significant reduction in potential emissions and can have a large impact on PTE estimates and subsequent major source determinations.

7.2 Types of PTE

Potential emissions are not only calculated to estimate maximum theoretical emissions; in some cases the actual anticipated emissions from the source(s) must be calculated as well. This type of potential to emit reflects the quantify of emissions that the source owner/operator believes will be representative of typical operations once the source is placed into service. In addition to the maximum PTE estimates, these "actual potential" emissions are utilized when developing some emissions source permit applications. The need for both kinds of potential emissions estimates varies between regulatory agencies and permit types and personnel developing permit applications must understand the regulatory requirements and expectations of their permitting authority regarding the emissions estimates to be included. As with other steps in the permitting process, regulatory coordination is key to ensure an efficient, timely approval of permit applications.

7.3 AF Standard PTE Methodology

The AFCEC has developed a series of standard methods for calculating PTEs. These include but are not limited to; statistical analysis of typical Air Force operations, site-specific meteorological data as well as ways to estimate maximum emissions based on current mission profile. This information is provided in the *USAF Potential to Emit Guide*. The methods outlined in that guide can accommodate the majority of use cases in the Air Force, however in more challenging cases evaluating additional considerations and constraints may be necessary.

7.4 Additional PTE Constraints

As mentioned, the PTE for a piece of equipment is in most cases not 8,760 hours per year. The definition above makes two critical statements to consider; in the first sentence it states, "under its physical and operational design," while the following sentence states, "Any physical or operational limitation on the capacity of a source to emit an air pollutant…shall be treated as part of its design…"

These two statements provide us with some critical questions which must be asked when calculating PTE:

- Are there any equipment or design parameters to consider?
- How long is the emissions source intended to operate per year?

Although military organizations are a 24/7, round the clock operation in some regards, most units do not function in this way. For example, a normal work week is 40 hours over five week days. Although personnel working in security forces and flight operations may be on duty at all times, most maintenance shops (excluding depots) are limited to a normal work week. As such, with typical manning, most shops would be limited to 40 hours per week, 52 weeks per year of operation (2,080 hours). Conversely, consider a base which performs depot level maintenance on aircraft. Due to the significant workload and production schedule requirements, these facilities may operate two, three or even four work shifts in a day. In those cases, the PTE for emissions sources operated by those shops would be greater in order to reflect that work schedule.

This kind of operational limit should also be considered with evaluating workload. A common example would be an aircraft painting operation; assume that it takes three days to de-paint an aircraft, three days to prepare it for painting, two days to paint and another day to complete the job for a total of nine days from start to finish. Assuming a single shift, five day per week shop, the maximum number of aircraft that could be painted is just under 29. Since aircraft maintenance is well defined, the quantity of paint and primer needed for each aircraft is likely known and could be multiplied by the theoretical number of aircraft that could be painted. Without changing the operational parameters of the shop (number of personnel, shifts, workdays/week, etc.) the PTE would be limited by those factors.

Similar to the operational limits due to manpower, equipment limits must also be considered. When specifying equipment such as boilers or generators, engineering studies and calculations are performed and compared against facility design criteria to determine appropriate equipment sizing. In this way, equipment is properly sized for the job it will be performing so that it will be both efficient and provide an appropriate equipment lifespan. An example of this would be determining the "heat load" required to maintain a building at a comfortable temperature for the personnel working there. The calculations to determine the proper size for the furnace take building size, age, design and geographic location (weather) into account. As such, two identical buildings; one

in Florida and one in Alaska would have significantly different design parameters with a larger furnace designed to operate more days per year being needed in Alaska and a smaller one which is expected to operate fewer days per year in Florida.

One additional example of design constraint are those placed on equipment from the manufacturer. In some cases standards are developed for certain categories of equipment; for instance emergency generators. Generator manufacturers design their units to function in different use cases (emergency backup vs. primary power) with built in safety factors appropriate for the task to ensure that their equipment is reliable. The International Organization for Standardization (ISO) has developed a standard for engine driven generators, ISO 8528, *Standard for reciprocating internal combustion engine driven alternating current generator sets*, which most manufacturers adhere to. This standard defines applications, ratings and performance of generators, of which the Emergency Standby Power (ESP) parameters are of the most interest to the Air Force, since most generators are designed/rated for this use. Per the ISO ESP standard, a generator designed to that specification is limited to 200 hours per year of operation with a maximum average load factor of 70%. Again, relative to the EPA's 500 hour per year PTE, this is a significant reduction in potential emissions and may impact the classification of a base as a major source.

Prior to considering use of more advanced PTE constraints, coordination with regulatory agencies is necessary as some have published their own guidance and placed restrictions on what is/isn't allowed in permit applications.

7.5 Operating Limits as PTE

In addition to use of EPA, Air Force or other design or operational parameters when calculating PTEs there exists another option, utilizing operational limits. In cases where a facility would otherwise be classified as a major source, environmental management flight personnel may opt to coordinate with base leadership to impose operational limits in order to reduce their PTE and avoid a Title V permit. This is what is known as a synthetic minor source because the requested operating limits "artificially" cause them to be a minor source as opposed to a true minor source, which would not require incorporation of such limits to reduce PTE.

Use of operating limits is a valid way to limit an installations PTE to below the major source threshold, however must be used with caution. When incorporating operating limits into a PTE, their use does not end there as those values/parameters will subsequently be incorporated into the final permit and dictate the maximum quantity of operation allowed. These limits must meet two criteria, first, as mentioned before, they must be Federally enforceable. Second, any limits adopted in the operating permit must allow the installation to accomplish its mission without exceeding them. For example, assume that a base typically uses 500 gallons of paint per year in their aircraft corrosion control shop, so wishing to limit their emissions a limit of 400 gallons per year is

incorporated into the permit. The installation has now "painted itself into a corner" in that it cannot meet its mission requirements for painting aircraft without exceeding their permit limit.

Use of permit limits should be carefully evaluated prior to proceeding; coordination with installation leadership and operations personnel must accomplished to ensure that realistic limits are implemented and that the ramifications of exceeding them are well understood. Support from regulatory agencies may also be necessary to ensure that proposed limits are acceptable and permit is structured so that demonstrating compliance with them is not overly complicated.

7.6 Calculating PTE

PTE calculation methodology only differs slightly from how actual emissions estimates are generated. Instead of using actual throughput and operational parameters as with actual emissions estimates, PTE calculations rely instead on assumptions for those parameters; number of hours, equipment load, maximum quantity of material that could be processed/used, etc. As with actual calculations, the correct Emissions Factors (EF) must be selected and used. For example, selecting the proper engine family/tier for generators, or the correct low NOx factor for boilers and heaters.

Since the establishment of the various New Source Performance Standards (NSPS), use of engines and boilers that are not equipped with pollution controls has decreased over time as sales of new equipment having emissions controls has been phased in over the last 10-15-20 years. Because of this, use of AP-42 emissions factors is not appropriate in many cases as some of the most commonly used factors only address "uncontrolled" equipment and do not take the modern requirements and emissions limit certifications into account. For example, the NOx emissions factor for boilers can be as high as a factor of three or more greater for an uncontrolled source vs. a newer unit equipped with a low NOx burner. The AFCEC air emissions guides should be referenced when selecting emissions factors to ensure use of the most current and appropriate values. The AFCEC guides provide the most current versions of Air Force approved emissions factor sets.

Use of APIMS for both AEIs and PTEs is required by AFMAN 32-7002, so long as installations maintain this data and keep it current, performing PTE estimates is a simple process in the system. The installation Air Quality Manager (AQM) needs to only update the operating limits and assumptions in the APIMS PTE setup and estimates will be calculated using the same emissions factors as were used in the most recent AEI or as currently configured if updates have been made. Using a series of standard and/or custom reports all calculation parameters can be displayed and exported as necessary to be provided to regulatory agencies or others.

Again, as with many of the topics discussed in the guide, many regulatory agencies have different standards, policies and procedures that must be followed. If questions arise, coordination with regulators may be necessary to develop a technically acceptable PTE.

7.7 Common PTE Errors

Common errors in PTE calculations include, but are not limited to:

- Excessively conservative equipment operating limits
- Inclusion of control devices which are not "inherent" to the operation of the equipment
- Incomplete or outdated equipment inventory
- Use of incorrect or overly conservative (uncontrolled) emissions factors (AP-42 vs. NSPS)
- Inclusion of exempt or other sources which should not have been included

PTE calculations can be extremely important, especially for installations which may be near or just over the major source threshold. Simple errors, lazy data management or poor assumptions can mean the difference between a less restrictive minor source and a more burdensome Title V permit.

7.8 PTE Additional Reading

More detail regarding PTE is available in the AFCEC *USAF Potential to Emit Guide*. This guide provides significant detail of methodologies developed by the Air Force for calculating PTEs. Additionally, the *Air Emissions Guide for USAF Stationary Sources* as well as the *APIMS AEI Procedure* guides are extremely useful when evaluating PTEs.

8 MAJOR SOURCE DETERMINATION

All of the steps outlined in this guide up to this point are an integral part of performing a major source determination. Once sources have been identified, grouped by; location, common control, and SIC, and PTEs calculated only a single question remains, "do any of the emissions estimates exceed the applicable major source threshold?" If the answer is, "Yes", then a major source has been identified and must be permitted appropriately.

The definition of a major source as previously discussed is one that has a PTE for one or more CPs which is greater than 100 TPY, or has a PTE which exceeds 10 TPY of any individual HAP, or 25 TPY of total HAPs. This definition has been made more restrictive in areas which are non-attainment for certain NAAQS. In those cases, when the attainment status has been designated as "serious" or greater, the major source thresholds have been lowered significantly as detailed in Table 8-1 below.

Table 8-1. Major Source Thresholds By Attainment Status

Area Designation	VOC or NO_x (tpy)	CO (tpy)	PM_{10} (tpy)
Attainment	100	100	
Marginal	100	100	100

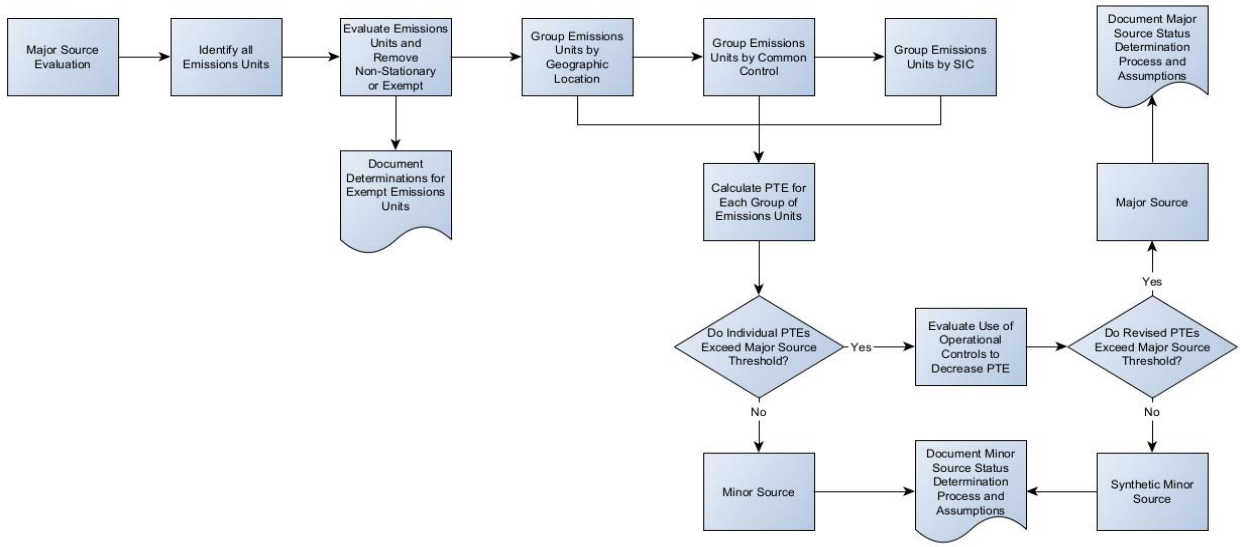
Area Designation	VOC or NO_x (tpy)	CO (tpy)	PM_{10} (tpy)
Moderate	100	100	70
Serious	50	50	
Ozone Transport Region (other than severe or extreme)	50 (VOC only)		
Severe	25		
Extreme	10		

SOURCE: 40 CFR 70.2 Definition of a "Major Source"

Once an existing minor source installation has been identified as now being a major source, the installation must develop and submit a Title V permit application to their regulatory authority and/or develop and implement a series of operational limits which limits potential emissions to less than major source and obtain a synthetic minor permit. The timeline for permit application submittal varies between regulatory agencies, therefore, review of applicable regulations and processes is necessary to ensure compliance.

A general overview of this process is included in Figure 8-1 below.

Figure 8-1. Major Source Determination Overview



8.1 Criteria Pollutants

Major source determinations are most often thought of in terms of criteria pollutant emissions as those chemicals make up the majority of emissions of regulated air pollutants on AF installations. As stated in 40 CFR 70.2 (Section 2.1 of this guide), fugitive emissions sources should NOT be

included when performing a major source determination for criteria pollutants. Additionally, although an installation can be classified as a major source for CPs, it is unlikely that it will also be a major source for HAPs. The determination for each type of pollutant is made utilizing a different set of guidelines and requirements.

Upon completing evaluation of an installation, it will then fall into one of three categories: Major Source, Minor Source or Synthetic Minor source. Although permits by other names exist, each fall into one of these groups. For example, a standard exemption or permit by rule is a type of minor source permit, while a Federally Enforceable State Operating Permit (FESOP) is a synthetic minor.

8.2 Hazardous Air Pollutants

While installations classified as major sources for CPs are not necessarily uncommon in the AF, currently fewer than 10 bases are classified as a major source of HAPs. Being classified as a major source of HAPs results in becoming subject to one or more very stringent NESHAPs. Any time an installation has questions regarding their status and believes that they are now a major source of HAPS, they should contact the AFCEC Air Quality SME for guidance prior to performing any permitting action.

Although CPs comprise the majority of regulated pollutants, HAP emissions can equal and/or exceed the number of regulatory requirements placed on CPs. A significant and important distinction between the major source determination process for these two groups of pollutants is the requirement to include fugitive emissions when evaluating HAPs. As such, the level of effort to calculate PTE for HAPs requires significantly more detail than is required for CPs. For example, calculating the emissions from a fuel storage tank would only require evaluating total VOCs emitted when evaluating CPs, however the same source requires speciation of those VOCs into their constituent chemicals when estimating HAP emissions. Additionally, other fugitive sources of VOCs, such as degreasers and general solvent and adhesive use must be tracked when making a HAP major source determination. This will require significant effort to identify HAP containing materials and estimate their potential emissions; see the AFCEC Potential To Emit Guide for additional information.

In addition to requiring inclusion of fugitive emissions, the major source threshold for HAPs is also evaluated differently. The major source threshold as defined 40 CFR 70.2 (Section 2.2 of this guide) is a source which, “emits or has the potential to emit 10 tpy of a single HAP, or 25 tpy of all HAPs.” Instead of evaluating each pollutant separately as with CPs, total HAP emissions must also be calculated. This is further complicated by the fact that unlike the short list of six CPs, the list of HAPs currently 187 chemicals and chemical categories. These 187 are comprised of 170 distinct chemicals (including isomers) and 17 chemical compounds. The 17 chemical compounds included in the HAP list are chemicals which include one or more of a listed set of elements or

functional groups. This list is included in Attachment 1 of this document; however it should be noted that chemicals have both been added and removed from the list of HAPs and it is therefore subject to change as new chemical hazards are identified.
One further distinction between CP and HAPs is the terminology used to identify the classification of emissions sources. HAP emissions sources are classified as "major" or "area" sources, with area sources being analogous to a minor source.

8.3 Greenhouse Gasses

Greenhouse Gases (GHG) are a group of compounds when emitted to the atmosphere are thought to have a negative impact by trapping heat in the earth's atmosphere thereby raising the overall average temperature of the plant resulting in potentially harmful climatic changes. The most common chemical considered to be a GHG is carbon dioxide (CO_2). Other chemicals have been identified as being more capable of this heat trapping effect and have had their relative strength, i.e. their Global Warming Potential (GWP) measure/estimated relative to CO_2. This relative quantification of the property is known as the CO_2 equivalent (CO_2e). Unlike other permitting and reporting activities, emissions of these chemicals for the purpose of GHG reporting and permitting are converted into their CO_2e mass instead of their normal, physical mass. For example, GWP of methane (CH_4) is estimated to be 25, this means that it's heat trapping effect is 25 times that of CO_2 of therefore, every pound of methane emitted has a CO_2e of 25 pounds. See the AFCEC *Air Emissions Guide for Stationary Sources* for additional information regarding GHGs and their associated GWPs.

Regulation and permitting of GHG emissions is a relatively new and still evolving subject. Current Federal regulations are only applicable to the largest sources of GHG emissions; however, a limited number of State and local regulatory agencies have put GHG emissions programs in place which have lower thresholds. As with CPs and HAPs, it is important to be aware of any additional or different regulations which govern GHG emissions at your facility and ensure compliance with those regulations.

Although an installation may be subject to and required to report under the GHG Reporting Rule, that does not necessarily mean that it is a major source of GHG emissions. Under the Federal GHG permitting standards, a facility cannot be deemed a major source for GHGs alone, it must also be designated as a Title V, major source in addition to emitting greater than 100,000 tpy of CO_2e. For additional information, please see the *USAF Guide to the Mandatory Greenhouse Gas Reporting Rule and Greenhouse Gas Tailoring Rule*. For additional support, contact your AFCEC ISS if necessary.

8.4 Documentation

Major source determinations are an integral part of managing the Air Quality Program at every AF installation, especially at minor source bases. Simply stating that an AF base (group of emissions

units) is a; Major, Minor or Synthetic Minor source without having supporting documentation of how that determination was made leaves installations vulnerable to enforcement actions. Maintaining documentation of how a major source determination was accomplished is an often overlooked, but vital step to air quality compliance.

Without the necessary information, installations are not readily capable of demonstrating compliance with Title V of the CAAA to regulatory agencies, which may therefore require that the determination be re-accomplished. As such, environmental management flights must maintain documentation of major source determinations which includes, but is not limited to; list of sources evaluated with specifications, common control determinations and SIC evaluations groupings as well as assumptions used when calculating PTE. This is even more important at minor source bases where status is more likely to come into question in areas where minor source permits are not required.

9 PERMIT TYPES

9.1 Operating Permits

The term operating permit is a used broadly to generally mean any air permit which allows a source which emits pollutants into the air to operate. As such, simply stating that a base has an operating permit does not provide enough detail to understand the installation's classification. A discussion of the various operating permit types is included below. This discussion is focused on the terminology used at the Federal level, however, keep in mind that State and local regulatory agencies may use the same, similar, or even completely different terms. It is important to understand how the terms used by regulatory agencies corelate to the Federal definitions and requirements.

Operating permits serve multiple purposes including, but not limited to, establishing/documenting operational limits for individual emissions units and sources, outlining compliance requirements (testing, tracking, monitoring, recordkeeping, etc.) and as a reference for regulatory citations applicable to the emissions source.

For several reasons, a single AF base can hold more than one air operating permit; this can be in the form of any combination of multiple Title V, synthetic minor and minor permits. Careful and thoughtful grouping of emissions units into emissions sources as discussed in Chapters 4, 5 and 6 based on location, common control and function can result in more streamlined and less onerous permitting requirements. In some cases, however, issuance of multiple permits cannot be avoided due to the geographic layout of the installation where the area that it occupies spans multiple counties, municipalities and/or regulatory agencies/permitting authorities.

Use of the concepts discussed above can significantly reduce environmental liability and the level of effort required to manage an installations air quality program. For example, segregation of an installation by SIC would result in emissions units such as hospital boilers and aircraft paint booths being on separate permits which are more tailored to those specific emissions units. Because this approach can result in more permits to manage, careful analysis of the risks and rewards of each path must be considered. Regardless, installations must not abuse the practice of disaggregation and attempt to circumvent CAAA permitting requirements in the process.

9.1.1 Major Source / Title V

Installations deemed to be a major source of CPs or HAPs must obtain a Title V operating permit. The process to develop an application and be issued this kind of permit can be very difficult and take a long time to complete. In some cases, the length of time between application submittal and permit issuance can be years. As such, it is of the utmost importance to coordinate with regulatory agencies to ensure that the process goes as smoothly as possible.

Title V permits are intended to be a compilation of all emissions units and applicable requirements at an emissions source. The kind of information included in a Title V varies between regulatory agencies with many having a standardized format. Information included in the permit documents includes, but is not limited to; a list of both regulated and exempt emissions units with limits for operation and emissions, monitoring, reporting, testing and documentation requirements, regulatory citations as well as permit issuance and expiration dates. In the case of Title V permits, they are issued for a period of five years, after which they must be renewed.

In addition to the more frequent renewal cycle for Title V permits, these permits also have more stringent data requirements which require that three to five or more years of records be maintained at all times. Keeping these records is not only a time consuming task, but also one which introduces additional regulatory risk due to the potential for records to go missing or otherwise be incomplete. Missing operating logs is a common source of non-compliance issues which is compounded by personnel turnover at both the shop and environmental management level. Being unable to meet requests for compliance demonstrations is a key reason to ensure that all emissions unit details and operating logs are maintained in APIMS.

Major source permits also bring with them additional data collection, emissions calculation and reporting requirements. In most cases, emissions must be reported as a rolling 12-month total which must be completed each month. As such, operating logs must be collected monthly so that the required emissions estimates can be calculated and reported. This greatly compounds the level of effort required to collect operating logs when compared to synthetic minor and minor installations which may be able to get away with a single, annual log for each emissions unit (12 data points vs. one).

Semi-annual compliance reports are required and must be coordinated with the installation's responsible official (typically the base commander). These semi-annual reports include a compliance statement where the responsible official attests under penalty of law that the installation is and has maintained compliance with all permit provisions over the time period covered by that reporting cycle. Non-compliance events must typically be reported within 24 hours to the regulatory agency and included in these reports as well.

Being a major source and holding a Title V permit increases the level of scrutiny on an installation. Facilities having a Title V permit may have to deal with recurring as well as no-notice regulatory inspections from a State or local regulatory agency, as well as the Federal EPA. Additionally, Title V permits include "self-incrimination" clauses which require that the facility report any and all incidences of non-compliance, no matter how minor they may seem. This self-incrimination is one of the biggest reasons to reduce emissions to a level where a synthetic minor, or minor permit is appropriate. In many cases, when an installation reports a non-compliance, a regulatory inspection will be triggered by this reporting since all non-compliance events reported to state or local regulatory agencies are also provided to the Regional EPA office as well. Although it may be unpleasant, failure to self-report typically carries heavier penalties than those that would be garnered from the initial non-compliance itself.

9.1.2 Synthetic Minor

Synthetic minor permits are a highly flexible permitting tool and similar to other kinds of permits in that they will contain much of the same information. The key difference is that the operating and subsequent emissions limits included in them are intended to restrict potential emissions from and installation to less than that of a major source. As such, care must be taken to ensure the accuracy of the list of emissions units and assumptions used to estimate emissions so that compliance with those limits can be maintained and demonstrated to regulators.

Like Title V permits, synthetic minor permits require periodic renewal, however at a reduced frequency and level of effort required. In most cases, synthetic minor permits are issued for periods of ten or more years and may only require simple periodic updates when a significant number of emissions units have been changed. Renewal efforts are also typically simpler, take less time to complete and do not require public notice like Title V permits do.

As discussed in Chapter 7, operating limits established in synthetic minor permits must be "Federally enforceable", that is, they must be quantifiable, objective measurements of emissions unit operation or process throughput which ensure compliance with the emissions limits established in the permit. Examples of these kinds of limits include, but are not limited to; engine operating hours, quantity of fuel consumed, mass of paint or solvent used.

Record retention for synthetic minor permits can vary, as does data collection frequency. In some cases, operating logs must be collected monthly, while in others a single annual value will suffice. Similarly, emissions calculations may likely only be required to be performed and submitted on an annual basis without the need to perform 12-month rolling averages. These requirements vary between permits and regulatory agencies and must be reviewed to ensure that site-specific permit requirements for emissions calculations and reporting are understood.

In addition to potentially being subject to fewer regulations, synthetic minor permits do not require the inclusion of the self-incrimination clauses that are mandatory in Title V permits. Although they are not required, synthetic minor permits held at some AF installations still include these self-incrimination provisions. When developing new, or revising a minor source permit of any kind, environmental management flight personnel should work to have these provisions removed whenever possible. Removal of these requirements does not alleviate an installation from ensuring compliance with their air permit, however it can make addressing minor non-compliance issues easier to manage as they can often be handled in-house without the need to include regulators. That said, permits and regulations vary and should be reviewed to ensure that environmental management personnel are aware of all reporting requirements.

9.1.3 True Minor and Minor

Where synthetic minor source permits are a step down from Title V, minor source permits are yet a further step down from synthetic minor. Although they can seem quite simple, minor source permits can become cumbersome due to the number of permits that may be issued to an installation. Additionally, even though being a minor source is desirable for several reasons, minor source installations must carry the burden of continually being able of demonstrating that they are not a major source. Where installations which have Title V or synthetic minor permits may be able to exclude tracking of trivial or insignificant sources, minor source bases may not have that luxury.

Minor source permits can come in a variety of forms that range from something that appears similar to a Title V or synthetic minor permit to a short series of compliance requirements for an individual emissions unit. In some cases, it can be just a letter from the regulatory agency stating the installations status with directions to provide notification if their PTE changes such that their major source status would change. Often the coordination with regulators is significantly less for minor source facilities with some minor source permits being self-executing and not requiring any regulatory coordination.

The most basic of minor source permits governs what is known as a “true minor” emissions source; this is one where the unrestricted emissions of a source (typically an entire base) are such that they are below the major source threshold. A common misconception is that to be classified as a true minor source, the PTE must be calculated against 8,760 hours of operation per year. The correct

interpretation of the definition of major source indicates, however that the PTE be calculated against the maximum design and operational capacity of the emissions unit/source as discussed in Chapter 8. In other words, the installations PTE should be calculated against its current manning and operational design limits and not arbitrarily against theoretical year-round operation. Further, use of these operational and design limits should not be misinterpreted to constitute operational limits where the source would thereby be classified as a synthetic minor.

Conversely, a minor source may not necessarily constitute the entirety of an installation, but my represent only a single emissions unit, or small group of emissions units at an AF base where other portions of the base may themselves be classified as a major, or synthetic minor source. In these cases, the minor source is not typically referred to as a true minor due to the fact that the facility as a whole itself does not meet the minor source definition. Minor source permits therefore can cover a broad range of emissions units, quantities, sizes, types, etc.

As with most other parts of minor source permitting, collection of operating logs and calculation of emissions is a less complicated task as well. In most cases, minor source installations are able to collect operating logs which span a year as where Title V and synthetic minor sources may be required to collect data monthly. Similarly, emissions estimates are generally calculated on an annual basis and may not require regulatory reporting. Regardless, as with other permit types, environmental management flight personnel must be familiar with their recordkeeping and reporting requirements as they can vary between permits and regulatory agencies. An example of a minor source permit which requires significant recordkeeping is a permit by rule utilized in one state which requires multiple hourly rolling totals for painting operations. This kind of "minor detail" slips by many new air quality personnel but can have significant compliance ramifications for failure to properly maintain records and calculate emissions within the timeframe required.

9.1.4 Standard Exemptions

Standard exemptions (SE), also known as Permit By Rule (PBR) are a kind of cookie cutter permit which is designed to allow operators of small or limited numbers of emissions units to meet all applicable CAAA requirements in easiest way possible. SEs are developed by regulatory agencies with standard text and forms published for public use. Typically they are comprised of a series of thresholds where if an emissions unit falls below or between them, the permit can be used. An example of the kind of thresholds included in SEs include, but is not limited to; quantity of paint sprayed, or material processed over a period of time. These are usually simple, easily quantifiable metrics where both the operation and emissions from the emissions unit can be captured.

SEs vary in their usage and how they are handled by regulatory agencies. Some SEs are "self-executing" and do not require any regulatory notification, while others require that a form be completed which contains information about the emissions unit operator, its specifications, anticipated operating parameters and quantity and type of emissions anticipated. Regardless of

whether the SE is self-executing, or must be registered, it is common that a copy of the SE is maintained at or near the emissions unit.

As with the other permit types discussed, it is likely that an installation will hold multiple permits of different types. In the case of SEs, when a facility holds other "larger" permits, the SEs must be incorporated into those other permits. This usually simplifies the other permit and will only include basic information about the emissions unit with references to the compliance requirements contained within the SE.

Recordkeeping and reporting under SEs are generally simple requiring only minimal data collection, however as discussed in the previous section, some SEs do require very detailed operating logs and emissions calculations. The example cited which required hourly rolling emissions calculations is more extreme than most SEs, however air quality personnel must ensure that they are aware of and understand all requirements related to SEs being used or being considered for use on their installation.

9.1.5 Exempt, Insignificant and De-minimis Sources

The terms "exempt", "insignificant" and "de-minimis" when used to describe emissions units are at times related, while other times not. Confusion can arise with the use of these terms due to the fact that in some cases an emissions unit may be deemed to be so small as to be insignificant or de-minimis and therefore exempt from permitting. Although this may at first appear to be a different way of saying the same thing, for the purposes of air permitting, it is not.

Examination of air quality regulations at the State level reveals that in some area's exemptions have been created which remove the requirement to obtain air operating permits for certain sizes or equipment or other minor processes because the emissions from them are so small that they do not have a significant negative impact on air quality. An example of this is where a state has exempted emergency generators with a brake horsepower (bhp) rating of less than 50 bhp from the requirement to obtain an operating permit.

Alternatively, a major source installation may have its diesel fuel tanks classified as insignificant due to the extremely low emissions from them. Although these tanks were considered to be insignificant, they were not exempt from permitting and were therefore included in the installations permit and classified as such. Although still included in an installations permit, these insignificant typically require less tracking and have fewer compliance requirements compared to their non-insignificant counterparts.

Applicable air regulations should be carefully reviewed with developing new or modifying existing operating permit applications to evaluate sources that could be exempt, insignificant or both to ensure proper permitting. Incorrect classification of these small, low impact emissions

sources can result in inclusion of unnecessary compliance requirements. When questions arise, regulatory coordination is a valuable when making these determinations.

9.1.6 Greenhouse Gasses

As mentioned previously, in order for an installation to be classified as a major source of GHGs, it must already be classified as a major source and have emissions in excess of 100,000 tons of CO_2e. This threshold is not an insignificant number and is more difficult to attain than might otherwise be thought. As such, it is not likely that AF installations will be classified as a major source for GHGs. That said, however there are more stringent regulations which have been put into place at the State and local levels which installations must be in compliance with. Installation environmental management flight personnel should be aware of any State or local regulations applicable to their facility.

9.1.7 Best Practice – Permit Flexibility

One concept which is applicable to all permit types is to work towards operating limits and emissions unit configurations within the document itself which allow the most flexibility as possible. A common challenge faced at AF installations is ensuring that changes to emissions units are tracked and permits are updated accordingly. Multiple Notices of Violation (NOV) and Enforcement Actions (EA) have been issued to bases for failure to maintain current inventories of emissions units. It is all too common to have multiple organizations on a base which execute their own contracts or purchasing, which results in new generators, boilers or other kinds of emissions units being brought onto base without the knowledge of the environmental management flight.

On the surface, this appears to be a simple concept, just track and report emissions unit changes to the regulatory agency as necessary. In practice this is significantly more difficult due to the number of avenues that equipment can be brought onto a base by host and tenant organizations. A method to combat this challenge relative to air operating permits is to work with regulatory agencies to include language within permits that allows for in-kind emissions unit replacement and/or installation-wide production limits for the various categories of pollution emitting activities. An example of this is to limit the installation wide heat input rating for all boiler, or similarly the base wide power production capability for emergency generators instead of the restrictive equipment level tracking which is included in most permits. So long as the base maintains records of the total capacity for those emissions units, it is in compliance with the requirements of the permits and need only update the emissions unit listing on an annual basis, or when the permit requires renewal.

One of the challenges of this approach is to adequately estimate potential emissions for the various emissions units when equipment spans a wide range of ages and sizes and therefore requires significantly different emissions factors. Many facilities have implemented this kind of permit

configuration by utilizing emissions unit groups which are based on equipment type, size, age and operation. For example, a base might have multiple emissions unit groups covering emergency and non-emergency generators broken out by size (horsepower) and age (EPA emissions tier / NSPS applicability). As equipment ages and is replaced it obviously will be replaced by newer, more efficient and less polluting equipment, as is the case with NSPS boilers and engines.

Incorporating this kind of common-sense flexibility into operating permits can allow installations to replace aging and worn-out equipment without the need for regulatory coordination prior to commencing construction. Having a well formulated plan which is supported by Federally enforceable operating limits is necessary for this approach to be successful. Installation environmental management flight personnel must be able to clearly explain to regulators why this kind of permit flexibility is advantageous to the AF, the regulatory agency and still protective of the environment at the same time. An easy way to summarize this is to show that as older equipment is replaced, newer units are subject to more restrictive emissions standards (e.g. Tier 0 vs. Tier 3 engines) and although the production capacity will stay the same or slightly increase, both the actual and potential emissions for the installation will decrease. In this way, facilitating a more streamlined and therefore faster equipment replacement process is beneficial to all parties.

9.2 Construction Permits

When any new or modified emission source is constructed on an Air Force Base, that source must be evaluated and permitted under Federal guidelines known as New Source Review (NSR). The NSR program is a pre-construction emission source permitting program established by the EPA as part of the 1977 CAA Amendments. This program was designed to protect air quality in designated areas defined by the NAAQS by requiring owners or operators to obtain a preconstruction NSR permit to limit air emissions. Depending on the area and its NAAQS designation, each new or modified source will need one (or more) of three different NSR permits:

- Minor NSR Source Permit
- Nonattainment New Source Permit
- Prevention of Significant Deterioration (PSD) Permit

9.2.1 NSR / PSD Overview

As with other programs established by the CAAA, state and local regulatory agencies have implemented their own set of regulations and requirements under NSR/PSD. Not all regulatory agencies have been granted approval of their proposed programs. Due to the number of EPA approved state and local programs in existence, there can be significant variety in the regulations and requirements between regulatory agencies. Environmental management flight personnel must be aware of the status of the NSR/PSD program applicable to their facility and whether submittal to the Federal EPA is required as well.

Each of these permits addresses a different NAAQS area status (attainment/maintenance/non-attainment) and applies to new major and minor sources as well as modification of an existing major source. A thorough understanding of NAAQS area definitions, NSR terminology, and major and minor sources under NSR will help ensure proper new source permitting across all applicable Air Force installations.

As discussed previously, the CAA established a series of NAAQS which limit the maximum permissible ambient air concentrations for the six CPs. The CAA requires the EPA to evaluate areas (state, county, metropolitan statistical area, etc.) against the primary and secondary NAAQS and subsequently classify each of them with one of four designations based on whether that area meets or does not meet any or all of the individual NAAQS. The four classifications/designations are:

- Attainment: area meets the applicable standard
- Nonattainment: area does not meet the applicable standard
- Maintenance: area previously did not meet the appliable standard (nonattainment), however does now meet the applicable standard, or
- Unclassifiable: indicates insufficient monitoring data for area designation, presumed to be in attainment

NSR permitting requires knowledge of the NAAQS and area designations to determine the appropriate type of permit required for any new or modified emissions source. Area designations can change as frequently as annually, and it is therefore necessary to be aware of local area designations and when changes are made to them. It is necessary to be aware of local NAAQS area designations, which can change annually. To ensure that the most current designations are known, local air quality regulators should be consulted for the most up-to-date area designations.

Figure 9-1. PSD / NSR Overview

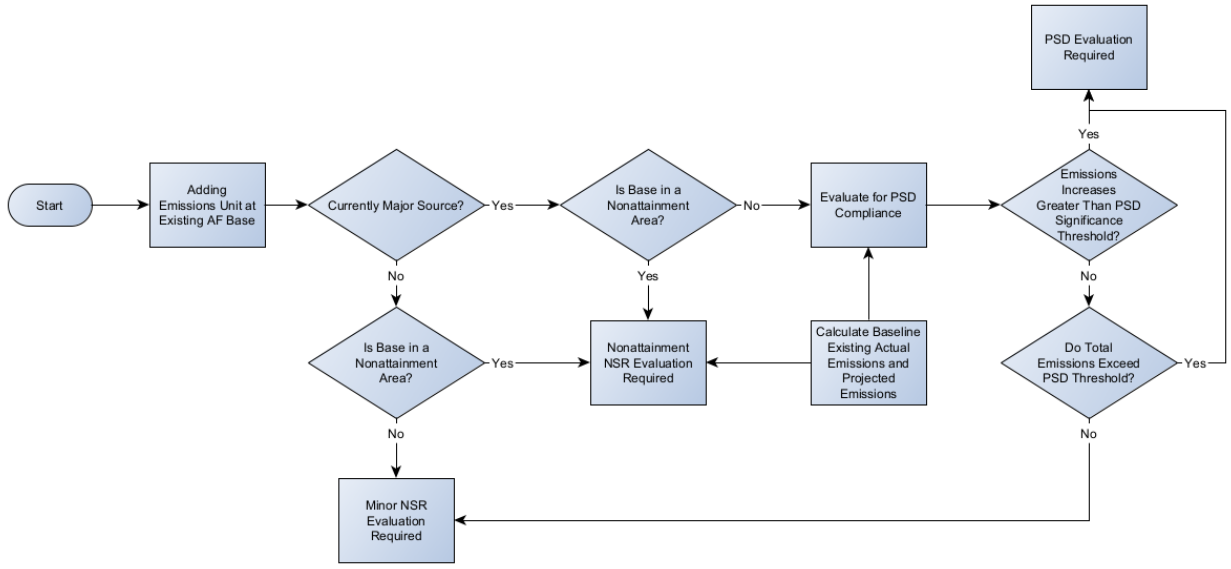
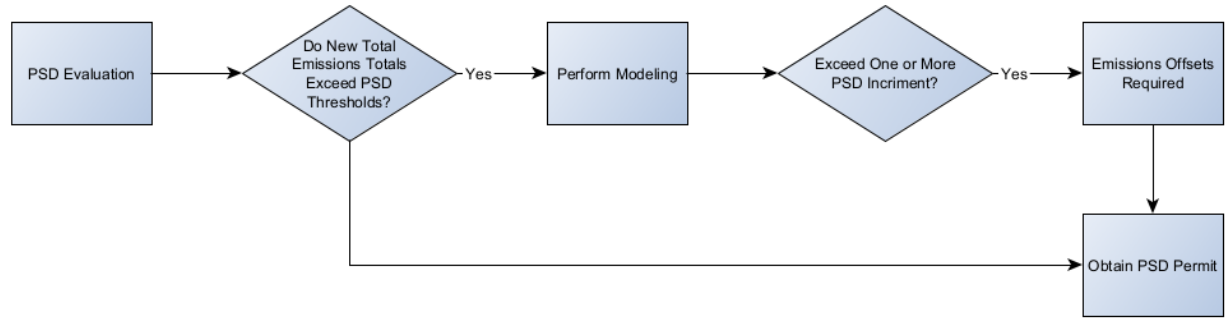


Figure 9-2. PSD Overview



9.2.2 NSR / PSD Permitting Process

Any planned new facility or modification to an existing facility must undergo an NSR evaluation and permitting process. Most NSR permits are issued at the state or local level by their respective regulatory agencies, which can develop their own permitting program so long as they meet the minimum requirements established by the EPA. As such, program policies and procedures can vary greatly between regulatory agencies with some being more stringent than the Federal standards. It is important that installation AQPMs are aware of local regulations and seek out guidance when questions arise.

NSR permits specify what construction is allowed, source emission limitations, and how the source must be operated and monitored. If a source resides in a NAAQS designation area, that source is

required to get one (or more) of three permit types under the NSR program: a minor source permit, a nonattainment major source permit, or a PSD major source review. The applicable permit type is initially determined by whether the source PTE emissions are in excess of the applicable major source threshold. The PTE calculation process is the first example of state-to-state variation within the NSR permitting process. Care should be taken to determine the appropriate calculation methodology and application format required by the state in which the application will be submitted.

9.2.3 Major Source NSR Applicability

To determine if a stationary source is considered "major," under NSR, the first step is to calculate the emission source's baseline actual emissions. Under NSR permitting, the term "source" can have multiple meanings. For the purposes of Major Source NSR permitting, the term "source" is defined by the EPA as "any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant" (40 CFR 51.166(b)(5)). Additionally, "any building, structure, facility, or installation" is defined as "all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same "Major Group" (i.e., which have the same first two-digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-006 and 003-005-00176-0, respectively) (40 CFR 51.166(b)(6)). In most cases, the term refers to the entire plant site.

Determining which NSR permit is applicable for a given source first requires that source's baseline actual emissions to be above or below the major source threshold for nonattainment NSR or PSD NSR. Note that "major source" thresholds are different between nonattainment NSR and PSD NSR. For major source designations, an emission source would have to emit beyond the established threshold as summarized in Table 1 below. If a source's baseline actual emissions exceed any of the thresholds listed in Table 1, it is a major source and requires either a nonattainment or PSD permit as applicable, otherwise a minor source permit is appropriate.

Table 9-1. – NSR Major Source Thresholds (nonattainment)

Nonattainment Areas		
Pollutant	**Nonattainment Classification**	**Threshold (tpy)**
Ozone	Marginal (≥ 0.085 < 0.092 ppm)	100 of VOC or NO_X
	Moderate (≥ 0.092 < 0.107 ppm)	100 of VOC or NO_X

Nonattainment Areas		
	Serious (≥ 0.107 < 0.120 ppm)	50 of VOC or NO_X
	Severe (≥ 0.120 < 0.187 ppm)	25 of VOC or NO_X
	Extreme (≥ 0.187 ppm)	10 of VOC or NO_X
Particulate Matter (10 um)	Moderate	100
	Severe	70
Carbon Monoxide	Moderate (9.1 – 16.4 ppm)	100
	Serious (≥ 16.5 ppm)	50
Sulfur Dioxide, Nitrogen Oxides, $PM_{2.5}$, and Lead	Only one nonattainment classification	100

Table 9-2. – PSD Major Source Thresholds (attainment, unclassified)

PSD Areas (attainment, unclassified)		
Pollutant	**Condition**	**Threshold (tpy)**
Any pollutant regulated under CAA	If source is one of 28 source categories listed in Section 169 of CAA	100
	Any other source	250

To be considered a modified source under NSR, the source must already be defined as an existing major source. Additionally, a source must also undergo a physical change or a change in the method of operation that results in a significant emissions increase (of a regulated NSR pollutant) and a significant net emissions increase of that pollutant. The significance threshold differs by pollutant and, for any unlisted (i.e., unregulated) pollutant such as CO2, is defined as "any emissions rate greater than zero."

9.2.4 Minor Source Permits

Minor source permits are issued to a source it does not meet the criteria to qualify as either a PSD major source or Nonattainment NSR major source. These permits are intended to prevent the construction of sources that would interfere with attainment or maintenance of a NAAQS or violate control strategies put in place in nonattainment areas as well as to avoid PSD or nonattainment NSR designations.

Minor source permit requirements, including required emissions calculations, are subject to state customization. Because these are generally part of a state's implementation plan, conferring with state and local regulators is highly recommended.

9.2.5 Nonattainment NSR

Nonattainment NSR permits are specifically for major sources located in NAAQS areas designated as nonattainment for not meeting the NAAQS requirements for the applicable pollutant(s) in the area. Requirements for nonattainment NSR are generally customized to the nonattainment area and its requirements, however, all nonattainment NSR programs are required to address three points:

- The installation of the lowest achievable emission rate (LAER)
- Emissions offsets, and
- Opportunity for public involvement

9.2.5.1 Lowest Achievable Emissions Rate

The lowest achievable emissions rate (LAER) refers to additional means of achieving the lowest possible emissions rate by implementation of emissions-limiting measures. The LAER can be derived from either of the following means:

- The most stringent emission limitation contained in the state implementation plan (SIP) of any state for such class or category of source; or
- The most stringent emission limitation achieved in practice by such class or category of source

These emissions limitations can be achieved through emission source process modification, additional emission controls, or a change in the raw material processed by the source.

9.2.5.2 Emissions Offsets

Emissions offsets are reductions in actual emissions derived from existing sources in the vicinity of the proposed emission source within the nonattainment area. These offsets are intended to allow for industrial growth in the local economy while enabling the area to continue moving towards attainment status for NAAQS purposes. Offsets can be generated by the source owner via emissions reductions at existing sources (netting) or purchased in form of emissions credits for that pollutant (or precursor). Emissions credits are issued to source owners who have reduced actual emissions in the nonattainment area and can be either “banked” (saved for future use) or sold to other source owners who need them. Typically, offsets must decrease total emissions of the pollutant in the nonattainment area by a ratio of not less than 1:1, but in some cases as high as 1.2:1 or greater. Emission offsets must result in a net decrease in total emissions the pollutant in question. When offsets are not available, regulatory coordination is necessary to evaluate viable alternatives prior to project approval.

9.2.6 Prevention of Significant Deterioration Permits

New and modified major PSD sources are required to undergo major NSR and obtain a permit before commencing construction of a project. The purpose of this requirement is threefold:

- To ensure that economic growth will occur in harmony with the preservation of existing clean air resources
- To protect the public health and welfare from any adverse effect which might occur even at air pollution levels better than the NAAQS
- To preserve, protect, and enhance the air quality in areas of special natural recreational, scenic, or historic value, such as national parks and wilderness areas

PSD requirements are pollutant-specific and only apply in NAAQS attainment and unclassified areas. To be considered a major PSD source, a source must be either a new source or an existing source undergoing a major modification that would significantly increase emissions beyond the major source threshold. The "major source" designation under PSD is defined as any source type that belongs to the list of 28 source categories defined in 40 CFR § 51.166 and 40 CFR § 52.21 that emits or has a PTE in excess of 100 tpy or more of any NSR pollutant, or any other source type which emits or has PTE of such pollutants in amounts equal to or greater than 250 tpy.

Note that for sources belonging to any of the 28 listed source categories, fugitive emissions are also included in emissions calculations. These source categories are industry-specific and not presently found on AF installations; as such, this is not a consideration to be taken into account unless present conditions change.

9.2.7 PSD Applicability

When determining PSD applicability for major new or modified sources, there are emissions calculations and comparisons that must be performed. Before defining these calculations, it is necessary to establish the distinction between a "new emissions source" and an "existing emissions source." A new emissions source is one that has existed for less than two years since the date of first operation, whereas an existing emissions source is defined as a source that is not a new emissions source (has been in operation more than two years). The distinction between new and existing sources is important since a major modification can only apply to an existing emissions source and has specific applicability steps that do not apply to new emissions sources.
For new emissions sources, a comparison of that source's PTE to any applicable NSR pollutant's major source threshold (as listed in Tables 9-1 and 9-2) is required to PSD applicability. If that source's PTE for any regulated NSR pollutant is determined to be significant, then the source qualifies as a new major source under PSD NSR.

For modified sources, a source qualifies as a major modification source under NSR if that source meets all the following criteria:

1. It is an existing major source
2. The modification causes a significant emissions increase (as described in 9.2.8)
3. The modification causes a significant net emissions increase (as described in 9.2.8)

If all three criteria are met, then the source qualifies as a major modification source under PSD NSR.

9.2.8 Significant Emissions Thresholds

When determining PSD and/or NSR applicability for major new or modified sources, "significant" emissions are frequently mentioned. For PSD NSR major new and modified source applicability, the term "significant emissions" refers specifically to defined thresholds for each NSR pollutant. A "significant emissions increase" for a project or source means that the emissions of the specific NSR pollutant in question have exceeded the established increment for that pollutant. These significance thresholds are usually cited in state regulations so check with state or local air quality agencies to verify these thresholds.

Table 9-3. – Significant Emission Rates

PSD REGULATED POLLUTANTS Major Source Modification Significant Emission Rates (SER) 40 CFR § 51.166(b)(23)	
Criteria Pollutant	**SER (tpy)**
Ozone (as Volatile Organic Compounds)	40
Ozone (as Nitrogen Oxides)	40
Carbon Monoxide (CO)	100
Nitrogen Oxides (NO_x)	40
Sulfur Dioxide (SO_2)	40
Particulate Matter (PM)	25
PM_{10} (includes condensable emissions)	15
$PM_{2.5}$ (includes condensable emissions)	10
Lead (Pb)	0.6
Non-Criteria Pollutant	**SER (tpy)**
Fluorides Sulfuric acid mist: 7 tpy Hydrogen sulfide (H_2S): 10 tpy Total reduced sulfur (including H_2S): 10 tpy Reduced sulfur compounds (including H_2S): 10 tpy	3
Sulfuric acid mist	7
Hydrogen sulfide (H_2S)	10
Total reduced sulfur (including H_2S)	10
Reduced sulfur compounds (including H_2S) tpy	10

Source Specific	SER (tpy)
Municipal waste combustor organics (measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	3.2 × 10-−6 megagrams per year (3.5 × 10−6 tons per year)
Municipal waste combustor metals (measured as particulate matter)	14 megagrams per year (15 tons per year)
Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride)	36 megagrams per year (40 tons per year)
Municipal solid waste landfill emissions (measured as nonmethane organic compounds)	45 megagrams per year (50 tons per year)

9.2.9 Best Available Control Technology

Best Available Control Technology (BACT) is a stipulation of NSR specifically regarding PSD pollutants. The BACT requirement applies to both new and modified PSD major sources, although in slightly different ways. For new major sources, BACT applies to each pollutant for which the PTE of the entire source is significant. For major modification sources, BACT applies to each pollutant for which the net emissions increase from the entire project is significant. A net emissions increase takes into account all new/additional emissions as well as emissions decreases included as part of the project.

9.2.10 Netting

Once a proposed project has been determined to result in a significant emission increase of an NSR pollutant, a netting analysis may be performed. Netting generally applies only to major modifications and is used to determine whether a modification to a source constitutes a "major modification" under PSD/NSR. This process is used for determining Major Modification NSR applicability for both PSD and Nonattainment NAAQS areas, is pollutant-specific, and is used to evaluate all non-project related emissions increases and decreases that have or will occur at the facility at the same time ("contemporaneously") with the proposed project. This is only required if there are other emissions increases or decreases within the proposed project's time period.

The netting process can also be used to "net out" of PSD and NSR major modification applicability. If the netting analysis results in the net emissions increase being less than the significant level for the specific NSR pollutant in question, the project is not a major modification for that pollutant and will not require PSD or NSR for that specific pollutant. Keep in mind however, that the source or project may still be subject to PSD review for other NSR pollutants.

9.2.11 Air Quality Modeling and PSD Increments

It is important to note that air quality monitoring and modeling is required for any NSR project having emissions in excess of one or more of the significance thresholds. Determining whether the

impact from a net emission increase of an NSR pollutant is significant (greater than any regulated pollutant's significant emissions threshold) is a requirement for PSD applicability and should be used to support any air modeling data. Modeling data should cover the period of 1 year prior to any project beginning.

A PSD increment refers to the maximum amount of pollution concentration an area is allowed to increase. These help to prevent the deterioration of air quality below NAAQS levels in otherwise clean areas. These levels are set by regulators and therefore differ by area. It is important to consult local regulators to determine these levels in the area under question. Results of air quality monitoring data collection should also be used to verify that no incremental exceedances occurred in the PSD applicability area being analyzed.

9.2.12 PSD / NSR Additional Reading

AFCEC, *Air Force New Source Review Permitting Guide*
Virginia DEQ, *Air Permitting Guidelines New and Modified PSD Sources*
Texas Commission on Environmental Quality, *Air Permit Reviewer Reference Guide APDG 5881 Major New Source Review – Applicability Determination, Air Permits Division*, September 2019
AFCEC

10 PERMITTING PROCESS

The process to obtain an air quality permit varies with the type of permit being sought, emissions units included, emissions sources being permitted as well as the processes put in place by the various regulatory agencies. As such, the path to obtaining a permit can vary significantly in both complexity and level of effort between seemingly similar installations. Because of the wide variety of permitting programs covered by AF installations, this guide will only provide a cursory overview of the major types of permitting actions and what is typically involved in each of them. An understanding of the requirements applicable to an installation as well as the process to obtain a permit is necessary. If questions arise, regulatory coordination and/or request for additional support from the AFCEC ISS should be requested to ensure compliance with applicable regulations.

10.1 Standard Exemptions and Permits by Rule

In the simplest cases, SEs and PBRs may require very little effort, action or prior coordination by the installation. As these programs are intended to simplify the permitting process, an installation may need only complete a simple boiler plate form provided by their regulatory agency and post it at or near the emissions unit in order to utilize these permits.

Other SEs and PBRs may require that they be registered with their regulatory agency, however approval is in many cases not necessary prior to commencing construction or operation of the emissions source. It should be noted, however, that although SEs and PBRs are very simple permits in and of themselves, they may need to be incorporated into other "larger" operating permits held by the base.

10.2 Minor Source Permits

The process to obtain a minor source permit is in most cases quite simple but does vary depending on the way that a regulatory agency handles minor sources. In some cases, a minor source is its own stand-alone facility encompassing an entire AF base or GSU and referred to as a true minor. In other cases, a minor source permit may only include a small portion of a bases activities or emissions units.

To be classified as a true minor source, the process usually includes development of an AEI including the installations PTE detailing all assumptions made which supports this assertion. In other cases, a permit application may be required, however the resulting classification is the same. Some regulatory agencies do not issue a conventional permit to true minor sources and only provide notification of their status as a true minor and that a permit is not required.

For other minor sources, a permit application is typically required for construction of new emissions units. As with SEs, some regulatory agencies provide a boiler plate application to be completed by the installation which is then provided to the regulatory agency for their approval and issuance of the permit. Other areas may accept a report style permit request where a "permit writer" working at the regulatory agency develops the permit which is subsequently provided to the installation for review, comment, correction and final issuance.

These minor source permits can be a construction permit, operating permit or both. Depending on the situation, some regulators require that a minor source permit be obtained prior to commencing construction or operation of the source. Regardless of the type of minor source permit required, planning must take into account the processes in place to obtain minor permits in that area to ensure that the source is properly permitted and in compliance with applicable air regulations. Failure to obtain minor source permits has resulted in NOVs being issued to the AF which negatively impacted the ability of that organization to accomplish their designated mission.

10.3 Synthetic Minor

Increasing in complexity, the process to obtain a synthetic minor operating permit is more complicated than that of a minor source, however still less involved than obtaining a Title V. When working to obtain a synthetic minor permit, the goal of this permitting option to limit emissions of regulated pollutants to less than that of a major source must always be kept in mind.

As discussed previously, to limit emissions from an installation so that they are less than the applicable major source thresholds, Federally enforceable operating limits must be utilized. Because of this, synthetic minor permit applications include a significant amount of information relating to equipment inventory and specifications, operating limits, emission factors and the facilities PTE.

As with the other permit types, the process to obtain a synthetic minor permit varies between installations and regulatory agencies. Like a minor permit application, a synthetic minor application can take more than one form. In some cases, a report style request is submitted to the regulatory agency which provides details regarding equipment specification, operational details and most importantly assumption and operating limits utilized to reduce the PTE of the installation. The information in this document is subsequently developed into a draft permit document by a permit writer within the regulatory agency. A draft of this document is then provided to the installation for review and corrections, comments and other concerns are documented and provided back to the agency for revision and negotiation as necessary.

Once complete, the permit application is signed by a government official at the installation and submitted back to the regulator. Synthetic minor permits can be signed by the base commander, deputy base commander, base civil engineer or other government employee who has been delegated authority. Once issued, the permit typically goes into effect for a period of five to ten years (sometimes more) and will direct the majority of air quality compliance tasks.

10.4 Major Source / Title V

Once an installation has made the determination that they are in face a major source of air pollution, a permit for a Title V, major source permit must be developed and submitted to the appropriate permitting authority. The timeline under which this must be accomplished can vary depending on whether the installation is a new, or existing source. As such, environmental management flight personnel should coordinate with their AFCEC ISS as soon as possible after making this determination so that it can be reviewed and coordinated with the AFCEC prior to initiating any permitting activities.

As with the other permit types, a Title V permit application will look different depending on the requirements of the regulatory agency. In most cases, however, Title V permit applications require completion of a series of standardized forms developed by the regulator. These permit application packages can become hundreds of pages long and require a significant level of effort, and therefore cost to develop. These efforts are not to be taken lightly and are more often than not are the product of a team effort over the course of months or years.

A significant amount of coordination between the installation and regulator is necessary when developing a Title V permit application. Permit development and the subsequent negotiations

regarding operating limits, terms and conditions included can span not just months, but years. There are cases of Title V permits taking five, ten or even more years to be completed and issued to an installation. Upon completion of the final permit application a copy is coordinated with base commander for signature as the "Responsible Official" (RO) and then submitted to the permitting agency. At this time, the duty of the responsible official has been deemed by the Air Force Legal Office (AFLOA) to not be delegatable and can only be accomplished by the base commander responsible for the activities on that installation.

In addition to coordination with the regulatory agency, issuance of Title V permits requires a public comment period where the local community and other interested parties are given the opportunity to review the draft permit and provide comments and objections to the permit. So long as no significant concerns are raised during the public comment period, a copy of the final application is provided to the EPA for review. Once this process if complete the permit is issued to the base at which time it goes into effect and governs compliance and operation of the facility with respect to environmental air quality.

10.5 Permit Shields

Due to the length of time sometime required for a Title V or other permit to be issued, a common question is, "how can an installation continue to operate without a valid permit?" In short, a permit shield is a provision which allows continued operation of a source permitted under a Part 70 program based on the assumption that the previous/existing permit contains all necessary regulatory requirements and that the permitted facility will continue to abide by those requirements until such time as the final permit is issued. These provisions are outlined in 40 CFR 70.6 and require that a permit application be submitted in a timely manner to the regulatory agency in order for the permit shield to go into effect.

Although an updated permit application may include new or revised compliance requirements, a permit shield does not implement or require compliance with any new permit provisions. Additionally, although a facility is considered to be in compliance and not in violation of operating without a permit, the permit shield does not protect them from violations of current permit requirements.

In summary, a permit shield is simply a stop-gap measure to allow continued operation without fear of non-compliance due to operating without a permit. It does not reduce the compliance burden on a facility or alleviate the owner/operator of their duty to comply with all applicable regulations.

10.6 Permit Fees

Fees associated with air operating permits are the result of application fees and annual emissions fees levied against emissions sources. Application fees can be as low as a few hundred dollars which is due at the time of permit application submittal or be several thousand dollars in some cases. In cases where regulatory agencies are the ones who write all permits, the fees are higher since regulators are attempting to defray the cost of the additional personnel necessary to manage all of the permits issued through their office.

Annual emissions fees are typically based on the mass of pollutants emitted from the facility over the course of the year. Fees set under Part 71 programs by the Federal EPA are currently approximately $55 per ton and are adjusted annually for inflation, but can vary at the State and local level. Installation environmental management flight personnel must ensure that the necessary funds are planed and programmed annually to cover any anticipated permit application or emissions fees which must be paid to their regulatory agency.

11 PERMIT RENWALS

Once issued, some construction and operating permits expire after a set amount of time. For construction permits they may only be good for a couple of years after which they must be incorporated into an existing operating permit or converted into an operating permit upon completion of the project. In some cases, construction permits can be extended if necessary, however regulations vary, but typically require that permits be cancelled or rescinded if construction did not take place or resubmitted if not completed within the specified timeframe.

In the case of operating permits, depending on the regulatory agency, minor source permits may be issued without an expiration date, however synthetic minor permits require renewal every ten year and Title V, major source permits needing to be renewed every five years. The process can differ significantly between regulatory agencies, however in most cases renewal applications for synthetic minor and Title V permits must be submitted within three, six or 12 months prior to expiration. In the case of Title V permits, most renewals are due six to 12 months prior to expiration.

Due to the number of different regulatory agencies and processes within each one, the permit renewal process can vary widely between them. In some cases, permit renewals are completed by a dedicated team of permit writers who develop the application, provide it to the facility for review, comments, and signature. Regulators with this kind of permit process typically have significantly higher permit application fees to cover the cost of those personnel. More commonly regulatory agencies will use a series of documents to be completed by the facility which outline all of the emissions sources, activities, and assumptions used to calculate the PTE. Obtaining copies of the

forms with all instructions and guidance from the regulator is necessary to ensure adherence to required standards and procedures set forth there.

Depending on the type and structure of the operating permit, regulatory agencies with have different requirements for renewals and any necessary changes in the interim. If the permit was structured with flexible limits for equipment; for example, limiting total boiler capacity, an update may not be required every time an emissions unit is added, removed or replaced. In those cases, source changes should be tracked and subsequently incorporated during the next permit renewal. Other regulatory agencies may require that minor permits be issued when emissions sources are added or changed. These minor source permits may be issued in addition to or as addendums of comprehensive Title V or synthetic minor permits already held by the facility. Similarly, these permits are tracked until the next renewal period at which time they are incorporated into the "main" permit.

As part of the permit issuance and renewal process, once an application has been completed and submitted to the regulatory agency, the facility will either operate under the provisions of the previously issued permit, or the new permit application until the final permit is issued. Under 40 CFR 70.7(b), source operators are protected from enforcement actions due to continuing to operate emissions sources without having an air operating permit. This "permit application shield" is effective so long as the completed application was submitted in a timely manner and all applicable compliance obligations are met. This application shield can be an important factor during both the initial application and renewal phases as some facilities have been waiting for their regulatory agency to issue a final permit for as long as five to 10 years or more.

Due to the number of regulatory agencies and their policies and procedures, it would be impossible to detail the requirements for each of them here. Regardless of the regulator or permit type, coordination with regulatory agencies to ensure that permit renewals are completed correctly and on time is of the utmost importance. In addition to meeting regulatory deadlines, AQMs must consider the need to coordinate permit applications for signature internally with the Commander (Title V) or other appropriate responsible official (synthetic minor and minor permits) and plan ahead for delays. In some cases, it may take as many as 30-60 days to accomplish internal coordination for signature and this must be factored into the timeline when developing permit applications, renewals or other time sensitive submittal to regulatory agencies.

12 ADDING EMISSIONS UNITS TO EXISTING PERMITS/FACILITIES

It is common for AF bases to add, remove or revise multiple emissions units every year. As equipment ages, fails or otherwise needs to be removed or replaced, air operating permits must be updated to address these changes. Depending on the installations permit, the need to update permits and the process to do so can vary significantly between bases. As mentioned previously, one of the most advantageous ways to manage equipment inventory changes is to work the

regulators to configure operating permits so that in-kind or other minor equipment additions or changes can be covered under existing operating limits and not require permit revisions for every equipment change.

In some cases, regulators have provided guidance stating something to the effect of, “provide list of revised emissions units if and when inventory changes by 10% or more.” In other cases, installations provide notification to their regulator when equipment is added or removed and so long as the change does not impact their status or result in an exceedance of a permit limit, the changes are not incorporated into the installations main permit document until it is renewed.

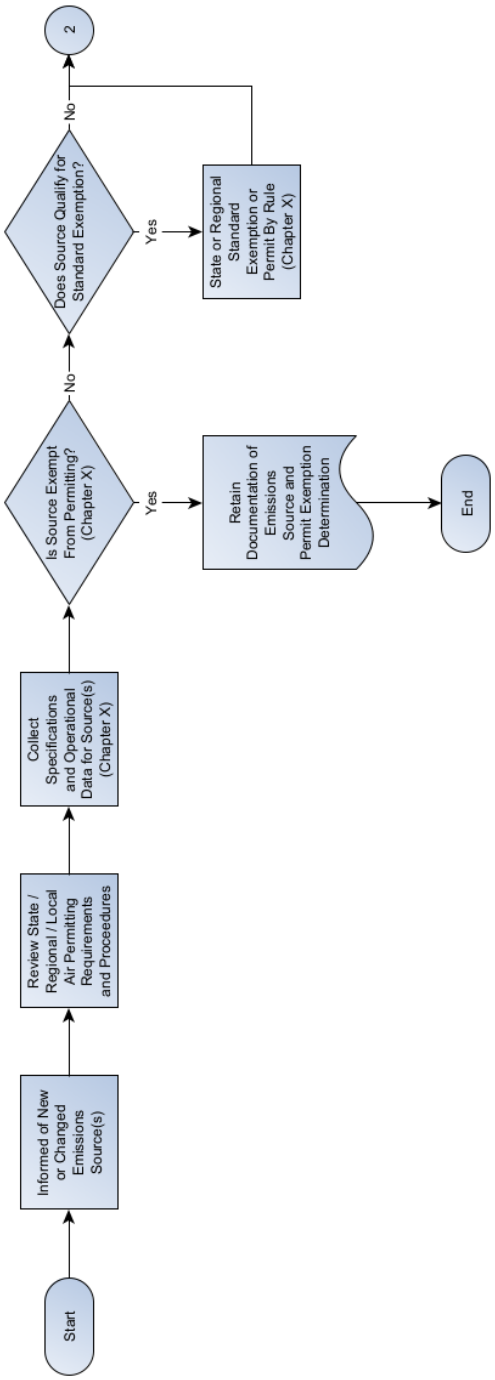
Updates to most permits simply follow the same logical process that a major source determination and permitting effort does.

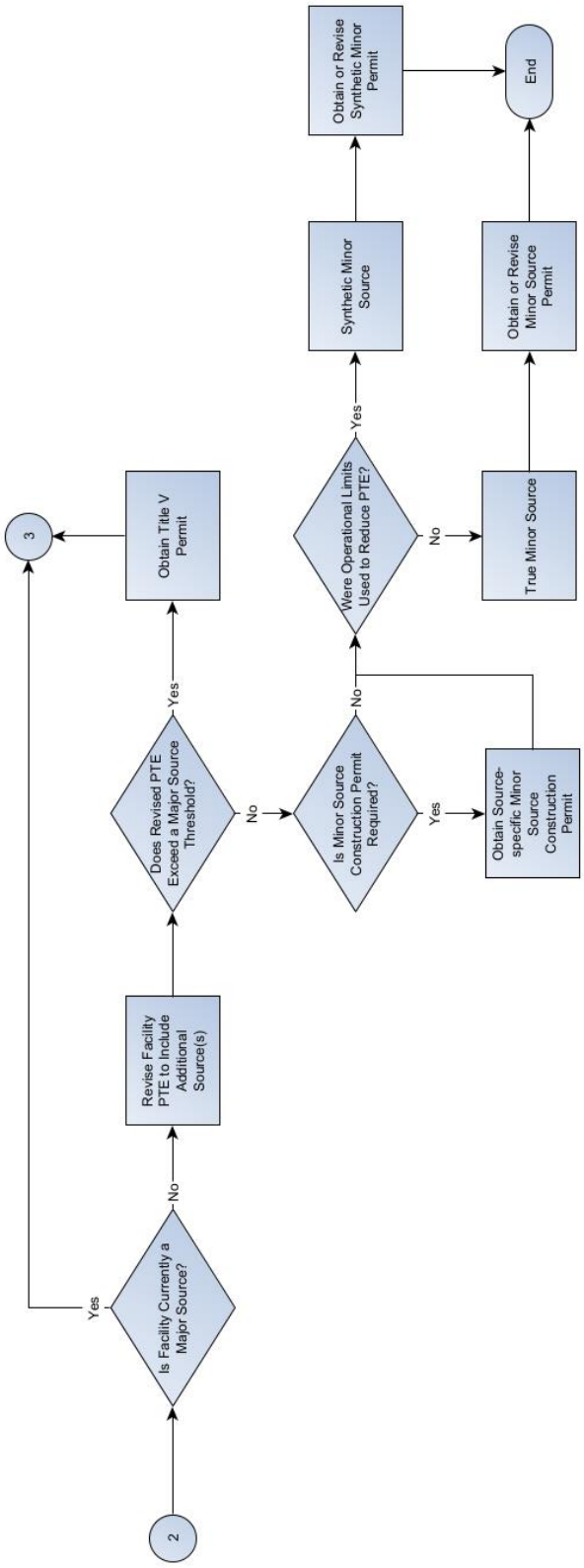
- Evaluate the new or changed source
- Quantify the increase or decrease in emissions
- Notify regulatory agency as necessary
- Develop permit application or modification for submittal to regulator

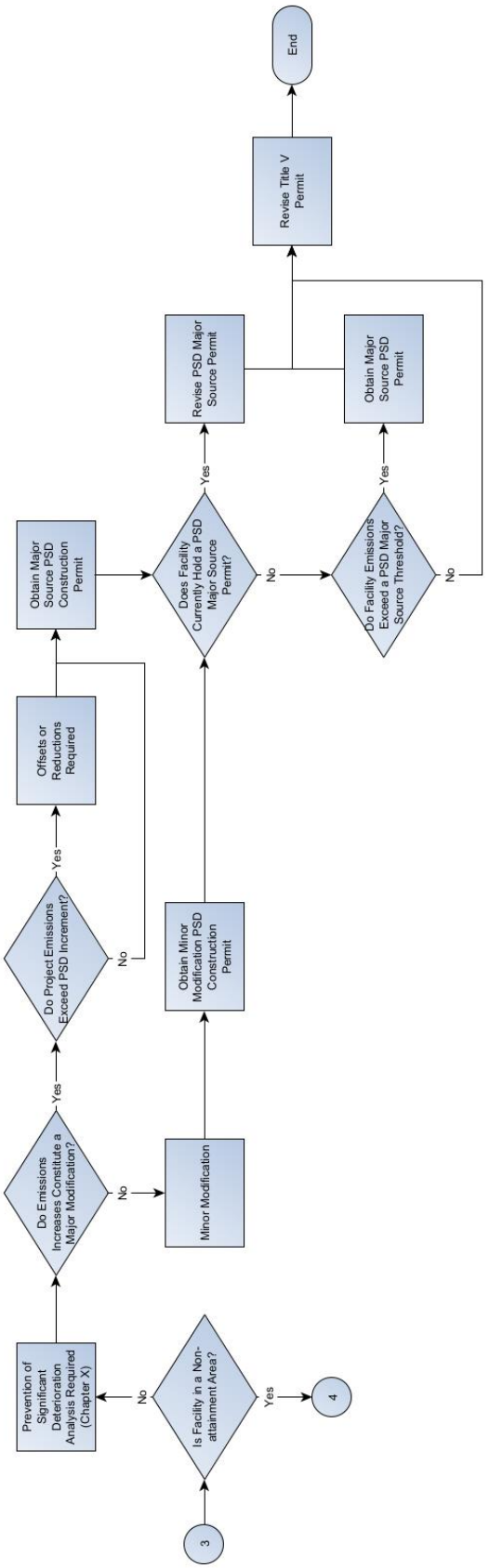
This process usually is not a significant effort, except in cases where equipment changes are extremely frequent, or when new emissions sources trigger NSR, PSD or some kind of NEPA or conformity evaluation. If questions arise regarding the need to update emissions sources in a permit, or other more advanced question regarding installation of new emissions sources, installation environmental management flight personnel should contact their AFCEC ISS for support.

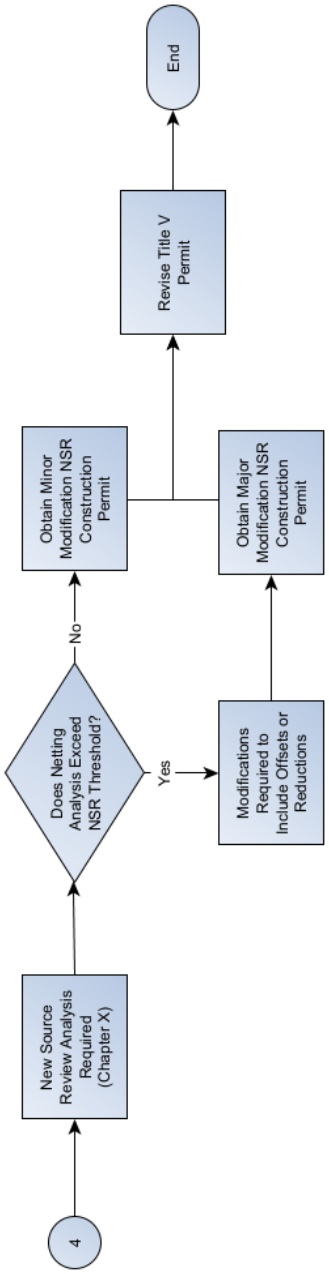
A series of general flow diagrams outlining the process to add additional emissions units to a permit have been include in Figure 12-1 below.

Figure 12-1. Overview of Updating Permitted Emission Sources




Obtain or Revise Synthetic Minor Permit
End
Synthetic Minor Source
Obtain or Revise Minor Source Permit
Yes
Were Operational Limits Used to Reduce PTE?
No
3
Obtain Title V Permit
True Minor Source
Yes
No
Does Revised PTE Exceed a Major Source Threshold?
No
Is Minor Source Construction Permit Required?
Yes
Obtain Source-specific Minor Source Construction Permit
Revise Facility PTE to Include Additional Source(s)
No
Is Facility Currently a Major Source?
Yes
2


End
Revise Title V Permit
Revise PSD Major Source Permit
Obtain Major Source PSD Permit
Yes
Yes
Obtain Major Source PSD Construction Permit
Does Facility Currently Hold a PSD Major Source Permit?
No
Do Facility Emissions Exceed a PSD Major Source Threshold?
No
Offsets or Reductions Required
Yes
Do Project Emissions Exceed PSD Increment?
No
Obtain Minor Modification PSD Construction Permit
Yes
Do Emissions Increases Constitute a Major Modification?
No
Minor Modification
Prevention of Significant Deterioration Analysis Required (Chapter X)
No
Is Facility in a Non-attainment Area?
Yes
4
3


End
Revise Title V Permit
Obtain Minor Modification NSR Construction Permit
Obtain Major Modification NSR Construction Permit
No
Does Netting Analysis Exceed NSR Threshold?
Yes
Modifications Required to Include Offsets or Reductions
New Source Review Analysis Required (Chapter X)
4

13 REFERENCES

32 CFR 187, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Subchapter L-Environment, Part 187-Environmental Effects Abroad of Major Department of Defense Actions," U.S. Environmental Protection Agency

40 CFR 51, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 51-Requirements for Preparation, Adoption, and Submittal of Implementation Plans," U.S. Environmental Protection Agency

40 CFR 68, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 68-Chemical Accident Prevention Provisions," U.S. Environmental Protection Agency

40 CFR 70.2, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 70.2-State Operating Permit Programs: Definitions," U.S. Environmental Protection Agency

40 CFR 82, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 82-Protection of Stratospheric Ozone," U.S. Environmental Protection Agency

40 CFR 93, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 93-Determining Conformity of Federal Actions to State or Federal Implementation Plans," U.S. Environmental Protection Agency

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FR 1996, "Deletion of Caprolactam From the List of Hazardous Air Pollutants: Final Rule," 61 FR 30816, June 1996

FR 2004, "List of Hazardous Air Pollutants, Petition Process, Lesser Quantity Designations, Source Category List; Petition To Delist of Ethylene Glycol Monobutyl Ether: Final Rule," 69 FR 69320, November 2004

FR 2005, "List of Hazardous Air Pollutants, Petition Process, Lesser Quantity Designations, Source Category List-methyl ethyl ketone: Final Rule," 70 FR 75047, December 2005

Seitz 1996, Seitz J. S., Memorandum titled "Major Source Determinations for Military Installations Under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act (Act)," U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, August 2, 1996

Seitz 2000, Seitz J. S., Memorandum titled "Guidance on the Major Source Determination for Certain Hazardous Air Pollutants," U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, August 14, 2000

(verify list below against list above)

1. Environmental Protection Agency website "Basic Information about Operating Permits."

2. Texas Commission on Environmental Quality (TCEQ), "Section II – Federal Authority for Emission Controls and Pollutants Subject to Control Analysis."

3. Texas Commission on Environmental Quality (TCEQ), "Major New Source Review – Applicability Determination", APDG 5881, September 2019.

4. Texas Commission on Environmental Quality (TCEQ), "Flexible Permit Application Review Summary", APDG 6280, December 2014.

5. Texas Commission on Environmental Quality (TCEQ), "Fact Sheet – Air Permitting", APDG 6239v5.

6. Air Force Civil Engineering Center, Compliance Technical Support Branch, "Air Emissions Guide For Air Force Stationary Sources", September 2017.

7. Air Force Civil Engineering Center, Compliance Technical Support Branch, "Air Emissions Guide For Air Force Transitory Sources."

8. Air Force Civil Engineering Center, Compliance Technical Support Branch, "Air Force Potential to Emit (PTE) Guide."

9. Air Force Civil Engineering Center, Compliance Technical Support Branch, “APIMS Air Emission Inventory Procedure.”

10. Environmental Protection Agency, “Memorandum Major Source Determination for Military Installation Under Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act”, August 2,1996.

ATTACHMENT 1 – CURRENT LIST OF HAPS AND HAP COMPOUNDS

CAS Number	Chemical Name
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
107131	Acrylonitrile
107051	Allyl chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene (including benzene from gasoline)
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl)phthalate (DEHP)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium cyanamide
105602	Caprolactam (See Modification)
133062	Captan
63252	Carbaryl
75150	Carbon disulfide
56235	Carbon tetrachloride
463581	Carbonyl sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate

CAS Number	Chemical Name
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene
1319773	Cresols/Cresylic acid (isomers and mixture)
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	Cumene
94757	2,4-D, salts and esters
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-chloropropane
84742	Dibutylphthalate
106467	1,4-Dichlorobenzene(p)
91941	3,3-Dichlorobenzidene
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)
542756	1,3-Dichloropropene
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Dimethylaniline
64675	Diethyl sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl aminoazobenzene
119937	3,3'-Dimethyl benzidine
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	1,1-Dimethyl hydrazine
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	4,6-Dinitro-o-cresol, and salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin (l-Chloro-2,3-epoxypropane)
106887	1,2-Epoxybutane
140885	Ethyl acrylate
100414	Ethyl benzene

CAS Number	Chemical Name
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Aziridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen fluoride (Hydrofluoric acid)
7783064	Hydrogen sulfide (See Modification)
123319	Hydroquinone
78591	Isophorone
58899	Lindane (all isomers)
108316	Maleic anhydride
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
78933	Methyl ethyl ketone (2-Butanone) (See Modification)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	4,4-Methylene bis(2-chloroaniline)

CAS Number	Chemical Name
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocyanate (MDI)
101779	4,4'-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Aroclors)
1120714	1,3-Propane sultone
57578	beta-Propiolactone
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2-Dichloropropane)
75569	Propylene oxide
75558	1,2-Propylenimine (2-Methyl aziridine)
91225	Quinoline
106514	Quinone
100425	Styrene
96093	Styrene oxide
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium tetrachloride
108883	Toluene
95807	2,4-Toluene diamine
584849	2,4-Toluene diisocyanate

CAS Number	Chemical Name
95534	o-Toluidine
8001352	Toxaphene (chlorinated camphene)
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethylene
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl acetate
593602	Vinyl bromide
75014	Vinyl chloride
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (isomers and mixture)
95476	o-Xylenes
108383	m-Xylenes
106423	p-Xylenes
0	Antimony Compounds
0	Arsenic Compounds (inorganic including arsine)
0	Beryllium Compounds
0	Cadmium Compounds
0	Chromium Compounds
0	Cobalt Compounds
0	Coke Oven Emissions
0	Cyanide Compounds 1
0	Glycol ethers 2 (See Modification)
0	Lead Compounds
0	Manganese Compounds
0	Mercury Compounds
0	Fine mineral fibers 3
0	Nickel Compounds
0	Polycyclic Organic Matter 4
0	Radionuclides (including radon) 5
0	Selenium Compounds

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique

chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

1 - X'CN where X = H' or any other group where a formal dissociation may occur. For example KCN or Ca(CN)2

2 - Includes mono- and di- ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH2CH2)n -OR' where

n = 1, 2, or 3

R = alkyl or aryl groups

R' = R, H, or groups which, when removed, yield glycol ethers with the structure: R-(OCH2CH)n-OH. Polymers are excluded from the glycol category. (See Modification)

3 - Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.

4 - Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 ºC.

5 - A type of atom which spontaneously undergoes radioactive decay.