

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. 63221**

I. INTRODUCTION

This Class II synthetic minor permit is for the operation of boilers, internal combustion engines, and other miscellaneous equipment by Northern Arizona University (NAU) in Flagstaff, Arizona. This is a renewal of Air Quality Permit No. 52525.

Company Information

Mailing Address: P.O. Box 4137
Flagstaff, AZ 86011

Facility Address: Northern Arizona University
Flagstaff, AZ 86011

II. FACILITY DESCRIPTION

Northern Arizona University is an educational institution. Thirty three natural gas-fired boilers and one heater serve the campus of Northern Arizona University. These equipment operate seasonally and have been restricted in their usage of natural gas to avoid major source classification. Twenty eight diesel-fired and two natural gas-fired internal combustion engines used at this facility provide back up power in the absence of commercial power. These engines are restricted to be used for up to 200 hours in any rolling twelve-month period each. Additionally, there are eight gas-fired kilns, six wood-fired kilns, eight cooling towers, and one paint booth at the facility.

III. LIMITATIONS ON POTENTIAL TO EMIT (PTE)

This facility has the PTE, when operating all permitted equipment for 8,760 hours per year, of more than 100 tons per year of oxides of nitrogen (NO_x) and carbon monoxide (CO) which would make the facility a major source by definition.

In order to stay below the major source threshold, the Permittee has accepted following:

- Natural gas usage not exceeding 1475 MMSCF based on a twelve-month rolling total for all natural gas-fired equipment (All boilers, one heater, three internal Combustion Engines, and gas-fired kilns).
- Limit on the hours of operation of each internal combustion engine to not to exceed 200 hours in any rolling twelve-month period; and
- Limit on the usage of wood of not to exceed 128 tons in any rolling twelve month period in the wood-fired kilns.

With the voluntarily accepted limits, the facility wide potential to emit is provided in the Table below:

Table 1: Facility wide Potential Emissions

Pollutant	Emissions
	Ton/year
CO	83.87
NO _x	92.52
SO ₂	1.14
VOC	10.36
PM ₁₀	8.62
HAPs	8.62

V. COMPLIANCE HISTORY

A review of the compliance records for the facility indicates no pending air quality cases.

VI. APPLICABLE REGULATIONS

The applicable regulations were identified by the Department as part of the permitting process. If necessary, the source is required to list any additional regulations that may be applicable.

Table 3: Verification of Applicable Regulations

Unit	Date of Manufacture	Control Device	Rule	Verification
Boilers – Non NSPS	Pre 1989	None	A.A.C. R-18-2-724	Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment.
Boiler – NSPS	2000	None	40 CFR 60, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.
Generators Generators-EG-1, EG-6, EG-8, EG-12, EG-14, EG-15, EG-17, EG-18, EG-20, EG-21, EG-22, EG-25, EG-26, EG-22, EG-27E, EG-28C, EG-29W, and EG-30	Pre June 2006 2008, 2010, 2011, 2012, 2013, 2014, 2015		A.A.C. R-18-2-719 40 CFR 60, Subpart III NESHAP Subpart ZZZZ	Standards of Performance for Existing Stationary Rotating Machinery. New Source Performance Standards for ICEs are applicable. These engines are termed as a ‘New’ ICE since these are manufactured after June, 2006. NESHAP Subpart ZZZZ is not applicable to these ICEs since NAU is an area source for HAPs and these are existing emergency engines located at an institutional area. [40 CFR 63.6590(b)(3)]

Unit	Date of Manufacture	Control Device	Rule	Verification
Kilns	1988, 1990, 1994, 2006	None	A.A.C. R-18-2-730	A.A.C. R 18-2-730 is applicable to unclassified sources.
Cooling Towers	1989, 1990, 1991	None	A.A.C. R-18-2-730	A.A.C. R 18-2-730 is applicable to unclassified sources.
Fugitive Dust Sources	N/A	Water and other reasonable precautions	Article 6 A.A.C. R-18-2-702.B	These Sections are applicable to fugitive dust sources.
Abrasive blasting operations	N/A		R18-2-726	This standard is applicable to any sand blasting or other abrasive blasting operation.
Spray painting operations	N/A	Filters	R-18-2-727	This standard is applicable to any spray painting operation.
Demolition/renovation operations	N/A		R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.
Mobile Sources	N/A		Article 8	This Article is applicable to mobile sources which either moves while emitting air pollutant or are frequently moved their utilization.

VII. PREVIOUS PERMITS

Table 4: Details of Previous Permit

Date of Permit Issuance	Permit Number	Application Basis
March 22, 2011	52525	Operating Permit
November 15, 2012	56296	Significant Permit Revision
August 12, 2014	59603	Significant Permit Revision

VIII. PREVIOUS PERMIT CONDITIONS

Operating permit #52525 was issued to NAU on March 22, 2014 for the operation of generators and boilers.

Operating Permit #52525

Condition No.	Determination				Comments
	Revise	Keep	Delete	Stream-line	
Att. A.	x				General Provisions - Revised to represent most recent permitting language.
Attachment "B"					
I		x			Condition for Facility Wide Limitations
II.A and B		x			Conditions for applicability and type of fuel.
II.C			x		Condition for hours of operation for boilers deleted.
II.D		x			Applicable conditions from State Regulations for Boilers and Heater renumbered as Condition II.C.
II.E		x			Applicable conditions for Boilers subject to New Source Performance Standards, Subpart Dc renumbered as Condition II.D.
III.A		x			Applicability condition for ICEs.
III.B			x		Condition for hours of operation for ICEs renumbered as Condition I.B.2.
III.C		x			Conditions for applicable regulations from State regulations renumbered as Condition III.B.
III.D	x				Condition for applicable regulations from NSPS for ICEs renumbered as Condition III.C.
IV.	x				Condition for Gas/Wood Fired Kilns changed to Conditions for Gas/Wood- fired Kilns, and Paint Booth
IV.A	x				Condition for applicability modified by adding paint booth
IV.B		x			Condition for fuel limitation
IV.C.1			x		Condition for hourly limitation for boilers deleted.
IV.C.2	x				Condition for limitation of usage of wood in wood kilns moved as Condition I.B.3.
IV.C.3	x				Condition for Monitoring, Recordkeeping, and Reporting Requirements modified and renumbered as Condition I.C.4 and 7.
IV.D to H	x				Conditions IV.D to H renumbered as Conditions IV.C to G.
V	x				This condition for "Fugitive Dust Requirements" revised to represent most recent permitting language.
VI	x				This condition for "Other Periodic Activities" revised to represent most recent permitting language.
VII		x			Conditions Specific to Mobile Sources.
Attachment "C"					

Condition No.	Determination				Comments
	Revise	Keep	Delete	Stream-line	
Equipment List	x				Equipment list has been revised in line with permit renewal application.

Significant Permit Revision #56296

Condition No.	Determination				Comments
	Revise	Keep	Delete	Stream-line	
Attachment "B"					
II.C.1			x		Table 1 for limit on hours of operation of boilers deleted..
III.D.4	x				Condition for Emission Limitations for NSPS ICEs revised in line with the newly added NSPS engines.
Attachment "C"					
Equipment List	x				Equipment list has been revised in line with permit renewal application.

Significant Permit Revision #59603

Condition No.	Determination				Comments
	Revise	Keep	Delete	Stream-line	
Attachment "B"					
VIII	x				Condition VIII for limit on natural gas usage renumbered as Condition I.B.1.
Attachment "C"					
Equipment List	x				Equipment list has been revised in line with permit renewal application.

IX. MONITORING AND RECORDKEEPING REQUIREMENTS

A. Facility Wide Gas Consumption

The Permittee must maintain a log of the facility wide natural gas consumption in each month and maintain rolling twelve month totals of natural gas consumed at the facility.

B. Boilers – Non NSPS

1. Monitoring Requirements

Opacity

A certified EPA Reference Method 9 observer must conduct quarterly surveys of visual emissions from the boiler and heater. If the opacity of the emissions observed appears to exceed the standard, the observer must conduct a certified EPA Reference Method 9 observation.

2. Recordkeeping Requirements

a. Particulate Matter (PM)

The Permittee must keep records of fuel supplier certifications. The certification must contain information regarding the name of fuel supplier and heating value of the fuel.

b. Opacity

The Permittee is required to record the date, time and the results of all visible emission surveys or Method 9 observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee will keep a record of the corrective action taken to bring the opacity below the standard.

C. Generators- Not subject to NSPS

1. Operating Hours

The Permittee must record and maintain a log of the daily hours of operation and calculate a rolling twelve-month total of hours of operation of the internal combustion engines at the end of each month.

2. Monitoring and Recordkeeping Requirements

Opacity

a. A certified EPA Reference Method 9 observer must conduct quarterly survey of visual emissions from the internal combustion engines stacks when in operation. If the opacity of the emissions observed appears to exceed the standard, the observer must conduct a certified EPA Reference Method 9 observation.

b. The Permittee must record the emission point being observed, date, time and the results of all visible emission surveys or Method 9 observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee must keep a record of the corrective action taken to bring the opacity below the standard.

D. Generators- Subject to NSPS

Recordkeeping Requirements

1. The Permittee must keep documentation that engine meets all applicable emission standards.
2. The Permittee must record and maintain a log of the daily hours of operation and calculate a rolling twelve-month total of hours of operation of the internal combustion engines at the end of each month. The record must identify whenever the operation of the engine was for emergency purposes.

E. Cooling Towers, Gas-Fired, and Wood-Fired Kilns

Monitoring, recordkeeping and reporting requirements

1. A certified EPA Reference Method 9 observer must perform quarterly surveys of visible emissions from the cooling towers and gas/wood-fired kilns when in operation. If any observation appears to exceed the opacity standard, the Permittee must conduct and record a proper Method 9 observation. If this observation is in excess of the opacity standard, suitable corrective action must be taken and also reported to the agency as an “excess emission”. The Permittee must keep records of all surveys, observations, and results.
2. The Permittee must maintain records of fuel supplier certifications. The certification must contain information regarding the name of fuel supplier and heating value of the fuel.
3. The Permittee must keep records of monthly totals of wood fired in the wood-fired kilns. The permit must calculate a rolling twelve-month total of amount of wood combusted in wood-fired kilns.

F. Fugitive Dust

Monitoring and Recordkeeping Requirements

Opacity

1. A certified EPA Reference Method 9 observer must conduct quarterly visual survey of visible emissions from fugitive dust sources.
2. The Permittee must record the emission point being observed, date, time and the results of all observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee must keep a record of the corrective action taken to bring the opacity below the standard.

X. TESTING REQUIREMENTS

Kilns

No testing for NO_x and SO₂ emissions from kilns is required since the emissions of these criteria pollutants from kilns are 0.24 and 0.03 tons per year respectively.

XI. LIST OF ABBREVIATIONS

A.A.C.....	Arizona Administrative Code
CFR.....	Code of Federal Regulations
CO	Carbon Monoxide
EPA.....	Environmental Protection Agency
ICE.....	Internal Combustion Engine
NAU.....	Northern Arizona University
NESHAP.....	National Emission Standards for Hazardous Air Pollutants
NO _x	Nitrogen Oxides
NSPS.....	New Source Performance Standard
PM.....	Particulate Matter
PM ₁₀	Particulate Matter Less than 10 Microns
PTE.....	Potential to Emit
SO ₂	Sulfur Dioxide
VOC	Volatile Organic Compounds

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