TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. 72820

Apache Nitrogen Products Inc.

I. INTRODUCTION

This Title V renewal permit is proposed to be issued to Apache Nitrogen Products, Inc. (ANPI), the Permittee, for the continued operation of their nitric acid, liquid ammonium nitrate, ammonium nitrate prill and truck emulsion plants located in St. David, Cochise County.

A. Company Information

1. Facility Name: Apache Nitrogen Products Inc.

2. Facility Location: 1436 S Apache Powder Road
St. David, AZ 85630

3. Mailing Address: P.O. Box 700
Benson, AZ 85602

B. Attainment Classification

This facility is located in an attainment area for all criteria pollutants.

II. PROCESS DESCRIPTION

A. Process Description

The primary product from ANPI is ammonium nitrate prill, intermediate products – ammonium nitrate solution (ANS) and nitric acid - can be sold individually. However, the majority of the intermediate products are utilized for prill production. ANPI produces nitric acid from anhydrous ammonia in ammonia oxidation plants (AOP) 3 and 4, which is converted into ANS at the ANS plant. Next, the ANS is sent to a falling film evaporator (FFE) at the prill plant, where ANS is further concentrated. After the FFE, the concentrated ANS is sent to the prill tower, where the spraying and rapid cooling of the ANS allows for prill formation. Finally, the prill is sized, coated, and sent to prill barns 1 and 2 for storage and subsequent shipping via trucks.

ANPI has the ability to receive offsite prill via train. Shipments of prill arrive to the site by train and are transloaded into prill barns 1 and 2 via enclosed conveyors for storage.

ANPI has incorporated the production of Ammonium Nitrate Emulsion (ANE) at their truck emulsion plant (TEP) at their facility. ANE involves the mixing and heating of ANS, water, urea, and diesel fuel. To start the production of ANE, ANS produced at ANPI is transported by truck to the TEP. Next, water, which is also transported from an onsite location, and urea are mixed with the ANS and heated. Finally, diesel fuel is added to the mixture to create an emulsion. ANE slurry is then sent to a tanker truck for shipment to the consumer.

Ancillary operations at ANP include three natural-gas fired steam boilers, one natural

gas/diesel fuel fired electric power generating engine, a cooling tower, a diesel fired air compressor, and a gasoline dispensing facility (GDF) for distribution of gasoline to plant vehicles.

B. Control Devices

The facility uses the following air pollution control equipment to minimize emissions from various processes:

1. A hydrogen peroxide system is used in absorption towers to minimize nitrogen oxides emissions during startups of AOP-3 and AOP-4

2. A selective catalytic reduction (SCR) system is used at the AOP-3 tail gas system to reduce nitrogen oxide emissions.

3. A high efficiency wet scrubber is utilized to remove ammonia and ammonium nitrate, expressed as particulate matter, from the neutralizer exhaust gases.

4. An ammonium nitrate (AN) reclaim unit (scrubber) for the collection of ammonium nitrate from the dryers in the prill plant as well as the treatment of a portion of gases from the (FFE).

5. A boot-lift connector system for the reduction of particulate matter (PM) emissions during transloading of prill.

6. A flexible chute system for the reduction of PM emissions during loading of trucks with prill product.

7. A packed bed scrubber is installed on the vents of the nitric acid storage tanks for minimizing nitrogen oxides (NO_X) emissions.

8. Hydrogen peroxide injections into the nitric acid stream into the storage tank for minimizing nitrogen oxides (NOx) emissions.

III. EMISSIONS

The emissions calculations for the permit review process relied upon emission factors drawn from the EPA's Compilation of Air Pollution Emission Factors (AP-42); California Emission Inventory Development and Reporting System; 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for GHG emissions; EPA TANKS Program; performance testing, and CEMS data. Estimated emissions are tabulated in the table below:

Table 1: Potential Emissions

Pollutant	Emissions (tons per year)
PM	328.3
PM_{10}	191.5
$PM_{2.5}$	118.4
NO_x	258.1
CO	44.4
SO_2	0.3
VOC	2.9
HAPs	1.0
GHG (expressed as CO_{2e})	720,401.6

IV. MINOR NEW SOURCE REVIEW

During this renewal, ANPI did not modify any processes or equipment that would affect the emissions of any regulated NSR pollutant from the facility. Therefore, this renewal is not subject to minor NSR.

V. APPLICABLE REGULATIONS

Table 2 displays the applicable requirements for each permitted piece of equipment along with an explanation of why the requirement is applicable.

Table 2: Verification of Applicable Regulations

Unit	Control Device	Rule	Discussion
AOP-3	Tail Gas Catalytic Reactor	40 CFR Part 60, Subpart G Installation Permit No. 1229	The trigger date for 40 CFR Subpart G is August 17, 1971. AOP-3 was modified in 1992 and resumed operations in 1994. A NOx emission limit of 37.67 tpy from Installation Permit No. 1229.
AOP-4	N/A	40 CFR Part 60, Subpart G	The trigger date for 40 CFR Subpart G is August 17, 1971. AOP-4 was constructed in 1978.
ANS-Neutralizer	Two Stage Venturi/Packed Bed Scrubber	A.A.C. R18-2-730, 40 CFR 64 (Compliance Assurance Monitoring – CAM)	The plant is an unclassified source subject to A.A.C. R18-2-730.
Natural Gas-Fired Steam Boilers and Superheater	N/A	A.A.C. R18-2-724	The natural gas-fired industrial equipment is subject to A.A.C. R18-2-724
Diesel 350 hp air compressor	Crank Case Vent	A.A.C. R18-2-719 40 CFR Part 63, Subpart ZZZZ	The diesel-fired engine is subject to A.A.C. R18-2-719, existing stationary rotating machinery standards. The engine was built before June 12, 2006, and, thus, is subject to the existing area source standards under for 40 CFR 63, Subpart ZZZZ for reciprocating internal combustion engines.
Natural Gas-Fired 830 hp Electric Generator	N/A	A.A.C. R18-2-719 40 CFR Part 63, Subpart ZZZZ	The natural gas-fired engine is subject to A.A.C. R18-2-719, existing stationary rotating machinery standards. The engine was built before June 12, 2006, and, thus, is subject to the existing area source standards under for 40 CFR 63, Subpart ZZZZ for reciprocating internal combustion engines.

Unit	Control Device	Rule	Discussion
Diesel 73 hp Fire Pump	N/A	40 CFR Part 63, Subpart IIII	The trigger date for 40 CFR Part 60, Subpart IIII, is July 15, 2005. The diesel-fire pump was manufactured in 2009.
Natural Gas-Fired 96-hp Emergency Generator	N/A	40 CFR Part 60, Subpart JJJJ	The engine was built after January 1, 2009 and is subject to 40 CFR 60, Subpart JJJJ.
Gasoline Storage Tank	Submerged filling device	A.A.C. R18-2-710	A.A.C.R18-2-710 is applicable to storage tanks handling petroleum liquids, and, hence, applicable to gasoline storage tank.
Gasoline Dispensing Facility	N/A	40 CFR Part 63, Subpart CCCCCC	The gasoline dispensing facility is subject to 40 CFR 63 Subpart CCCCCC.
Misc. Storage Tanks, Truck Emulsion Plants, and Cooling Towers	Acid storage tanks: packed bed scrubber; hydrogen peroxide injections.	A.A.C. R18-2-730	These unclassified sources are subject to A.A.C. R18-2-730.
Fugitive dust sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R18-2-727	This standard is applicable to any spray painting operation.
Demolition/renovation operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

VI. PREVIOUS PERMIT CONDITIONS

Permit No. 57484 was issued on February 6, 2013, for the continued operation of this facility. Table 3 below illustrates if a section in Permit No. 57484 was revised or deleted.

Table 3: Permit No. 57484

Section No.	Determination		Comments
	Revised	Delete	
Att. A.	X		General Provisions - Revised to represent most recent template language.
Attachment B			
Section I	X		Revised to update facility wide opacity conditions and to list out specific conditions for permit deviation reporting.
Condition II.C.1.b	X		Revised to reflect a ton per year value for NO_X in AOP-3 instead of a pound per hour limit.
Condition II.D		X	The ammonia limit for AOP-3 was removed since performance testing over the last permit term has shown emissions well below the permit limit.
Condition III.B.1.b		X	Removed ammonium nitrate limit since the performance test data showed emissions significantly lower than the emission limit. The facility will be subject to the process weight rate equation already listed in the permit.
Condition III.B.1.d	X		Moved condition from III.C.1.b and revised language to reflect A.A.C. R18-2-730.D.
Condition III.C		X	The ammonia limit for the liquid ammonium nitrate plant was removed since performance testing over the last permit term has shown emissions well below the permit limit.
Condition IV.B.3	X		Removed "baseline" language for visible emissions from this section.
Condition IV.C.4	X		Updated performance test requirements to require testing at or near the start of a permit term, and then annually if the results of the performance test indicate emissions greater than 50% of the emission standard. If the results of the performance test indicate emissions 50% or below the standard, no subsequent testing shall be required.
Condition V.C.1.c	X		Revised the condition to reflect the language in the A.A.C.
Condition VI.C.2	X		Removed language for corrective actions and recordkeeping since Attachment "A" covers excess emissions.
VI.C.3.c	X		Revised condition to remove the requirement to keep records of fuel supplier certifications showing the lower heating value of the fuel. Compliance will be determined by keeping records of the fuel used in all the boilers and superheater.
V.C.2.b	X		Updated opacity monitoring requirements to be done monthly.
V.C.2.c		X	Removed requirement to report excess emissions since it is covered by excess emission reporting in Attachment "A."
Section VI	X		Revised to reflect emergency engine requirements for 40 CFR 63, Subpart ZZZZ.
Section VII	X		Revised to reflect emergency engine requirements for 40 CFR 60, Subpart IIII.
Section VIII	X		Revised to reflect emergency engine requirements for 40 CFR 60, Subpart JJJJ.

Section XI	X		Section revised to represent most current language for facility wide fugitive emissions.
Section XII		X	Removed Mobile Source Requirements section.
Section XIII	X		Revised to remove abrasive blasting since none is performed at the facility.
Attachment "D"		X	Attachment D, the Ammonia Emissions Reduction Plan, was removed because the ammonia emissions for both AOP-3 and the ANS plant were well below the permit limits.

VII. RECORDKEEPING AND MONITORING REQUIREMENTS

A. Nitric Acid Plants (AOP-3 and AOP-4)

1. ANPI is required to operate and maintain a COMS on AOP-3 and AOP-4 to monitor and record the opacity of exhaust gases on a continuous basis.

2. ANPI is required to operate and maintain CEMS on AOP-3 and AOP- to monitor and record the emissions of NOx on a continuous basis.

3. ANPI is required to operate and maintain a CERMS on AOP-3 to monitor and record the flow of exhaust gases on a continuous basis.

4. ANPI is required to record daily, the amount of nitric acid produced and the hours of operation of AOP-3 and AOP-4.

B. Ammonium Nitrate Solution Plant

1. ANPI is required to maintain records of the results of annual and semi-annual inspections performed on the scrubber.

2. ANPI is required to conduct monthly visual surveys of emissions emanating from the Neutralizer.

C. Ammonium Nitrate Prill Plant

ANPI is required to perform a bi-weekly survey of visible emissions emanating from the stacks of the Prill Plant.

D. Boilers and AOP-4 Superheater

1. ANPI is required to perform quarterly surveys of visible emissions emanating from the stacks of the boilers and superheater.

2. ANPI is required to keep records of fuel used in all the boilers and superheater.

E. Internal Combustion Engines

1. ANPI is required to keep records of fuel supplier certifications or letters from fuel suppliers to demonstrate compliance with the sulfur content limit, containing information regarding the name of the fuel supplier and lower heating value of the fuel.

2. ANPI is required to perform a monthly survey of visible emissions emanating from

the stacks of the internal combustion engines.

3. ANPI is required to maintain records of each malfunction of operation or the air pollution control and monitoring equipment.

4. ANPI is required to keep records of maintenance conducted on the stationary RICE.

5. ANPI shall keep records of actions taken to minimize emissions during periods of malfunction.

6. If an oil analysis is performed, ANPI shall keep records of the parameters that are analyzed if an oil analysis is performed.

7. If the emergency engine does not meet the standards to non-emergency engines, ANPI shall keep records of the hours of operation of the engine using the non-resettable hour meter.

F. Diesel Fire Pump

ANPI is required to maintain records of the reasons for operation and the duration of operation of the fire pump engine.

G. New Emergency Spark Ignition Engine

ANPI is required to maintain records of conducted maintenance, certification, if applicable, the hours of operation for both emergency and non-emergency operations, and a description of what classified the operation as an emergency.

H. Gasoline Dispensing Facility

ANPI is required to maintain records of monthly throughput of gasoline (total volume of gasoline that is loaded into, or dispensed from the gasoline storage tank at the GDF during a month).

I. Gasoline Storage Tank

ANPI is required to, for the gasoline storage tank, maintain a file, of the typical Reid vapor pressure, the dates of storage and the dates on which the storage vessel is empty.

J. Miscellaneous Storage Tanks/ Truck Emulsion Plant/ Cooling Towers

1. Storage tanks

   ANPI is required to perform, a bi-weekly survey of visible emissions emanating from each miscellaneous storage tank.

2. Truck Emulsion Plant

   ANPI is required to record the number of transport trucks loaded with emulsion and mixed fuel.

K. Fugitive Dust

1. ANPI is required to maintain records of any actions taken to prevent the release of

fugitive dust emissions.

2. ANPI is required to perform a bi-weekly survey of visible emissions emanating from open areas, roadways and streets, and material handling operations at the facility.

L. Periodic Activities

1. Spray Painting

a. The date the project was conducted;

b. The duration of the project;

c. Type of control measures employed;

d. Safety Data Sheets (SDS) for all paints and solvents used in the project; and

e. The amount of paint consumed during the project.

2. Demolition/Renovation

ANPI shall keep all required records in a file. The required records shall include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

VIII. PERFORMANCE TESTING REQUIREMENTS

Particulate Matter

ANPI is required to conduct performance tests for particulate matter at or near the start of the permit term for the prill tower. If the results of the test indicate the emission rate is greater than 50% of the emission standard, subsequent annual performance tests shall be required. If the results of the performance test indicate emission rates are less than or equal to 50% of the emission standard, no subsequent performance tests shall be required for the permit term.

IX. PERMIT REVISION HISTORY

Permit Number/ Permit Type	Issued Date	Description of Changes
60087 – Minor Permit Revision	July 21, 2014	Authorizes the change of status of the 830-hp natural gas fired generator and 350-hp diesel generator from non-emergency to emergency.
63087 – Minor Permit Revision	January 5, 2016	Addition of a 96-hp natural gas-fired emergency generator and incorporation of 40 CFR 63, Subpart JJJJ.
64324 – Minor Permit Revision	September 29, 2016	Addition of a mixed fuel operations used in the emulsion process or to be sold.
69224 – Minor Permit Revision	March 26, 2018	Authorizes nitric acid to be stored in an existing ammonium nitrate storage tank. The tank is vented to a scrubber to minimize NO_X. Replacement of a

Permit Number/ Permit Type	Issued Date	Description of Changes
		wastewater filtration system for the prill plant and Tank 174. Automation of ANS and AN20 fertilizer batching. Removal of four storage tanks.
72338 – Minor Permit Revision	September 12, 2018	Authorizes the use of hydrogen peroxide injections for controlling NO_X emissions from Tank 102.

X. COMPLIANCE HISTORY

The facility was subjected twenty three (23) facility inspections and thirty seven (38) file/report reviews between the years 2014 and 2018 and, based on these, the following six (6) cases were initiated against Apache Nitrogen Products, Inc.:

A. Case No. 155558

ADEQ's review of Apache Nitrogen Products, Inc.'s January 30, 2015 Quarterly Report of Excess Emissions and Monitoring Systems Performance for the 4th calendar quarter of 2014 revealed that ANPI did not calibrate, maintain and operate its AOP-3 COMS and AOP-4 COMS daily to allow continuous opacity monitoring of the opacity of exhaust gases from AOP-3 and AOP-4 nitric acid production facilities which resulted in the COMS being inoperable for extended periods of time. A Notice of Violation (NOV) was issued to ANP on February 17, 2015. ANPI complied with the conditions of the NOV and the case was closed on November 30, 2015

B. Case No. 160513

Upon inspection of the facility on December 8, 2015, the ADEQ inspectors observed a plume of particulate matter being emitted from the top of the prill tower. After observing the plume of the particulate matter, the ADEQ inspectors performed an ALT-082, Digital Opacity Camera System (DOCS) II observation and results indicated an opacity of 27%. An NOV was issued to ANPI on December 18, 2015. ANP complied with the conditions of the NOV and the case was closed on January 28, 2016.

C. CV2015-011332

Between the years 2010 and 2013, ANPI failed to pass several of their performance tests for ammonia and ammonium nitrate for the Neutralizer and the performance test for ammonia and RATA testing for the CEMS for AOP-3. The CV was signed on September 24, 2015 which required that ANPI pass their performance and RATA testing for AOP-3 and the Neutralizer for the following three years of testing. ANPI completed the requirements of the CV in October 2018, and the CV was closed.

D. Case 174094

During an onsite inspection, ANPI could not provide documentation for the following: Natural Gas Fired 830 Empire CAT emergency generator, the Diesel Fired 350 hp emergency air compressor, the 73 hp Diesel Fire Pump, or the oil analysis completed for the emergency generator. During the same inspection, the opacity of the prill tower exceeded the 20% opacity limit. The case was dismissed on February 22, 2018 when ANP provided the appropriate documentation.

E. Case 178340

The 120-day rolling average of NO_X in AOP-3 was exceeded at 2:00 AM September 19, 2018 due to an erroneous prediction of the amount of ammonia needed to control NO_X emissions and comply with the NO_X and ammonia permit limits. Once the exceedance was noted, ANPI shut down AOP-3 on September 20, 2018. The 120-day rolling average reached a maximum of 8.64 lb/h before returning below the limit at 6:00AM September 23, 2018. ADEQ issued an NOV on October 25, 2018. The case is still pending.

F. Consent Decree: Civil Action No. 4:17-cv-00612-RCC; December 28, 2017:

To resolve alleged violations of the Clean Air Act (CAA) and the Arizona State Implementation Plan (SIP) regarding commencing construction of a major modification project at AOP-4 without having undergone a Prevention of Significant Deterioration (PSD) review by ADEQ, ANPI has agreed to hire a consultant to conduct an Alternative NOx Reduction Technical Feasibility Study on AOP-4 or "AOP-4 Study Report." ANP has agreed to include the AOP-4 Study Report as part of an AOP-4 Best Available Control Technology (BACT) Analysis, which ANPI will then submit as part of an application to ADEQ requesting an AOP-4 BACT Determination. In the event ADEQ's determination identifies an appropriate alternative NOx control technology for AOP-4, ANPI must submit an application to ADEQ requesting authorization to install and operate such control technology to continue operation of AOP-4, request a continuously achievable emissions limit consistent with the final AOP-4 BACT Determination, and install and operate any such alternative NOx control technology for AOP-4 according to the terms of the permit revision issued by ADEQ.

XI. LIST OF ABBREVIATIONS

A.A.C. ..... Arizona Administrative Code
ADEQ ..... Arizona Department of Environmental Quality
ANPI ..... Apache Nitrogen Products, Inc.
BACT ..... Best Available Control Technology
CAA ..... Clean Air ACT
CFR ..... Code of Federal Regulations
CO ..... Carbon Monoxide
CO_2 ..... Carbon Dioxide
HAP ..... Hazardous Air Pollutant
EPA ..... Environmental Protection Agency
lb/hr ..... Pounds per hour
NO_x ..... Nitrogen Oxide
NOV ..... Notice of Violation
NSR ..... New Source Review
PM ..... Particulate Matter
PM_{10} ..... Particulate Matter Nominally less than 10 Micrometers
PSD ..... Prevention of Significant Deterioration
PTE ..... Potential-to-Emit
SO_2 ..... Sulfur Dioxide
TPY ..... Tons per Year
VOC ..... Volatile Organic Compound
yr ..... Year