

# YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

## Emission Evaluation

**ENGINEER:** René Toledo

**FACILITY NAME:** Agrium U.S. Inc.

**LOCATION:** The equipment is located at 3961 Channel Drive in West Sacramento. The equipment is not located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

**PROPOSAL:** The source is proposing to modify P-37-82(a2) by installing a carbon monoxide (CO) (and carbon dioxide (CO<sub>2</sub>)) "abatement" device with a proposed control efficiency of 0% for either pollutant. The source is also proposing to amend several permit conditions as follows:

- Amend PTO Condition 13 per the requirements of District Rule 2.42 (Nitric Acid Production) to allow for the use of alternative visible emission evaluation (VEE) methods to U.S. EPA Method 9, as approved by the EPA and the District;
- Amend PTO Condition 23 to include the pollutant specific drift error for NO<sub>x</sub> and CO as allowed by Performance Specifications 2 and 4 (respectively) of 40 CFR Part 60, Appendix B.

Each of the application's proposed changes have been evaluated separately below to determine the amendment's compliance with the applicable rules and requirements. Additionally, the District will also incorporate the applicable conditions of Rule 2.42 (Nitric Acid Production) which was adopted into the California State Implementation Plan on July 9, 2010. The application has been processed as part of Enhanced New Source Review and is considered a minor permit modification (see Rule 3.8 discussion below).

The following proposed requests were not approved as part of this modification:

- Amend PTO Condition 13 to also explicitly state that evaluations are to be conducted only when the nitric acid plant is running;
- Amend PTO Condition 31 to include the wording "detected" in the standard excess emission reporting requirement.

It should be noted that ATC C-11-61 proposes the same permit modifications as canceled ATC application C-10-99 (see file).

**PROCESS:** Nitric Acid Production

The source uses a high pressure process to make nitric acid (HNO<sub>3</sub>) from the oxidation of ammonia (NH<sub>3</sub>) with air (O<sub>2</sub>) over a catalyst. The nitric acid manufactured by the source is considered "weak" with a 50-55% percent acid strength. The NO<sub>x</sub> Decomposer uses natural gas fuel to reduce NO<sub>2</sub> emissions in the process' tail gas into nitrogen and water. The process is equipped with a continuous emission monitoring system (CEMS) for NO<sub>x</sub> and CO. It is expected that the proposed CO abatement device will be installed after the NO<sub>x</sub> Decomposer and prior to the existing CO specific CEMS sampling probe.

**FLOW DIAGRAM:** None

**EQUIPMENT:** One (1) 3700 BHP air compressor;  
one (1) 5 HP stripper feed pump;  
one (1) 10 HP condensate feed pump;

ATC #	C-11-61
SIC Code #	2873
UTM E	624.0 km
UTM N	4268.8 km

one (1) 10 HP ammonia feed pump;  
 one (1) 15 HP acid feed pump; and  
 one (1) 20 HP raw water pump

Total electric motor horsepower is 3760 HP.

**CONTROL EQUIPMENT:** NOx Decomposer and a CO abatement device

**APPLICATION DATA / EMISSION FACTOR DATA:**

<u>CO Emission Limits</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Daily Emissions=	1,000.0 lb/day	EFco-day	Applicant *
1st Quarter Emissions =	90,000 lb/quarter	EFco-1q	Applicant *
2nd Quarter Emissions =	91,000 lb/quarter	EFco-2q	Applicant *
3rd Quarter Emissions =	92,000 lb/quarter	EFco-3q	Applicant *
4th Quarter Emissions =	92,000 lb/quarter	EFco-4q	Applicant *
Max. Yearly Emissions =	168.00 tons/year	EFco-yr	Applicant *

\* CO mass emission limits retained from PTO P-37-82(a2).

<u>NOx Emissions Limits</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Daily Emissions=	250.0 lb/day	EFnox-day	Applicant *
1st Quarter Emissions =	22,500 lb/quarter	EFnox-1q	Applicant *
2nd Quarter Emissions =	22,750 lb/quarter	EFnox-2q	Applicant *
3rd Quarter Emissions =	23,000 lb/quarter	EFnox-3q	Applicant *
4th Quarter Emissions =	23,000 lb/quarter	EFnox-4q	Applicant *
Max. Yearly Emissions =	42.00 tons/year	EFnox-yr	Applicant *

\* NOx mass emission limits retained from PTO P-37-82(a2).

**ASSUMPTIONS:**

<u>Control Efficiency</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
CO Abater =	0 %	-	Applicant *

\* For reference, the application claims that the proposed carbon monoxide (CO) abatement device also controls carbon dioxide (CO2) emissions. However, the source has not proposed any specific level of control for either pollutant. Lastly, the District will not address CO2 in this evaluation, since it is not considered a regulated pollutant at this time.

**PROCESS LIMIT AND EMISSION LIMIT CALCULATIONS:**

**1. Determine CO Emissions:**

Max. Daily CO Emissions = EFco-day =	1,000.0 lb/day
1st Quarter CO Emissions = EFco-1q =	90,000 lb/quarter
2nd Quarter CO Emissions = EFco-2q =	91,000 lb/quarter
3rd Quarter CO Emissions = EFco-3q =	92,000 lb/quarter
4th Quarter CO Emissions = EFco-4q =	92,000 lb/quarter
Max. Yearly CO Emissions = EFco-yr =	168.00 tons/year

**2. Determine NOx Emissions:**

Max. Daily NOx Emissions = EFnox-day =	250.0 lb/day
1st Quarter NOx Emissions = EFnox-1q =	22,500 lb/quarter
2nd Quarter NOx Emissions = EFnox-2q =	22,750 lb/quarter
3rd Quarter NOx Emissions = EFnox-3q =	23,000 lb/quarter
4th Quarter NOx Emissions = EFnox-4q =	23,000 lb/quarter
Max. Yearly NOx Emissions = EFnox-yr =	42.00 tons/year

## **RULE & REGULATION COMPLIANCE EVALUATION:**

### **District Rule 2.3-Ringelmann**

The source is expected to comply with this rule's facility wide opacity limit of 20% (amended 01/13/2010). Although the rule has yet to be entered into the California SIP, the District will make the applicable rule requirements federally enforceable by using the provisions of Rule 3.4, Section 409, to subsume the SIP approved 40% opacity limit (see Title V Statement of Basis).

### **District Rule 2.5-Nuisance**

The operation is expected to comply with the rule requirement of no discharge which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or the public. A condition will not be placed on the ATC, but will be added to the PTO upon implementation.

### **District Rule 2.16-Fuel Burning Heat or Power Generators**

Per Section (c)(1) of Rule 2.16, "fuel burning equipment serving primarily as air pollution control equipment by using combustion to destroy air contaminants shall be exempt from the provisions of (the) rule." Therefore, the nitric acid plant's permitted NSCR system ("NOx Decomposer") under P-37-82(a2) is exempt from the mass emission limits of Rule 2.16 since it consumes natural gas in order to abate the nitric acid plant's NOx emissions.

### **District Rule 2.42-Nitric Acid Production**

The facility is subject to the rule (adopted on 05/13/2009 and approved into the SIP in 07/09/2009). As demonstrated in the Statement of Basis, the District has streamlined the applicable requirements of this rule with the requirements of 40 CFR Part G (Standards of Performance for Nitric Acid Plants).

The following conditions apply to the operation:

Section 110: Exemption for NOx and opacity emission limits of the rule during periods of startup and shutdown.

Section 206: Periods of equipment startup will be limited to 3.0 hours and shall not include control equipment preheating times.

Section 207: Periods of equipment shutdown will be limited to 3.0 hours and shall not include control equipment cool down times.

Section 301: NOx emission limit of 3.0 lb per ton of acid produced (expressed as 100% strength);

Section 302: Opacity limit 1/2 of Ringelmann No. 1, or 10%;

Section 303: The facility will continue to be required to use a CEMS for NOx and CO pollutants, and will be required to comply with the applicable operating and calibration standards;

Section 304: The facility will be required to perform a NOx, CO, and visible emission source tests once every twelve (12) months;

Section 400: The facility is currently operating under an approved Operating and Maintenance Plan (submitted on 06/16/2009, approved on 07/20/2010);

Section 501: The facility will continue to be required to maintain all records for five (5) years.

Section 502: The facility will continue to be required to monitor and record the facility's operating parameters (e.g., startup and shutdown times, hours of operation, NOx emissions, etc.); and

Section 600: The facility will continue to be required to test and calculate the required NOx emission parameters and opacity requirements.

### **District Rule 3.4-New Source Review**

## **PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT**

	<u>Daily</u>	<u>Yearly</u>	
<b>VOC</b>	0.0 lb	0.00 tons	Use for annual billing
<b>CO</b>	1,000.0 lb	168.00 tons	Use for annual billing
<b>NOx</b>	250.0 lb	42.00 tons	Use for annual billing
<b>SOx</b>	0.0 lb	0.00 tons	Use for annual billing
<b>PM10</b>	0.0 lb	0.00 tons	Use for annual billing

	<u>Quarterly</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	90,000	91,000	92,000	92,000
NOx (lb)	22,500	22,750	23,000	23,000
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

**Previous quarterly potential to emit for modified permit \***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	VOC (lb)	0	0	0
CO (lb)	90,000	91,000	92,000	92,000
NOx (lb)	22,500	22,750	23,000	23,000
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* Emissions from PTO P-37-82(a2) (issued 05/03/2005).

**Historic potential emissions for modified permit \***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	VOC (lb)	0	0	0
CO (lb)	90,000	91,000	92,000	92,000
NOx (lb)	22,500	22,750	23,000	23,000
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* The following historic potential emissions (HPE) calculation will be performed separately for CO and NOx since the existing facility is equipped with a CEMS for both pollutants.

**CO Determination:** The reported CO emissions for this permit over the last four consecutive calendar quarters preceding the submission of this modification application were 135.37 tons, which was 80.6% of the permitted throughput. Specifically, the reported CO emissions are 62,817 tons /2nd quarter of 2010, 70,503 tons/3rd quarter of 2010, 71,345 tons/4th quarter of 2010, and 66,084 tons/1st quarter of 2011 - see email dated 06/28/2011). Because the emissions are over 80% in at least one year out of the last five, the HPE equal the previous PTE.

**NOx Determination:** The reported NOx emissions for this permit in 2008 was 34.16 tons, which was 81.3% of permitted emission limit. Because the emissions are over 80% in at least one year out of the last five, the HPE equal the previous PTE.

<u>Pollutant</u>	<u>Trigger (lb/day)</u>	<u>BACT</u>	<u>Quarterly Increase</u>	<u>BACT</u>
		<u>Proposed (lb/day)</u>		
VOC	10	0	No	No
CO	250	1,000	No	No
NOx	10	250	No	No
SOx	80	0	No	No
PM10	80	0	No	No

**OFFSETS**

**Quarterly permitted emissions for other permits at the stationary source\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	VOC (lb)	69	70	70
CO (lb)	3,723	3,753	3,784	3,784
NOx (lb)	8,187	8,194	8,200	8,200
SOx (lb)	26	27	27	27
PM10 (lb)	11,874	11,898	11,922	11,922

\* Emissions from other stationary units excluding the modified unit of C-11-61 (see Quarterly PTE worksheet dated 07/13/2011).

**Quarterly permitted emissions for the stationary source including proposed emissions**

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	69	70	70	70
CO (lb)	93,723	94,753	95,784	95,784
NOx (lb)	30,687	30,944	31,200	31,200
SOx (lb)	26	27	27	27
PM10 (lb)	11,874	11,898	11,922	11,922

**Offset triggers**

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

**Quantity of offsets required**

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

**MAJOR MODIFICATION**

**Facility Total Potential to Emit \***

0.21 TPY VOC  
 175.03 TPY CO  
 58.74 TPY NOx  
 0.06 TPY SOx  
 8.46 TPY PM10

**Major Source Thresholds**

25 TPY VOC  
 100 TPY CO  
 25 TPY NOx  
 100 TPY SOx  
 100 TPY PM10

\* Emissions from Quarterly PTE worksheet dated 07/13/2011.

**Last five year emission aggregate \***

0.00 TPY VOC  
 0.00 TPY CO  
 0.00 TPY NOx  
 0.00 TPY SOx  
 3.53 TPY PM10

**Major Modification Thresholds**

25 TPY VOC  
 100 TPY CO  
 25 TPY NOx  
 40 TPY SOx  
 25 TPY PM10

\* Emissions from Five-Year Aggregate worksheet dated 07/13/2011.

**Result: The proposed modification is not a major modification**

**PUBLIC NOTICE**

**"Increase in historic potential to emit"**

0 lb VOC/quarter  
 0 lb CO/quarter  
 0 lb NOx/quarter  
 0 lb SOx/quarter  
 0 lb PM10/quarter

**Exemption level for notification**

7,500 lb VOC/quarter  
 49,500 lb CO/quarter  
 7,500 lb NOx/quarter  
 13,650 lb SOx/quarter  
 13,650 lb PM10/quarter

**Result: Public notice is not required**

### **District Rule 3.8-Federal Operating Permits**

As request by the source, ATC C-11-61 has been processed under the Enhanced New Source Review provisions of District Rule 3.4, Section 404 (see application). The proposed permit modification is considered a minor permit modification, since the modifications do not meet the definitions of "significant permit modification" or "administrative permit amendment."

Section 228 of the rule defines a "significant permit modification" as any modification to a federally enforceable condition that: is defined in Title I of the Clean Air Act; significantly changes any monitoring requirement; relaxes any reporting or recordkeeping requirement; includes a permit term or condition which allows the source to avoid applicable federal requirement; involves a case-by-case determination of any emission standard; or involves an ambient impact analysis. Section 203 of the rule defines an "administrative permit amendment" as any amendment that: corrects a typographical error; identifies a minor administrative change; requires more frequent monitoring or reporting by the permit holder; transfers ownership of an affected source; or incorporates into the Title V permit conditions of an approved "preconstruction permit." Per Section 402.4 of the rule, minor permit modifications can include changes in the permitted emissions, and/or the addition of federally applicable requirements.

Per Section 409.2 of the rule, the District will provide written notice of the proposed decision (including the appropriate documentation) to CARB and U.S. EPA.

### **District Rule 3.20-Ozone Transport Mitigation**

As documented above, the facility total potential to emit is above 10 tons per year for VOC or NOx, and therefore the post-project Stationary Source Potential to Emit (SSPE) will be calculated.

#### **Annual permitted emissions for the stationary source including proposed emissions**

VOC (lb)	416	lbs
NOx (lb)	117,484	lbs

#### **Annual permitted emissions for equipment which is exempt from Rule 3.4\***

VOC (lb)	238	lbs
NOx (lb)	2,504	lbs

\* Emissions from P-85-94(t) for emergency engine.

#### **Post -project Stationary Source Potential to Emit (SSPE)**

VOC (lb)	178	lbs
NOx (lb)	114,980	lbs

Because the post-project SSPE is greater than 10 tons (20,000) lbs per year for VOC or NOx, per section 301.1, calculations shall be performed to determine the quantity of mitigation required, if any.

#### **Pre -project Stationary Source Potential to Emit (SSPE)**

VOC (lb)	178	lbs
NOx (lb)	114,980	lbs

#### **Quantity of offsets required by Rule 3.4**

VOC (lb)	0	lbs
NOx (lb)	0	lbs

#### **Quantity of Mitigation required by Rule 3.20**

VOC (lb)	0	lbs
NOx (lb)	0	lbs

#### **40 CFR Part 60, Subpart G-Standards of Performance for Nitric Acid Plants**

The source is subject to the requirement of this subpart since the plant produces nitric acid and commenced operation after 08/17/1971. As discussed above for Rule 2.42, the applicable conditions of this subpart will be streamlined with the requirements of Rule 2.42 (see Statement of Basis).

The following conditions apply to the operation:

Section 60.72(b)(1): NO<sub>x</sub> limit of 3.0 lb per ton of acid produced (expressed as 100% strength);

Section 60.72(b)(2): Opacity limit of 10% (equivalent to 1/2 of Ringelmann No. 1);

Section 60.73(a): The facility will continue to be required to use a CEMS for NO<sub>x</sub> and CO pollutants, and will be required to comply with the applicable operating and calibration standards;

Section 60.73(b): The facility will continue to be required to test and calculate the required NO<sub>x</sub> emission parameters;

Section 60.73(c): The facility will continue to be required to monitor and record the facility's production parameters;

Section 60.73(e): The facility will be required to report excess emission as described in the section.

Section 60.74(a) through (d): The facility will continue to be required to test and calculate the required NO<sub>x</sub> emission parameters.

#### **40 CFR Part 60, Appendix B-Performance Specifications**

Appendix B - Specification 2 applies to the NO<sub>x</sub> CEMS, since the plant is subject to the CEMS requirements of 40 CFR Part 60. District Rule 3.4 will be used to require that the CO CEMS comply with the applicable requirements of Specification 4A. The source is currently in compliance with this appendix, and the following conditions will be retained in the permit:

Section 6.1.1.2: The CEMS (recorder output) shall have a high-level value between 1.5 times the NO<sub>x</sub> concentration corresponding to the emission standard level and the span value (streamlined with the requirements of Specification 4A - see Title V Statement of Basis).

Section 6.1.2: The calibration gas shall have a reference value between 50% and 100% of the high-level value (streamlined with the requirements of Specification 4A - see Title V Statement of Basis).

Section 13.1: The zero and span shall be adjusted whenever the daily zero drift or the daily span drift deviates from the reference value of the calibration gas by more than two-times 2.5% of the NO<sub>x</sub> span value, or two-times of the CO span value (streamlined with the requirements of 40 CFR Part 60.13(d)(1) - see Title V Statement of Basis).

#### **40 CFR Part 60, Appendix F-Quality Assurance Procedures**

Appendix F - Procedure 1 applies to the NO<sub>x</sub> CEMS, since the plant CEMS is "used to demonstrate compliance with emission limits on a continuous basis" as outlined in 40 CFR Part 60.13(a). District Rule 3.4 will be used to require that the CO CEMS comply with the applicable requirements of Procedure 1. As such, the streamlined condition requires that a relative accuracy test audit (RATA) be performed on the CO and NO<sub>x</sub> CEMS once every twelve (12) consecutive calendar months (instead of once every four (4) quarters as required by the procedure - see Title V Statement of Basis).

#### **40 CFR Part 64-Compliance Assurance Monitoring**

The operation is exempted from the requirements of the rule per the provisions of Section 64.2(b)(vi) for NO<sub>x</sub>. The section requires that any emissions unit complying with a continuous compliance determination method be exempted from the requirements of the subpart. Therefore, by satisfying the CEMS requirements of Subpart G, the nitric acid plant is exempted from the CAM requirements of this subpart. Also, since the modified production plant's yearly CO PTE is below the major source threshold (100 tons), the emissions unit is not subject to the CAM requirements for this pollutant.

#### **District Risk Management Plan and Risk Assessment Guidelines**

The application results in a decrease in CO emissions and a zero increase in NO<sub>x</sub> emissions for the operation. Since an increase in the operation's health risk is not expected, the District will not perform a health risk screening for this project.

#### **COMMENTS:**

The application does not trigger BACT, offsets, or mitigation credits. The following are conditions to be placed on the permit (see Title V Statement of Basis for streamlining demonstrations) and are enforceable under either Condition Approval (District Rule 3.1, Section 402) or New Source Review (District Rule 3.4) when applicable:

### **Emission Limits**

The mass emissions from the nitric acid production facility (including periods of start-up and shutdown) shall not exceed the daily, quarterly, or annual values listed in the PERMITTED EMISSION LIMITS table. [District Rule 3.4, §409.2(b)]

Except for qualifying periods of equipment startup or shutdown, the nitrogen oxides (NO<sub>x</sub>) emissions (expressed as NO<sub>2</sub>) shall not exceed 3.0 pound per ton (lb/ton) nitric acid (HNO<sub>3</sub>) produced (expressed as 100% nitric acid by mass) averaged over a three (3) hour rolling period. [District Rule 2.42, §110 & 301 and 40 CFR Part 60.72(a)(1)]

Except for qualifying periods of equipment startup or shutdown, no activity associated with the nitric acid manufacturing process shall discharge into the atmosphere any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

- a. Half as dark or darker in shade as No. 1 on the Ringelmann Chart; or
- b. 10% opacity. [District Rule 2.3, District Rule 2.42, §110 and §302, and 40 CFR Part 60.72(a)(2)]

The Permit Holder shall not discharge into the atmosphere from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

- a. As dark or darker in shade than No. 1 on the Ringelmann Chart; or
- b. Greater than 20% opacity. [District Rule 2.3 and District Rule 3.4]

### **Qualifying Periods of Startup and Shutdown**

The Permit Holder shall minimize to the maximum extent practicable the frequency, duration, and emissions of all qualifying periods of startup and shutdown. Each qualifying period shall not exceed three (3) hours and shall be determined as follows:

- a. Startup Period - The period of time between when feedstock is introduced into the nitric acid production process and the equipment achieves the proper operating temperature and stable operating conditions. The period will exclude the time required to preheat the control equipment.
- b. Shutdown Period - The period of time after feedstock is no longer introduced in a nitric acid production unit. The period will exclude the time required to cool down the control equipment. [District Rule 2.42, §110, §206, and §207]

### **Sampling Locations**

The Permit Holder shall install and maintain such facilities as are necessary for sampling and testing purposes. The number, size, and location of sampling ports shall be in accordance with Air Resources Board Test Method 1 or EPA Test Methods. The location and access to the sampling platform shall be in accordance with the General Industry Safety Orders of the State of California. [District Rule 3.4, §409]

### **O&M Plan**

The Permit Holder shall comply with the procedures and schedules contained in the most recent Operation and Maintenance (O&M) Plan submitted to, and approved by, the District. [District Rule 2.42, §402 and District Rule 3.4, §409]

### **Subpart G and CEMS Requirements**

The nitric acid production facility shall be operated in accordance with the requirements of 40 CFR Part 60 - Subpart G (Standards of Performance for Nitric Acid Plants). [40 CFR Part 60.70 through 60.74]

The Permit Holder shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) for measuring carbon monoxide (CO) emission concentrations. [District Rule 3.4, §409]

The Permit Holder shall install, calibrate, maintain, and operate a CEMS for measuring NO<sub>x</sub> emission concentrations. [District Rule 2.42, §303 and 40 CFR Part 60.73(a)]

The CO CEMS shall comply with the requirements specified in 40 CFR Part 60 - Appendix B, Specification 4 or other alternative methods approved by the U.S. EPA and the District. [District Rule 3.4, §409]

The NO<sub>x</sub> CEMS shall comply with the requirements specified in 40 CFR Part 60 - Appendix B, Specification 2 or other alternative methods approved by the U.S. EPA and the District. [District Rule 2.42, §303.1 and 40 CFR Part 60.73(a)]

The NO<sub>x</sub> CEMS shall be calibrated and checked using a nitrogen oxide (NO) span gas with a value between 450 and 500 ppmv, or other alternative methods approved by the U.S. EPA and the District. [District Rule 2.42, §303.2, District Rule 3.4, §409, and 40 CFR Part 60.73(a)]

#### **CEMS Design and Operation**

Each CEMS (recorder output) shall have a high-level value between 1.5 times the pollutant concentration corresponding to the emission standard level and the span value. [40 CFR Part 60 - Appendix B, Performance Specifications 2 & 4, Section 6.1.1.2)]

The calibration gas shall have a reference value between 50% and 100% of the high-level value. [40 CFR Part 60 - Appendix B, Performance Specifications 2 & 4, Section 6.1.2]

The CEMS shall complete a minimum of one (1) cycle of operation (sampling, analyzing, and data recording) for each successive fifteen (15) minute period. [40 CFR Part 60.13(e)(2)]

One (1) hour averages shall be computed from four (4) or more data points equally spaced over each one (1) hour period. [40 CFR Part 60.13(h)]

The data accumulated during periods of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, shall not be included in the data average. [40 CFR Part 60.13(h)]

The CEMS shall be in continuous operation except for system breakdowns, repairs, calibration checks, and zero and span adjustments. [40 CFR Part 60.13(e)]

The Permit Holder shall check the zero and span calibration drifts at least once daily (24 hour) in accordance with a written procedure. [40 CFR Part 60.13(d)(1)]

#### **CEMS Calibration and Adjustments**

The zero and span CO calibrations shall be adjusted whenever the daily zero drift or the daily span drift deviates from the reference value of the calibration gas by more than two-times 5% of the span value. [District Rule 3.4, §409 and 40 CFR Part 60 - Appendix B, Specification 4, Section 13.1]

The zero and span NO<sub>x</sub> calibrations shall be adjusted whenever the daily zero drift or the daily span drift deviates from the reference value of the calibration gas by more than two-times 2.5% of the span value. [40 CFR Part 60.13(d)(1) and 40 CFR Part 60 - Appendix B, Specifications 2]

### **Emissions Testing**

The Permit Holder shall perform a weekly visible emissions evaluation of the nitric acid production plant using U.S. EPA Method 9 (or an alternative test method approved by the U.S. EPA and the District). If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within twenty-four (24) hours the District shall be notified immediately. [District Rule 2.42, §304 and §604, and District Rule 3.4]

The Permit Holder shall perform a source test at least once every twelve (12) consecutive calendar months to demonstrate compliance with the following items:

- a. CO concentration (ppmvd @ 15% O<sub>2</sub>);
- b. CO mass emissions (lb/day);
- c. NO<sub>x</sub> concentration (ppmvd @ 15% O<sub>2</sub>); and
- d. NO<sub>x</sub> mass emissions (lb/day and lb/ton nitric acid produced). [District Rule 2.42, §304 and District Rule 3.4]

The Permit Holder shall perform a Relative Accuracy Test Audit (RATA) of the CO and NO<sub>x</sub> CEMS at least once every twelve (12) consecutive calendar months. The RATA shall be performed in accordance with 40 CFR Part 60 - Appendix F (Quality Assurance Procedures), or approved equivalent. [District Rule 3.4, §409 and 40 CFR Part 60 - Appendix F, Procedure 1, Section 5.1.1]

The Permit Holder shall conduct the following test methods (or alternative test methods approved by the U.S. EPA and the District) to measure the required pollutant emissions during any emission testing event. If the source wishes to use an alternative methodology a complete and detailed description of the method must be submitted to the District for written approval no less than thirty (30) days prior to the performance evaluation.

- a. CO - U.S. EPA Method 10;
- b. NO<sub>x</sub> - U.S. EPA Method 7; and
- c. Volumetric Flow rate - U.S. EPA Method 2. [District Rule 2.42, §601 and §604, District Rule 3.4, §409, and 40 CFR Part 60.74(b)(2) & (b)(3)]

The District must be notified prior to any emissions testing event (source test or RATA), and a protocol must be submitted for approval thirty (30) days prior to testing. The results of an emissions testing event shall be submitted to the District within sixty (60) days of the test date. The protocol and report shall be mailed to the attention of the Supervising Air Quality Engineer. [District Rule 3.4, §409]

### **Emission Requirements**

The Permit Holder shall establish a conversion factor for the purpose of converting CO monitoring data (in ppmv) into the applicable CO compliance limit units (lb/day). [District Rule 3.4, §409]

The Permit Holder shall determine a NO<sub>x</sub> conversion factor used to convert the NO<sub>x</sub> CEMS data (in ppmv) into the applicable NO<sub>x</sub> compliance limit units (in lb/ton) using the data from the most recent source test submitted to, and approved by, the District. The NO<sub>x</sub> emission conversion factor shall:

- a. Be calculated using the equation contained in 40 CFR Part 60.74(b)(1);
- b. Be calculated using the CEMS and source test data pertaining to the same operating time frame;
- c. Be calculated by dividing the source test data averages (in lb/ton) by the corresponding CEMS data averages (in ppmv) to obtain a conversion factor expressed in the units of lb/ton per ppmv; and
- d. Be reestablished during any source test or RATA performed. [District Rule 2.42, §602 and §603, 40 CFR Part 60.73(b), and 60.74(b)(1)]

The Permit Holder shall use the equation contained in 40 CFR Part 60.74(a)(1) to calculate the NOx emission rate that is to be used to demonstrate compliance with the requirements of this permit. [District Rule 2.42, §602 and 40 CFR Part 60.74(b)(1)]

### **Recordkeeping**

The Permit Holder shall maintain records of the occurrence and duration of any:

- a. Startup, shutdown, or malfunction in the operation of an affected facility;
- b. Any malfunction of the air pollution control equipment; or
- c. Any periods during which a CEMS or monitoring device is inoperative. [40 CFR Part 60.7(b)]

The Permit Holder shall maintain an operating log for the facility that includes, on a daily basis:

- a. The actual startup and shutdown time;
  - b. Total hours of operation, amount of nitric acid (HNO<sub>3</sub>) produced (expressed as 100% acid strength);
  - c. Operating system parameters;
  - d. The exhaust gas NOX concentrations in parts per million volume (ppmv) on a dry basis;
- and
- e. The exhaust gas NOX emission rate in lb/ton HNO<sub>3</sub> per three (3) hour rolling average. [District Rule 2.42, §502 and 40 CFR Part 60.73(c)]

The Permit Holder shall maintain all records required by this permit on-site for a period of five (5) years from the date of entry and made available to the APCO upon request. [District Rule 2.42, §501 and 40 CFR Part 60.7(f)]

### **Reporting**

The Permit Holder shall submit a monthly CO and NOx emission report to the District within fifteen (15) days of the end of the month. The report shall provide average daily CO and NOx concentrations (ppm), daily CO and NOx emissions in units of the District standard (lbs/day), and aggregate CO and NOx emissions in tons. [District Rule 3.4]

The Permit Holder shall submit a quarterly excess emissions and monitoring system performance report and/or a summary report form to the District and U.S. EPA, Region IX within thirty (30) days of the end of each quarter. [40 CFR Part 60.7(a)(7)(c)]

The Permit Holder shall submit a summary report and excess emissions and monitoring report if the total duration of excess emissions for the reporting period is 1% or greater of the total operating time for the reporting period, or if the total CEMS downtime for the reporting period is 5% or greater of the total operating time for the reporting period. [40 CFR Part 60.7(d)(2)]

The Permit Holder shall report all excess emissions to the District within ninety-six (96) hours of the occurrence of excess emissions. [District Rule 3.1, §405.4]

The responsible official shall submit a compliance certification to the U.S. EPA and the APCO every twelve (12) months unless required more frequently by an applicable requirement. The twelve (12) month period will begin on the date that the Title V permit was originally issued (July 16), and will be due within thirty (30) days after the end of the reporting period, unless otherwise approved in writing by the District. All compliance reports and other documents required to be submitted to the District by the responsible official shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. [District Rule 3.1, §402 and District Rule 3.8, §302.14(a)]

A semi-annual monitoring report shall be submitted at least every six (6) consecutive months and shall identify any deviation from permit requirements, including that previously reported to the APCO pursuant to Section 302.7(a) of Rule 3.8. The six (6) month period will begin on the date that the Title V permit was originally issued (July 16), and will be due within thirty (30) days after the end of the reporting period, unless otherwise approved in writing by the District. [District Rule 3.1, §402 and District 3.8, §302.7(b)]

**RECOMMENDATIONS:** Provide written notice of the proposed decision to CARB and U.S. EPA prior to the issuance of ATC C-11-61.

**Engineer:** *Deirdre Toole*

**Date:** *07/13/2011*

**Reviewed by:** *Susan K O'Laughlin*

**Date:** *7/13/11*



Engineer: René Toledo

SIC Code # 2873

Facility Name: Agrium U.S., Inc.

Date of Initial Quarterly PTE Determination: 12/03/1999  
 Date of Previous Quarterly PTE Determination: 10/21/2010  
 Date of Current Quarterly PTE Determination: 07/13/2011

Location: 3961 Channel Drive; West Sacramento, CA

CURRENT APPLICATIONS:

ATC's  
C-11-61

PTO's

Process Description	Current Permits	VOC Emissions				CO Emissions				NOx Emissions				SOx Emissions				PM10 Emissions								
		QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)					
Steam Generation	P-36-82(a) P-37-82(a2)	30	0	0	0	0.06	3,198	3,228	3,259	3,259	6.47	394	398	402	402	0.80	6	7	7	7	0.01	148	150	151	151	0.30
Nitric Acid Production	C-11-61	0	0	0	0	0.00	90,000	91,000	92,000	92,000	168.00	22,500	22,750	23,000	23,000	42.00	0	0	0	0	0.00	0	0	0	0	0.00
Bulk Ammonia Warehousing	P-70-78(a1)	6	6	6	6	0.01	21	21	21	0.04	7,193	7,196	7,198	7,198	14.39	16	16	16	16	0.03	148	148	148	148	0.30	
Ammonia Product Heaters	P-71-78(a)	33	33	33	33	0.02	504	504	504	0.25	600	600	600	600	0.30	4	4	4	4	0.00	46	46	46	46	0.02	
Shipping & Transfer of Bulk Urea	P-72-78(a7)	0	0	0	0	0.00	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	4,559	4,562	4,565	4,565	2.72	
Receiving of Bulk Urea - Railcar/Truck	P-33-09(a)	0	0	0	0	0.00	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	1,741	1,760	1,780	1,780	2.42	
Receiving of Bulk Urea - Ship/Barge	P-73-78(a3)	0	0	0	0	0.00	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	5,232	5,232	5,232	5,232	2.62	
PRE-PROJECT SSPE <sup>1</sup> (lbs)		69	70	70	70	0.178	93,723	94,753	95,784	95,784	349,523	30,687	30,944	31,200	31,200	114,980	26	27	27	27	85	11,874	11,898	11,922	11,922	16,746
POST-PROJECT SSPE <sup>1</sup> (lbs)		69	70	70	70	0.178	93,723	94,753	95,784	95,784	349,523	30,687	30,944	31,200	31,200	114,980	26	27	27	27	85	11,874	11,898	11,922	11,922	16,746
Emergency IC Engine (600 BHP)	P-85-94(f)	238	238	238	238	0.12	545	545	545	0.27	2,504	2,504	2,504	2,504	1.25	38	38	38	38	0.02	172	172	172	172	0.09	
PRE-PROJECT TOTAL PTE <sup>2</sup>		307	308	308	308	0.21	94,268	95,298	96,329	96,329	175.03	33,191	33,448	33,704	33,704	58.74	64	65	65	65	0.06	12,046	12,070	12,094	12,094	8.46
POST-PROJECT TOTAL PTE <sup>2</sup>		307	308	308	308	0.21	94,268	95,298	96,329	96,329	175.03	33,191	33,448	33,704	33,704	58.74	64	65	65	65	0.06	12,046	12,070	12,094	12,094	8.46

Post-Project Stationary Source Potential to Emit (SSPE)

	Quarter #1 (lbs)	Quarter #2 (lbs)	Quarter #3 (lbs)	Quarter #4 (lbs)	Yearly (lbs)
VOC	69	70	70	70	178
CO	93,723	94,753	95,784	95,784	349,523
NOx	30,687	30,944	31,200	31,200	114,980
SOx	26	27	27	27	85
PM10	11,874	11,898	11,922	11,922	16,746

MITIGATION THRESHOLDS

Yearly (lbs/year)
20,000
20,000

SSPE Comparison to Rule 3.20 Triggers

Annual
Below
Above

Post-Project Total Quarterly Potential to Emit (PTE)

	Quarter #1 (lbs)	Quarter #2 (lbs)	Quarter #3 (lbs)	Quarter #4 (lbs)	Yearly (tons)
VOC	307	308	308	308	0.27
CO	94,268	95,298	96,329	96,329	175.03
NOx	33,191	33,448	33,704	33,704	58.74
SOx	64	65	65	65	0.06
PM10	12,046	12,070	12,094	12,094	8.46

OFFSET THRESHOLDS

Quarterly (lbs/qrtr)
7,500
49,500
7,500
13,650
13,650

PTE Comparison to NSR Triggers

Quarter #1	Quarter #2	Quarter #3	Quarter #4
Below	Below	Below	Below
Above	Above	Above	Above
Above	Above	Above	Above
Below	Below	Below	Below
Below	Below	Below	Below

COMMENTS: This quarterly PTE evaluation was updated for ATC C-11-61 (Nitric Acid Production).

Engineer: René Toledo

Date: 07/13/2011

Reviewed by: Susan K. O'Neil

Date: 7/13/11

**YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT**  
 1947 Galileo Court, Suite 103; Davis, CA 95618  
**New Source Review**  
**Last Five Year Activity**

Engineer: René Toledo

SIC Code # 2873

Facility Name: Agrium U.S. Inc. <sup>a</sup>

Date of Initial Determination: 10/03/2005

Location: 3961 Channel Drive; West Sacramento, CA

Date of Previous Determination: 10/21/2010

Date of Current Determination: 07/13/2011

Process	Issued Permits	Date PTO Issued	ATC	Date ATC Issued	VOC (TPY)	CO (TPY)	NO <sub>x</sub> (TPY)	SO <sub>x</sub> (TPY)	PM <sub>10</sub> (TPY)
Nitric Acid Production	P-37-82(a2)	02/28/2001	C-00-114	11/28/2000	0.00	0.00	0.00	0.00	0.00
Steam Generation	P-36-82(a)	11/21/2001	C-00-107	04/30/2001	0.00	0.57	0.00	0.00	0.00
Shipping & Transfer of Bulk Urea	-	-	C-00-115 <sup>b</sup>	06/12/2001	0.00	0.00	0.00	0.00	0.00
Receiving of Bulk Urea - Ship/Barge	-	-	C-00-116 <sup>c</sup>	06/12/2001	0.00	0.00	0.00	0.00	0.00
Ammonia Product Heater (Back Up)	P-71-78(a)	01/17/2003	C-01-169 <sup>d</sup>	04/04/2002	0.00	0.00	0.00	0.00	0.00
Bulk Ammonia Warehousing	P-70-78(a)	01/17/2003	C-01-162 <sup>e</sup>	09/17/2002	0.00	0.00	0.00	0.00	0.00
Receiving of Bulk Urea - Ship/Barge	-	-	C-03-129 <sup>f</sup>	10/23/2003	0.00	0.00	0.00	0.00	1.34
Nitric Acid Production	P-37-82(a2)	5/3/2005	C-03-68	10/23/2003	0.00	0.00	0.00	0.00	0.00
Shipping & Transfer of Bulk Urea	-	-	C-04-76 <sup>g</sup>	06/16/2005	0.00	0.00	0.00	0.00	0.06
Receiving of Bulk Urea - Ship/Barge	P-73-78(a2)	03/16/2006	C-04-77 <sup>h</sup>	10/21/2005	0.00	0.00	0.00	0.00	0.00
Shipping & Transfer of Bulk Urea	P-72-78(a3)	03/16/2006	C-05-204	10/21/2005	0.00	0.00	0.00	0.00	0.28
Ammonia Flare	P-70-78(a1)	04/12/2007	C-06-181	02/21/2007	0.00	0.00	0.00	0.00	0.00
Shipping & Transfer of Bulk Urea	P-72-78(a4)	08/17/2007	C-07-60	05/03/2007	0.00	0.00	0.00	0.00	0.05
Shipping & Transfer of Bulk Urea	P-72-78(a5)	07/30/2008	C-07-223	06/11/2008	0.00	0.00	0.00	0.00	0.74
Receiving of Bulk Urea - Ship/Barge	P-73-78(a3)	07/30/2008	C-07-224	06/11/2008	0.00	0.00	0.00	0.00	0.16
Receiving of Bulk Urea - Railcar/Truck	P-33-09	06/25/2009	C-08-114 <sup>i</sup>	09/22/2008	0.00	0.00	0.00	0.00	0.89
Shipping & Transfer of Bulk Urea	P-72-78(a7)	06/25/2009	C-08-225	09/22/2008	0.00	0.00	0.00	0.00	0.16
Receiving of Bulk Urea - Ship/Barge	P-33-09(a)	07/16/2010	C-10-14	04/06/2010	0.00	0.00	0.00	0.00	1.53
Nitric Acid Production	-	-	C-10-99	CANCELED	-	-	-	-	-
Nitric Acid Production	P-37-82(a3)	-	C-11-61	PENDING	0.00	0.00	0.00	0.00	0.00
<b>TOTAL <sup>k</sup></b>					<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>3.53</b>

<sup>a</sup> Facility transfer of ownership from Prodicta, LLC to Agrium US Inc. approved 6/12/2001.

<sup>b</sup> C-00-115 proposed to modify P-72-78(a1), but canceled on 2/18/03.

<sup>c</sup> C-00-116 proposed to modify P-73-78(a), but canceled on 2/18/03.

<sup>d</sup> C-01-169 revised on 12/9/05 to correct for emission limit errors.

<sup>e</sup> C-01-162 incorporates the emissions of P-31-91.

<sup>f</sup> C-03-129 superseded by ATC application C-04-77 (proposing to modify P-73-78(t)).

<sup>g</sup> C-04-76 superseded by ATC application C-05-204 (proposing to modify P-72-78(t)).

<sup>h</sup> C-04-77 revised to correct an error in calculations (re-issued 10/21/2005).

<sup>i</sup> C-08-114 revised to properly account for overfilled truck off-loading emissions and process limits (see attached email dated 10/10/2008).

<sup>k</sup> All decreases in PTE are treated as zero net change and not included in the Total 5-Year Aggregate summation.

**COMMENTS:** These permits are sorted by the ATC issuance date. According to Rule 3.4, Section 221, a major modification is calculated based on all creditable increases and decreases from the source over the period of five consecutive years before the application, including the calendar year of the most recent application. The applicable period ranges from June 2006 through June 2011.

Engineer: René Toledo

Date: 07/13/2011

Reviewed by: Susan K. McLaughlin

Date: 7/13/11