DAQC-407-13
Site ID 10825 (B1)

MEMORANDUM

TO: **FILE – GENEVA NITROGEN**

THROUGH: Harold Burge, Major Source Compliance Section Manager HB

FROM: Jeremiah R. Marsigli, Environmental Scientist JRM

DATE: April 12, 2013

SUBJECT: **FCE**, Major, Utah County, AIRS #04900082

INSPECTION DATE: April 9, 2013

SOURCE LOCATION: 1165 North 1600 West, Orem, Utah 84057 (801) 227-7301

SOURCE CONTACT: Terry Gasser - Safety, Health and Environmental Coordinator

OPERATING STATUS: Operating

PROCESS DESCRIPTION:

The nitrogen plant in Orem produces nitric acid and ammonium nitrate, which are key ingredients in the production of commercial explosives. Geneva Nitrogen employs about 33 people at their "Geneva" plant. The plant was originally built in 1956 as an addition to U.S. Steel's plant called the "Geneva Works Steel Plant." The steel plant provided the necessary resources to run the nitrogen plant, and the two facilities co-existed for many years. In 1982, the nitrogen plant stopped using by-products from the steel plant and became part of US Steel's Agra-Chemicals Division. Four years later, Geneva Nitrogen purchased the USS Agra-Chemicals Division. Today, the plant manufactures about 250 tons of nitric acid and 320 tons of ammonium nitrate per day.

Geneva Nitrogen purchases anhydrous ammonia (NH_3) and processes it into nitric acid (HNO_3) and ammonium nitrate (NH_4NO_3). 10-14 railcars of NH_3 are off-loaded at the facility each week. The NH_3 is stored in two 60.5'-diameter refrigerated Horton Spheres. The NH_3 in the spheres is kept in a liquid state at 35°F and 55 psig. The facility is equipped with a natural gas-fired Cleaver Brooks boiler for steam.

NITRIC ACID PRODUCTION: There are two nitric acid plants at the facility. The high-pressure Weatherly Nitric Acid Plant, constructed in 1966, produces ~90 tons of nitric acid per day, and the low-pressure Montecatini Nitric Acid Plant, constructed in 1956, produces ~170 tons per day. The chemistry of both plants is as follows:

The NH_3 from the Horton Spheres and compressed air are reacted under elevated pressure and temperature in several stages to produce nitric acid (HNO_3). In the first stage of the reaction, NH_3 is burned with oxygen (O_2) from the compressed air in the presence of a catalyst, platinum gauze to produce nitric oxide (NO) and water (H_2O):

$$4NH_3 + 5O_2 \Rightarrow 4NO + 6H_2O$$

The NO reacts with O_2 from the compressed air to produce nitrogen dioxide (NO_2):

$$2NO + O_2 \Rightarrow 2NO_2$$

Document Date 4/12/2013
DAQ-2013-004809

State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

10825

Title V Operating Permit

PERMIT NUMBER: 4900082004
DATE OF PERMIT: August 8, 2013
Date of Last Revision: August 8, 2013

This Operating Permit is issued to, and applies to the following:

Name of Permittee:	**Permitted Location:**
Geneva Nitrogen Inc. 1165 N 1600 W Vineyard UT 840570	Geneva Nitrogen Plant 1165 North 1600 West Vineyard UT 84057

UTM coordinates: 437,470 m Easting, 4,463,352 m Northing
SIC code: 2873 (Nitrogenous Fertilizers)

By:

_____
Bryce C. Bird, Director

Prepared By:

_____
Jennifer He

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ENFORCEABLE DATES AND TIMELINES

The following dates or timeframes are referenced in
Section I: General Provisions of this permit.

Annual Certification Due:	March 31 of every calendar year that this permit is in force.
Renewal application due:	February 8, 2018
Permit expiration date:	August 8, 2018
Definition of "prompt":	written notification within 14 days.

ABSTRACT

Geneva Nitrogen LLC Nitrogen Plant consists of the administration building, maintenance shop, laboratory, and ammonium nitrate production facilities. The laboratory is leased to another company. There are three manufacturing processes: nitric acid manufacturing, ammonium nitrate solution manufacturing, and solid ammonium nitrate manufacturing. The main emission units are two nitric acid plants, one prill tower, two prill dryer vents, and one prill cooler vent. Geneva Nitrogen LLC Nitrogen Plant is a major source of NO_x and PM_{10}. Both nitric acid plants are subject to 40 CFR 64 (Compliance Assurance Monitoring).

OPERATING PERMIT HISTORY

Permit/Activity	Date Issued	Recorded Changes
Title V renewal application (Project #OPP0108250006)	8/8/2013	Changes: no changes have been made in this renewal permit
Title V renewal application (Project #OPP0108250005)	1/15/2009	Changes: each acid plant has own CEM for CAM.
Title V renewal application (Project #OPP0108250003)	5/20/2004	Changes: AO DAQE-AN0825005-03 is included in the permit. Both nitric acid plants are subject to CAM. The new boiler (EU#10) has replaced the old boiler and is subject to NPSP Dc. Emission Unit #7 (Prill Precooler) in the last version of the permit is no longer a part of the process and is deleted as requested by the permittee.
Title V administrative amendment by DAQ (Project #OPP0108250002)	4/14/2003	Changes: due to issuance of AO DAQE-AN0825004-03, for removing the 90% reduction requirement for the NO_x abatement systems installed in the Montecatini and Weatherly nitric acid plants, deleting emission unit Prill Coating and Handling due to the modification of process, and deleting PM_{10} limit on Predryer Vent, Dryer Vent, Cooler Vent, and 4th Scrubber Vent. In addition, the new SIP (dated July 3, 2003) requirements are included in the permit.
Title V initial application (Project #OPP0108250001)	6/24/1999	

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Issued under authority of Utah Code Ann. Section 19-2-104 and 19-2-109.1, and in accordance with Utah Administrative Code R307-415 Operating Permit Requirements.

All definitions, terms and abbreviations used in this permit conform to those used in Utah Administrative Code R307-101 and R307-415 (Rules), and 40 Code of Federal Regulations (CFR), except as otherwise defined in this permit. Unless noted otherwise, references cited in the permit conditions refer to the Rules.

Where a permit condition in Section I, General Provisions, partially recites or summarizes an applicable rule, the full text of the applicable portion of the rule shall govern interpretations of the requirements of the rule. In the case of a conflict between the Rules and the permit terms and conditions of Section II, Special Provisions, the permit terms and conditions of Section II shall govern except as noted in Provision I.M, Permit Shield.

SECTION I: GENERAL PROVISIONS

I.A **Federal Enforcement.**

All terms and conditions in this permit, including those provisions designed to limit the potential to emit, are enforceable by the EPA and citizens under the Clean Air Act of 1990 (CAA) except those terms and conditions that are specifically designated as "State Requirements". (R307-415-6b)

I.B **Permitted Activity(ies).**

Except as provided in R307-415-7b(1), the permittee may not operate except in compliance with this permit. (See also Provision I.E, Application Shield)

I.C **Duty to Comply.**

I.C.1 The permittee must comply with all conditions of the operating permit. Any permit noncompliance constitutes a violation of the Air Conservation Act and is grounds for any of the following: enforcement action; permit termination; revocation and reissuance; modification; or denial of a permit renewal application. (R307-415-6a(6)(a))

I.C.2 It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (R307-415-6a(6)(b))

I.C.3 The permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director copies of records required to be kept by this permit or, for information claimed to be confidential, the permittee may furnish such records directly to the EPA along with a claim of confidentiality. (R307-415-6a(6)(e))

I.C.4 This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance shall not stay any permit condition, except as provided under R307-415-7f(1) for minor permit modifications. (R307-415-6a(6)(c))

I.D **Permit Expiration and Renewal.**

I.D.1 This permit is issued for a fixed term of five years and expires on the date shown under "Enforceable Dates and Timelines" at the front of this permit. (R307-415-6a(2))

I.D.2 Application for renewal of this permit is due on or before the date shown under "Enforceable Dates and Timelines" at the front of this permit. An application may be submitted early for any reason. (R307-415-5a(1)(c))

I.D.3 An application for renewal submitted after the due date listed in I.D.2 above shall be accepted for processing, but shall not be considered a timely application and shall not relieve the permittee of any enforcement actions resulting from submitting a late application. (R307-415-5a(5))

I.D.4 Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted consistent with R307-415-7b (see also Provision I.E, Application Shield) and R307-415-5a(1)(c) (see also Provision I.D.2). (R307-415-7c(2))

I.E **Application Shield.**

If the permittee submits a timely and complete application for renewal, the permittee's failure to have an operating permit will not be a violation of R307-415, until the Director takes final action on the permit renewal application. In such case, the terms and conditions of this permit shall remain in force until permit renewal or denial. This protection shall cease to apply if, subsequent to the completeness determination required pursuant to R307-415-7a(3), and as required by R307-415-5a(2), the applicant fails to submit by the deadline specified in writing by the Director any additional information identified as being needed to process the application. (R307-415-7b(2))

I.F **Severability.**

In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force. (R307-415-6a(5))

I.G **Permit Fee.**

I.G.1 The permittee shall pay an annual emission fee to the Director consistent with R307-415-9. (R307-415-6a(7))

I.G.2 The emission fee shall be due on October 1 of each calendar year or 45 days after the source receives notice of the amount of the fee, whichever is later. (R307-415-9(4)(a))

I.H **No Property Rights.**

This permit does not convey any property rights of any sort, or any exclusive privilege. (R307-415-6a(6)(d))

I.I **Revision Exception.**

No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit. (R307-415-6a(8))

I.J **Inspection and Entry.**

I.J.1 Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director or an authorized representative to perform any of the following:

I.J.1.a Enter upon the permittee's premises where the source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit. (R307-415-6c(2)(a))

I.J.1.b Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit. (R307-415-6c(2)(b))

I.J.1.c Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practice, or operation regulated or required under this permit. (R307-415-6c(2)(c))

I.J.1.d Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with this permit or applicable requirements. (R307-415-6c(2)(d))

I.J.2 Any claims of confidentiality made on the information obtained during an inspection shall be made pursuant to Utah Code Ann. Section 19-1-306. (R307-415-6c(2)(e))

I.K **Certification.**

Any application form, report, or compliance certification submitted pursuant to this permit shall contain certification as to its truth, accuracy, and completeness, by a responsible official as defined in R307-415-3. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. (R307-415-5d)

I.L **Compliance Certification.**

I.L.1 Permittee shall submit to the Director an annual compliance certification, certifying compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. This certification shall be submitted no later than the date shown under "Enforceable Dates and Timelines" at the front of this permit, and that date each year following until this permit expires. The certification shall include all the following (permittee may cross-reference this permit or previous reports): (R307-415-6c(5))

I.L.1.a The identification of each term or condition of this permit that is the basis of the certification;

I.L.1.b The identification of the methods or other means used by the permittee for determining the compliance status with each term and condition during the certification period. Such methods and other means shall include, at a minimum, the monitoring and related recordkeeping and reporting requirements in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Act, which prohibits knowingly making a false certification or omitting material information;

I.L.1.c The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the method or means designated in Provision I.L.1.b. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under 40 CFR Part 64 occurred; and

I.L.1.d Such other facts as the Director may require to determine the compliance status.

I.L.2 The permittee shall also submit all compliance certifications to the EPA, Region VIII, at the following address or to such other address as may be required by the Director: (R307-415-6c(5)(d))

Environmental Protection Agency, Region VIII
Office of Enforcement, Compliance and Environmental Justice
(mail code 8ENF)
1595 Wynkoop Street
Denver, CO 80202-1129

I.M **Permit Shield.**

I.M.1 Compliance with the provisions of this permit shall be deemed compliance with any applicable requirements as of the date of this permit, provided that:

I.M.1.a Such applicable requirements are included and are specifically identified in this permit, or (R307-415-6f(1)(a))

I.M.1.b Those requirements not applicable to the source are specifically identified and listed in this permit. (R307-415-6f(1)(b))

I.M.2 Nothing in this permit shall alter or affect any of the following:

I.M.2.a The emergency provisions of Utah Code Ann. Section 19-1-202 and Section 19-2-112, and the provisions of the CAA Section 303. (R307-415-6f(3)(a))

I.M.2.b The liability of the owner or operator of the source for any violation of applicable requirements under Utah Code Ann. Section 19-2-107(2)(g) and Section 19-2-110 prior to or at the time of issuance of this permit. (R307-415-6f(3)(b)

I.M.2.c The applicable requirements of the Acid Rain Program, consistent with the CAA Section 408(a). (R307-415-6f(3)(c))

I.M.2.d The ability of the Director to obtain information from the source under Utah Code Ann. Section 19-2-120, and the ability of the EPA to obtain information from the source under the CAA Section 114. (R307-415-6f(3)(d))

I.N **Emergency Provision.**

I.N.1 An "emergency" is any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. (R307-415-6g(1))

I.N.2 An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the affirmative defense is demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

I.N.2.a An emergency occurred and the permittee can identify the causes of the emergency. (R307-415-6g(3)(a))

I.N.2.b The permitted facility was at the time being properly operated. (R307-415-6g(3)(b))

I.N.2.c During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in this permit. (R307-415-6g(3)(c))

I.N.2.d The permittee submitted notice of the emergency to the Director within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirement of Provision I.S.2.c below. (R307-415-6g(3)(d))

I.N.3 In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof. (R307-415-6g(4))

I.N.4 This emergency provision is in addition to any emergency or upset provision contained in any other section of this permit. (R307-415-6g(5))

I.O **Operational Flexibility.**

Operational flexibility is governed by R307-415-7d(1).

I.P **Off-permit Changes.**

Off-permit changes are governed by R307-415-7d(2).

I.Q **Administrative Permit Amendments.**

Administrative permit amendments are governed by R307-415-7e.

I.R **Permit Modifications.**

Permit modifications are governed by R307-415-7f.

I.S **Records and Reporting.**

I.S.1 Records.

I.S.1.a The records of all required monitoring data and support information shall be retained by the permittee for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, all original strip-charts or appropriate recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. (R307-415-6a(3)(b)(ii))

I.S.1.b For all monitoring requirements described in Section II, Special Provisions, the source shall record the following information, where applicable: (R307-415-6a(3)(b)(i))

I.S.1.b.1 The date, place as defined in this permit, and time of sampling or measurement.

I.S.1.b.2 The date analyses were performed.

I.S.1.b.3 The company or entity that performed the analyses.

I.S.1.b.4 The analytical techniques or methods used.

I.S.1.b.5 The results of such analyses.

I.S.1.b.6 The operating conditions as existing at the time of sampling or measurement.

I.S.1.c Additional record keeping requirements, if any, are described in Section II, Special Provisions.

I.S.2 Reports.

I.S.2.a Monitoring reports shall be submitted to the Director every six months, or more frequently if specified in Section II. All instances of deviation from permit requirements shall be clearly identified in the reports. (R307-415-6a(3)(c)(i))

I.S.2.b All reports submitted pursuant to Provision I.S.2.a shall be certified by a responsible official in accordance with Provision I.K of this permit. (R307-415-6a(3)(c)(i)

I.S.2.c The Director shall be notified promptly of any deviations from permit requirements including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventative measures taken. Prompt, as used in this condition, shall be defined as written notification within the number of days shown under "Enforceable Dates and Timelines" at the front of this permit. Deviations from permit requirements due to breakdowns shall be reported in accordance with the provisions of R307-107. (R307-415-6a(3)(c)(ii))

I.S.3 Notification Addresses.

I.S.3.a All reports, notifications, or other submissions required by this permit to be submitted to the Director are to be sent to the following address or to such other address as may be required by the Director:

Utah Division of Air Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820
Phone: 801-536-4000

I.S.3.b All reports, notifications or other submissions required by this permit to be submitted to the EPA should be sent to one of the following addresses or to such other address as may be required by the Director:

For annual compliance certifications:

Environmental Protection Agency, Region VIII
Office of Enforcement, Compliance and Environmental Justice
(mail code 8ENF)
1595 Wynkoop Street
Denver, CO 80202-1129

For reports, notifications, or other correspondence related to permit modifications, applications, etc.:

Environmental Protection Agency, Region VIII
Office of Partnerships & Regulatory Assistance Air & Radiation Program (mail code 8P-AR)
1595 Wynkoop Street
Denver, CO 80202-1129
Phone: 303-312-6440

I.T **Reopening for Cause.**

I.T.1 A permit shall be reopened and revised under any of the following circumstances:

I.T.1.a New applicable requirements become applicable to the permittee and there is a remaining permit term of three or more years. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire, unless the terms and conditions of this permit have been extended pursuant to R307-415-7c(3), application shield. (R307-415-7g(1)(a))

I.T.1.b The Director or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit. (R307-415-7g(1)(c))

I.T.1.c EPA or the Director determines that this permit must be revised or revoked to assure compliance with applicable requirements. (R307-415-7g(1)(d))

I.T.1.d Additional applicable requirements are to become effective before the renewal date of this permit and are in conflict with existing permit conditions. (R307-415-7g(1)(e))

I.T.2 Additional requirements, including excess emissions requirements, become applicable to a Title IV affected source under the Acid Rain Program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into this permit. (R307-415-7g(1)(b))

I.T.3 Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. (R307-415-7g(2))

I.U **Inventory Requirements.**

An emission inventory shall be submitted in accordance with the procedures of R307-150, Emission Inventories. (R307-150)

I.V **Title IV and Other, More Stringent Requirements**

Where an applicable requirement is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, Acid Deposition Control, both provisions shall be incorporated into this permit. (R307-415-6a(1)(b))

SECTION II: SPECIAL PROVISIONS

II.A **Emission Unit(s) Permitted to Discharge Air Contaminants.**
(R307-415-4(3)(a) and R307-415-4(4))

II.A.1 **Permitted Source**
Source-wide

II.A.2 **Montecatini Nitric Acid Plant (EU #1)**
Weak nitric acid (HNO3) production plant equipped with a low temperature selective catalytic reduction (SCR) unit for controlling NO_x emissions.

II.A.3 **Weatherly Nitric Acid Plant (EU #2)**
Weak HNO3 production plant equipped with a low temperature selective catalytic reduction (SCR) unit for controlling NO_x emissions.

II.A.4 **Nitric Acid Plant Group (EU #3)**
Includes the Montecatini Nitric Acid Plant and the Weatherly Nitric Acid Plant.

II.A.5 **Prill Tower (EU #4)**
Low density prill production unit with no emission control equipment. The uncontrolled prill tower is the major source of ammonium nitrate (NH4NO3) particulate matter.

II.A.6 **Prill Predryer (EU #5)**
Prill predryer vent equipped with a cyclone wet scrubber for controlling solid ammonium nitrate TSP and PM_{10} emissions. No unit-specific applicable requirements.

II.A.7 **Prill Dryer (EU #6)**
Prill dryer vent equipped with a cyclone wet scrubber for controlling solid ammonium nitrate TSP and PM_{10} emissions. No unit-specific applicable requirements.

II.A.8 **NH4NO3 Solidification Process Units (EU# 9)**
Prill Tower, Prill Predryer, Dryer, and Cooler.

II.A.9 **Boiler (EU #10)**
Natural gas boiler (25.0 MM Btu/hr) with low NO_x burner, for startup when steam is needed. NSPS Subpart Dc.

II.A.10 **Evaporative Cooling Tower and Substation (EU #11)**
Used for non-contact cooling of all process equipment. No unit-specific applicable requirements.

II.A.11 **Evaporative Reactor (EU #12)**
Used for evaporating ammonium nitrate solution to produce melt ammonium nitrate. No unit-specific applicable requirements.

II.A.12 **Ammonium Nitrate Storage Warehouse Building (EU #13)**
Ammonium nitrate storage, loading, and transferring. No unit-specific applicable requirements.

II.A.13 **Maintenance Shop (EU #14)**
Used for Stoddard solvent parts washer, drill presses, milling machines, and pipe threading operations. No unit-specific applicable requirements.

II.A.14 **Storage Area (EU #15)**
Used for oil, solvent, oil drums, Stoddard solvent, and gasoline storage (2-gallon can). No unit-specific applicable requirements.

II.A.15 **Fuel Dispensing Area (EU #16)**

The fuel dispensing area contains one 500 gallon above ground storage (AGS) tank for diesel and one 500 gallon AGS tank for gasoline. No unit-specific applicable requirements

II.A.16 **Prill Cooler (EU #8)**

Prill cooler vent equipped with a cyclone wet scrubber for controlling solid ammonium nitrate TSP and PM_{10} emissions. No unit-specific applicable requirements.

II.B **Requirements and Limitations**

The following emission limitations, standards, and operational limitations apply to the permitted facility as indicated:

II.B.1 **Conditions on permitted source (Source-wide).**

II.B.1.a **Condition:**

At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected emission unit, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [Origin: DAQE-AN0825005-03]. [R307-401-8(2)]

II.B.1.a.1 **Monitoring:**

Records required for this permit condition will serve as monitoring.

II.B.1.a.2 **Recordkeeping:**

Permittee shall document activities performed to assure proper operation and maintenance. Records shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.1.a.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.1.b **Condition:**

A Risk Management Plan (RMP) developed in accordance with 40 CFR Part 68 shall be submitted to the United States Environmental Protection Agency not later than the applicable date in 40 CFR 68. [Originated in 40 CFR 68]. [40 CFR 68]

II.B.1.b.1 **Monitoring:**

A copy of the Risk Management Plan shall be available upon request along with a copy of the transmittal letter to EPA.

II.B.1.b.2 **Recordkeeping:**

A copy of the Risk Management Plan shall be available to the Director upon request along with a copy of the transmittal letter to EPA.

II.B.1.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.1.c **Condition:**

Visible emissions shall be no greater than 10 percent opacity except as specified elsewhere in this permit. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.1.c.1 **Monitoring:**

A visual opacity survey of each affected emission unit shall be performed on a weekly basis by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9. If visible emissions other than steam are observed from an emission unit, an opacity determination of that emission unit shall be performed by a certified observer within 24 hours of the initial survey. The opacity determination shall be performed in accordance with 40 CFR 60, Appendix A, Method 9.

II.B.1.c.2 **Recordkeeping:**

A log of the visual opacity survey(s) shall be maintained in accordance with Provision I.S.1 of this permit. If an opacity determination is indicated, a notation of the determination will be made in the log. All data required by 40 CFR 60, Appendix A, Method 9 shall also be maintained in accordance with Provision I.S.1 of this permit.

II.B.1.c.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.1.d **Condition:**

The permittee shall comply with the applicable requirements for recycling and emission reduction for class I and class II refrigerants pursuant to 40 CFR 82, Subpart F - Recycling and Emissions Reduction. [Origin: 40 CFR 82.150(b)]. [40 CFR 82]

II.B.1.d.1 **Monitoring:**

The permittee shall certify, in the annual compliance statement required in Section I of this permit, its compliance status with the requirements of 40 CFR 82, Subpart F.

II.B.1.d.2 **Recordkeeping:**

All records required in 40 CFR 82, Subpart F shall be maintained consistent with the requirements of Provision S.1 in Section I of this permit.

II.B.1.d.3 **Reporting:**

All reports required in 40 CFR 82, Subpart F shall be submitted as required. There are no additional reporting requirements except as outlined in Section I of this permit.

II.B.2 **Conditions on Montecatini Nitric Acid Plant (EU #1).**

II.B.2.a **Condition:**

Emissions of NO_x shall be no greater than 32.4 lbs/hour and 267 ppmdv. [Origin: DAQE-AN0825005-

03]. [R307-401-8(1)(a)(BACT), R307-110-17(SIP IX.1.b.A)]

II.B.2.a.1 **Monitoring:**

(a) Stack testing to show compliance with the NO_x emission limitations shall be performed as specified below:

(1) Testing and Frequency. Emissions shall be tested every two years. The source may also be tested at any time if directed by the Director.

(2) Notification. The applicant shall provide a notification of the test date at least 30 days before the test. A pretest conference shall be held, if directed by the Director, between the owner/operator, the tester, and the Director.

(3) Methods.
(A) Sample Location - the emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.
(B) 40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E shall be used to determine the pollutant emission rate.
(C) 40 CFR 60, Appendix A, Method 2 shall be used to determine the volumetric flow rate.

(4) Calculations. To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation.

(5) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

(b) NO_x concentration (ppmdv) shall be used as an indicator to provide a reasonable assurance of compliance with the NO_x emission limitation as specified below:

(1) Measurement Approach: NO_x concentration (ppmdv) shall be determined by using a continuous NO_x monitoring system.

(2) Indicator Range: An excursion is defined as an one-hour average NO_x concentration in excess of 200 ppmdv as measured by the continuous monitoring system. Excursions trigger an inspection, corrective action, and a reporting requirement.

(3) Performance Criteria:
(A). Data Representativeness: Measurements made by a continuous monitoring system shall provide a direct indicator of SCR performance. The low detectable limit is 0.01 ppmdv (in 0.5 ppmdv full scale range) and the precision is 1% of the full scale.
(B). QA/QC Practices and Criteria: The continuous monitoring system shall be operated, calibrated, and maintained in accordance with manufacture's recommendations. Zero and span drift tests shall be conducted on a daily basis.
(C). Monitoring Frequency: Emission should be monitored continuously and a data point should be recorded every 15 seconds.
(D). Data Collection Procedure: NO_x concentration (ppmdv) shall be recorded and stored electronically.
(E). Averaging Period: Use 15-second NO_x concentration (ppmdv) to calculate the 1-hour average NO_x concentration (ppmdv).

II.B.2.a.2 **Recordkeeping:**

In addition to the recordkeeping requirement described in Provision I.S.1 of this permit,

(a) The permittee shall maintain a file of all stack testing and all other information required by permit provision I.S.1.

(b) The permittee shall maintain a file of continuous monitor measurements, including performance testing measurements, all performance evaluations, all calibration checks, all adjustments, and maintenance.

(c) The permittee shall maintain a file of the occurrence and duration of any excursion, corrective actions taken, and any other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. (40 CFR 64.9(b))

II.B.2.a.3 **Reporting:**

(a) The monitoring report required in Provision I.S.2 of this permit shall include, at a minimum, the following information, as applicable:

(1) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;(40 CFR 64.9(a)(2)(i))

(2) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable). (40 CFR 64.9(a)(2)(ii))

(b) The results of stack testing shall be submitted to the Director within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status.

II.B.3 **<u>Conditions on Weatherly Nitric Acid Plant (EU #2).</u>**

II.B.3.a **Condition:**

Emissions of NO_x shall be no greater than 19.4 lbs/hour and 438 ppmdv. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT), R307-110-17(SIP IX.1.b.A)]

II.B.3.a.1 **Monitoring:**

(a) Stack testing to show compliance with the NO_x emission limitations shall be performed as specified below:

(1) Testing and Frequency. Emissions shall be tested every three years. The source may also be tested at any time if directed by the Director.

(2) Notification. The applicant shall provide a notification of the test date at least 30 days before the test. A pretest conference shall be held, if directed by the Director, between the owner/operator, the tester, and the Director.

(3) Methods.

(A) Sample Location - the emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.
(B) 40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E shall be used to determine the pollutant emission rate.
(C) 40 CFR 60, Appendix A, Method 2 shall be used to determine the volumetric flow rate.

(4) Calculations. To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation.

(5) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

(b) NO_x concentration (ppmdv) shall be used as an indicator to provide a reasonable assurance of compliance with the NO_x emission limitation as specified below:

(1) Measurement Approach: NO_x concentration (ppmdv) shall be determined by using a continuous NO_x monitoring system.

(2) Indicator Range: An excursion is defined as an one-hour average NO_x concentration in excess of 200 ppmdv as measured by the continuous monitoring system. Excursions trigger an inspection, corrective action, and a reporting requirement.

(3) Performance Criteria:
(A). Data Representativeness: Measurements made by a continuous monitoring system shall provide a direct indicator of SCR performance. The low detectable limit is 0.01 ppmdv (in 0.5 ppmdv full scale range) and the precision is 1% of the full scale.
(B). QA/QC Practices and Criteria: The continuous monitoring system shall be operated, calibrated, and maintained in accordance with manufacture's recommendations. Zero and span drift tests shall be conducted on a daily basis.
(C). Monitoring Frequency: Emission should be monitored continuously and a data point should be recorded every 15 seconds.
(D). Data Collection Procedure: NO_x concentration (ppmdv) shall be recorded and stored electronically.
(E). Averaging Period: Use 15-second NO_x concentration (ppmdv) to calculate hourly average NO_x concentration (ppmdv).

II.B.3.a.2 **Recordkeeping:**

In addition to the recordkeeping requirement described in Provision I.S.1 of this permit,

(a) The permittee shall maintain a file of all stack testing and all other information required by permit provision I.S.1.

(b) The permittee shall maintain a file of continuous monitor measurements, including performance testing measurements, all performance evaluations, all calibration checks, all adjustments, and maintenance.

(c) The permittee shall maintain a file of the occurrence and duration of any excursion, corrective actions taken, and any other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and

does not conflict with other applicable recordkeeping requirements. (40 CFR 64.9(b))

II.B.3.a.3 **Reporting:**

(a) The monitoring report required in Provision I.S.2 of this permit shall include, at a minimum, the following information, as applicable:

(1) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;(40 CFR 64.9(a)(2)(i))

(2) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable). (40 CFR 64.9(a)(2)(ii))(b) The results of stack testing shall be submitted to the Director within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status.

II.B.4 **Conditions on Nitric Acid Plant Group (EU #3).**

II.B.4.a **Condition:**

Production of nitric acid shall be no greater than 13.5 tons per hour based on 100% acid. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.4.a.1 **Monitoring:**

Hourly nitric acid production rate shall be determined on daily basis by the following formula:

Nitric acid production during each day (tons) divided by operating hours during each day (hours)

Nitric acid production shall be determined by plant records, which include the amount of nitric acid produced and the concentration of nitric acid.

II.B.4.a.2 **Recordkeeping:**

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.4.a.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.4.b **Condition:**

Production of nitric acid shall be no greater than 113,400 tons per rolling 12-month total based on 100% acid. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.4.b.1 **Monitoring:**

The daily production rates shall be recorded and the total production rates shall be summarized for each calendar month. Within the first 15 days of each month, a new 12-month total shall be calculated using data from the previous 12 months.

II.B.4.b.2 **Recordkeeping:**

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.4.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.4.c **Condition:**

Hours of operation shall be no greater than 8,640 per 12-month rolling period for each affected emission unit. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.4.c.1 **Monitoring:**

Compliance shall be determined on a rolling 12-month total for each emission unit. The total shall be calculated for each calendar month. Within the first 15 days of each month, a new 12-month total shall be calculated using data from the previous 12 months.

II.B.4.c.2 **Recordkeeping:**

A log recording all hours of operation for each emission unit shall be maintained on daily basis. The log shall include the results of required monitoring.

II.B.4.c.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.5 **Conditions on Prill Tower (EU #4).**

II.B.5.a **Condition:**

Emissions of PM_{10} shall be no greater than 0.24 tons/day and 86 tons/year. [Origin: SIP Section IX.H.1.b.A]. [R307-110-17(SIP IX.1.b.A)]

II.B.5.a.1 **Monitoring:**

(a) Stack testing shall be performed as specified below:

(1) Frequency. Emissions shall be tested every three years. The source may also be tested at any time if directed by the Director.

(2) Notification. At least 30 days before the test, the source shall notify the Director of the date, time, and place of testing and provide a copy of the test protocol. The source shall attend a pretest conference if determined necessary by the Director.

(3) Methods.

(A) Sample Location - the emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 5B, and Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.

(B) For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. Method 202 may be used to measure condensible particulate matter.

(C) For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using a method specified by the Director. All

particulate captured shall be considered PM_{10}.

(D) The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

(4) Calculations. To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation.

(5) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

(b) The daily and rolling 12-month mass emissions shall be calculated by multiplying the most recent stack test results (lb/hr) by the appropriate hours of operation for each day and for each rolling 12-month period. Within the first 15 days of each month, a new rolling 12-month total shall be calculated using data from the previous 12 months

II.B.5.a.2 **Recordkeeping:**

Results of all stack testing shall be recorded and maintained in accordance with the associated test method and Provision S.1 in Section I of this permit. Additionally, hours of operations shall be logged daily. The results of daily and rolling 12-month emissions shall be maintained in accordance with Provision S.1 in Section 1 of this permit.

II.B.5.a.3 **Reporting:**

The results of stack testing shall be submitted to the Director within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status. There are no additional reporting requirements for this provision except those specified in Section I of this permit.

II.B.5.b **Condition:**

Visible emissions shall be no greater than 20 percent opacity. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.5.b.1 **Monitoring:**

A visual opacity survey of each affected emission unit shall be performed on a weekly basis by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9. If visible emissions other than steam are observed from an emission unit, an opacity determination of that emission unit shall be performed by a certified observer within 24 hours of the initial survey. The opacity determination shall be performed in accordance with 40 CFR 60, Appendix A, Method 9.

II.B.5.b.2 **Recordkeeping:**

A log of the visual opacity survey(s) shall be maintained in accordance with Provision I.S.1 of this permit. If an opacity determination is indicated, a notation of the determination will be made in the log. All data required by 40 CFR 60, Appendix A, Method 9 shall also be maintained in accordance with Provision I.S.1 of this permit.

II.B.5.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.6 **Conditions on NH4NO3 Solidification Process Units (EU #9).**

II.B.6.a **Condition:**

Production of solid ammonium nitrate shall be no greater than 14 tons per hour. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.6.a.1 **Monitoring:**

Hourly solid ammonium nitrate production rate shall be determined by the following formula:

Solid NH4NO3 production on-site during each day (tons) divided by operating hours during each day (hours)

Solid ammonium nitrate production shall be determined by examining plant production records.

II.B.6.a.2 **Recordkeeping:**

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.6.a.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.6.b **Condition:**

Hours of operation shall be no greater than 8,640 per 12-month rolling period for each affected emission unit. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.6.b.1 **Monitoring:**

Compliance shall be determined on a rolling 12-month total for each emission unit. The total shall be calculated for each calendar month. Within the first 15 days of each month, a new 12-month total shall be calculated using data from the previous 12 months.

II.B.6.b.2 **Recordkeeping:**

A log recording all hours of operation for each emission unit shall be maintained on daily basis. The log shall include the results of required monitoring.

II.B.6.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.7 **Conditions on Boiler (EU #10).**

II.B.7.a **Condition:**

Consumption of natural gas shall be no greater than 109.5 MMSCF per 12 month rolling period. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.7.a.1 **Monitoring:**

By the 15th day of each month, a new rolling 12-month natural gas consumption total shall be

calculated using the appropriate conversion of acf to scf, as recommended by the vendor.

II.B.7.a.2 **Recordkeeping:**

Records of the amounts of each fuel combusted during each day for each affected unit shall be maintained as described in Provision I.S.1 of this permit.

II.B.7.a.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.7.b **Condition:**

The permittee shall use only natural gas for fuel. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.7.b.1 **Monitoring:**

The annual certification required for this permit condition will serve as monitoring.

II.B.7.b.2 **Recordkeeping:**

The annual certification required for this permit condition shall be maintained as described in Provision I.S.1 of the permit

II.B.7.b.3 **Reporting:**

In addition to the reporting requirements specified in Section I of this permit, the permittee will certify with each annual certification report that only pipeline quality natural gas is used as fuel during the reporting year.

II.B.7.c **Condition:**

Visible emissions shall be no greater than 10 percent opacity. [Origin: DAQE-AN0825005-03]. [R307-401-8(1)(a)(BACT)]

II.B.7.c.1 **Monitoring:**

In lieu of opacity monitoring, the report required for this permit condition will serve as monitoring.

II.B.7.c.2 **Recordkeeping:**

The annual certification required for this permit condition shall be maintained as described in Provision I.S.1 of the permit

II.B.7.c.3 **Reporting:**

In addition to the reporting requirements specified in Section I of this permit, the permittee will certify with each annual certification report that only pipeline quality natural gas is used as fuel during the reporting year.

II.C **Emissions Trading**
(R307-415-6a(10))

Not applicable to this source.

II.D **Alternative Operating Scenarios**.
(R307-415-6a(9))

Not applicable to this source.

II.E Source-specific Definitions.
[R307-415-6a]

Not applicable to this source.

SECTION III: PERMIT SHIELD

The following requirements have been determined to be not applicable to this source in accordance with Provision I.M, Permit Shield:

III.A. this permit (40 CFR Part 51, Appendix P (Minimum Emission Monitoring Requirements))

This regulation is not applicable to the Nitric Acid Plant Group (EU #3) for the following reason(s): each nitric acid plant has less than 300 tons per day production capacity, the production capacity being expressed as 100 percent nitric acid [Last updated July 29, 2013]

III.B. this permit (40 CFR Part 60, Subpart G (Standards of Performance for Nitric Acid Plants))

This regulation is not applicable to the Nitric Acid Plant Group (EU #3) for the following reason(s): both nitric acid plants were built before the applicability date of August 17, 1971 [Last updated July 29, 2013]

SECTION IV: ACID RAIN PROVISIONS

IV.A This source is not subject to Title IV. [R307-417-1]

REVIEWER COMMENTS

This operating permit incorporates all applicable requirements contained in the following documents:

Incorporates	DAQE-AN0825005-03 dated December 9, 2003
Incorporates	Utah SIP Section IX.H.1.b.A dated July 3, 2002

3. Comment on an item originating in DAQE-AN0825005-03 and SIP Section IX.H.1.b.A. regarding Montecatini Nitric Acid Plant (EU #1)

   Stack test for NO_x: Stack tests conducted on from 1997 through 2003 had the NO_x emission results ranging from 4.47 to 15.3 lbs/hr and from 42.76 to 149 ppmdv, which were below the allowable limits of 32.4 lbs/hr and 267 ppmdv. Every two years stack test established by the referenced AO and SIP is sufficient to demonstrate compliance when used in conjunction with the periodic NO_x monitoring system.
   This unit is subject to CAM in the renewal permit. As per 40 CFR 64.5(d), CAM monitoring satisfies the requirement in 40 CFR 70.6(a)(3)(i)(B) for periodic monitoring, but the NO_x stack test frequency specified in the AO and PM_{10} SIP remains an applicable requirement in Title V. [Comment last updated on 5/13/2004]

4. Comment on an item originating in DAQE-AN0825005-03 and SIP Section IX.H.1.b.A. regarding Weatherly Nitric Acid Plant (EU #2)

   Stack test for NO_x: Stack tests conducted from 1998 through 2003 had the NO_x emission results ranging from 3.21 to 13.8 lbs/hr and from 46.9 to 237 ppmdv, which were below the allowable limits of 19.4 lbs/hr and 438 ppmdv. A stack test frequency of three years as established by the referenced AO and SIP is sufficient to demonstrate compliance when used in conjunction with the periodic NO_x monitoring system.
   This unit is subject to CAM in the renewal permit. As per 40 CFR 64.5(d), CAM monitoring satisfies the requirement in 40 CFR 70.6(a)(3)(i)(B) for periodic monitoring, but the NO_x stack test frequency specified in the AO and PM_{10} SIP remains an applicable requirement in Title V. [Comment last updated on 5/13/2004]

5. Comment on an item originating in the renewal permit regarding Nitric Acid Plant Group (EU #3)

   CAM requirement: CAM requirement: Both nitric acid plants are subject to CAM in the renewal permit. Continuous NO_x monitoring system is selected as CAM. The data generated from the NO_x monitoring system are averaged on hourly basis. The excursion level is defined as any 1-hour average NO_x concentration in excess of 200 ppmdv for each plant. Under normal operating condition, a measured NO_x concentration of 200 ppmdv corresponds to 12.4 lb/hr of NO_x emission rate for Weatherly plant and 20.8 lb/hr of NO_x emission rate for Montecatini plant, respectively. The emission limits for NO_x are 438 ppmdv and 19.4 lb/hr for Weatherly plant, and 267 ppmdv and 32.4 lb/hr for Montecatini plant. Therefore, the excursion level of 200 ppmdv NO_x emission concentration is considered conservative. [Comment last updated on 9/24/2008]

6. Comment on an item originating in DAQE-AN0825005-03 regarding NH4NO3 Solidification Process Units (EU# 9)

   Rolling 12-Month production limit on NH4NO3: The referenced AO condition establishes the following limits for NH4NO3 production:

   Hourly limit: 14 tons/hr
   12-Month operation hour limit: 8640 hours
   12-Month production limit: 122,640 tons.

   The maximum 12-month production can also be calculated below:

   The maximum 12-Month production (tons) = 14 (tons/hr) x 8640 (hr)

= 120,960 tons

Because the maximum 12-month production rate calculated above is less than the established production rate in the referenced AO, compliance with the hourly rate and operating hour requirements will achieve compliance with the 12-month production limit. Therefore, the limitation on the rolling 12-month production is redundant and is not included in this permit [Comment last updated on 2/04/2004]

7. Comment on an item originating in DAQE-AN0825005-03 condition 15.A. and 15.C. regarding Nitric Acid Plant Group (EU #3)

   Hourly production rate on HNO3 and NH4NO3: The hourly rate is monitored by calculating an average hourly rate on daily basis. [Comment last updated on 2/04/2004]

8. Comment on an item originating in SIP Section IX, Part H.1.b.A. regarding Montecatini Nitric Acid Plant (EU #1)

   Daily and annual NO_x emission rate: Condition 1.A has a NO_x emission rate of 0.389 tons/day and 140 tons/year for Montecatini acid plant. AO DAQE-AN0825004-03 has a NO_x emission rate of 32.4 lbs/hour (Condition 12) and rolling 12-month operation hour limit of 8,640 hours (Condition 15.E). The calculations below indicate that the SIP limits are equivalent to the AO limits.

   0.389 tons/day (SIP) = (32.4 lb/hour (AO) x 24 hours/day)/2,000 lbs/ton, and
   140 tons/year (SIP) = (32.4 lb/hour (AO) x 8640 hours/year (AO))/2,000 lbs/ton.

   However, the average time for the AO limits is shorter than for the SIP limits, therefore, the AO limits are more stringent than the SIP limits. Based on the discussions above, the SIP limits are not carried to this permit. [Comment last updated on 2/04/2004]

9. Comment on an item originating in SIP Section IX, Part H.1.b.A. regarding Weatherly Nitric Acid Plant (EU #2)

   Daily and annual NO_x emission rate: Condition 1.A has a NO_x emission rate of 0.233 tons/day and 83.8 tons/year for Weatherly acid plant. AO DAQE-AN0825004-03 has a NO_x emission rate of 19.4 lbs/hour (Condition 12) and rolling 12-month operation hour limit of 8,640 hours (Condition 15.E). The calculations below indicate that the SIP limits are equivalent to the AO limits.

   0.233 tons/day (SIP) = (19.4 lb/hour (AO) x 24 hours/day)/2,000 lbs/ton, and
   83.8 tons/year (SIP) = (19.4 lb/hour (AO) x 8640 hours/year (AO))/2,000 lbs/ton.

   However, the average time for the AO limit is shorter than for the SIP limit; therefore, the AO limits are more stringent than the SIP limits. Based on the discussions above, the SIP limits are not carried to this permit. [Comment last updated on 2/04/2004]

10. Comment on an item originating in the renewal permit (2008) regarding Permitted Source

    Changes made in this renewal permit: CAM **monitoring:** both nitric acid plants were installed CEMs in 2006. Each plant has own CEM for CAM.[Comment last updated on 9/24/2008]

11. Comment on an item originating in the renewal permit (2013) regarding Permitted Source

    (a) SIP dated May 4, 2011: The limitations in the SIP (pending approved by EPA) are same as those in the SIP date July 2, 2002, therefore there is no requirements included in this permit action.
    (b) Greenhouse gas (GHG) applicability has been reviewed and evaluated in this permit action and there no GHG requirements included in this permit. [Last updated March 27, 2013]

Final Permit Review Checklist

This checklist is to be used to review all final operating permits prior to signing.
The completed checklist is to be submitted to the Operating Permit section manager.

Source name: Geneva Nitrogen Inc.: Geneva Nitrogen Plant **Permit ID**: 4900082004
OPP0108250006

_____ 1. Cover page only is on letterhead paper
_____ 2. Permit ID is valid (not missing, not "1", ends in "00x" where "x" is the revision number)
_____ 3. Permit date and revision date (if applicable) are correct **Issue / revision date:_____**
_____ 4. Source name, address and SIC are correct
_____ 5. Abstract includes brief description of process and states why the source is subject to Part 70 (NSPS equipment, pollutants for which the source is major, etc.)
_____ 6. Operating permit history shows correct action, date and description of action
_____ 7. Table of contents is accurate
_____ 8. Permit footer information matches cover page
_____ 9. Permit renewal date is correct **Renewal Date:_____**
_____ 10. Annual compliance certification date is correct **First certification due date:_____**
_____ 11. Definition of "prompt" for deviation reporting is correct **Prompt means** _____days
_____ 12. All required emission units are included, and grandfathered units identified
_____ 13. Permit text is complete and legible, and superscripts/subscripts are correct
_____ 14. List of supporting approval orders and documents is included and is complete and accurate
_____ 15. If title IV applies, acid rain portion of permit is included
_____ 16. Reviewer comments are included as required to show basis for monitoring, etc.
_____ 17. Permit has been spell-checked and read for grammatical errors
_____ 18. OPP peer review completed
_____ 19. NSR review completed (N/A if no NSR review needed)
_____ 20. Compliance review completed
_____ 21. Draft Permit was sent to public comment (y / n) Public review start date:_____
_____ 22. Proposed Permit submitted for EPA review (y / n) EPA review start date:_____
_____ 23. Other comments on this permit:

This permit has been prepared in accordance with current administrative requirements as provided in R307-415 and with current OPP policy and guidance.

Permit writer signature:_____ Date:_____

Section manager signature:_____ Date:_____

Operating Permit Source File Checklist

_____ **1. Receipt letter (if source-initiated permit action) or Source notification (if DAQ initiated permit action)**

_____ **2. EPA / Affected state(s) notice of modification (minor modification only)**

_____ **3. Completeness determination (initial app, significant mod, renewal only)**

- _____ A) Checklist
- _____ B) "Complete" notification
- _____ C) "Incomplete" notification (if any)

_____ **4. Public comment paperwork (initial app, significant mod, renewal only)**

- _____ A) Draft permit checklist
- _____ B) DRAFT permit
- _____ C) Notice to paper(s)
- _____ D) Receipt from paper(s) (i.e., affidavit of publication)
- _____ E) Public hearing information (if any)
- _____ F) Comments received (if any)
- _____ G) Responses to comments (if any)

_____ **5. Affected state notifications (initial app, significant mod, renewal only)**

_____ **6. EPA comment paperwork (initial app, significant mod, renewal only)**

- _____ A) Submittal to EPA
  - ___i) Letter
  - ___ii) PROPOSED permit
  - ___iii) Other info sent to EPA that is not already in file
- _____ B) Receipt of delivery to EPA, stapled to submittal letter
- _____ C) EPA comments (if any)
- _____ D) Response to EPA comments (if any)

_____ **7. Final permits**

- _____ A) Final permit checklist completed
- _____ B) FINAL permit with letter of transmittal
- _____ C) Reviewer comments
- _____ D) Initial Permit Application
- _____ E) Update letters/packages (if any)
- _____ F) Other working file contents (RO designations, etc)
- _____ G) Disk with telecommute data for source and WP file of permit
- _____ H) Copy of letter of transmittal to EPA

DAQC-512-15
Site ID 10825 (B4)

MEMORANDUM

To: **STACK TEST FILE – GENEVA NITROGEN**

Through: Harold Burge, Major Source Compliance Section Manager HB

From: Rob Leishman, Environmental Scientist

Date: 4/20/2015

Subject:

Company:	Geneva Nitrogen
Location:	1165 North 1600 West, Vineyard, Utah County, Utah
Contact:	Thomas Duffield, 435-830-2025
Tester:	TETCO
Source:	Prill Tower (EU#4)
Airs #:	049-00082
Permit#	Title V operating permit 4900082004 dated 8/8/2013
Action Code:	3A
Subject:	Review of Stack Test Report dated 12/2/2014

On 12/4/2014, DAQ received a test report for the Geneva Nitrogen Prill Tower in Vineyard, Utah. Testing was performed on 11/13/2014, to demonstrate compliance with the PM_{10} emission limits found in Permit 4900082004 dated 8/8/2013, Condition II.B.5.a. The DAQ-calculated test results are:

Source	Test Date	Pollutant	Result	Limit
Prill Tower	11/13/2014	PM_{10}	0.06 tons/day	0.24 tons/day

DEVIATIONS: None noted.

CONCLUSION: The PM_{10} emissions were in compliance with the applicable limits at the time of testing.

RECOMMENDATION: No further action is necessary.

HPV: No compliance action is recommended.

Document Date 4/20/2015

DAQ-2015-005746

Division of Air Quality
Compliance Demonstration

Source Information

Company Name	**Geneva Nitrogen - Prill Tower**
Company Contact:	**Tom Duffield**
Contact Phone No.	**801-227-7300**
Source Designation:	**Prill Tower**

Test & Review Dates

Test Date:	11/13/2014	
Review Date:	4/16/2015	Tabs Are Shown
Observer:	**Rob Leishman**	
Reviewer:	**Rob Leishman**	

Particulate Emission Limits

lbs/MMBtu	lbs/hr	gr/dscf	Tons/Day	
0.240	10.000	0.007	0.24	

Emission Rates - "Front Half"

lbs/MMBtu	**lbs/hr**	**gr/dscf**	Tons/Day	
	5.0428	**0.0060**	0.0605	

Test Information

Equivalent Diameter (ft.)	**As ft^2**	Y	Dl H @	Cp	Pbar	Pq (static)	**Dn**
26.07	704.00	1.0000	1.495	0.84	25.3	0	0.6625

Rectangular

Contractor Information

Contracting Company:	American Environmental
Contact:	Brent Benson
Phone No.:	801-266-7111
Project No.:	

F factors for Coal, Oil, and Gas

	Fd scf/MMBtu	Fw scf/MMBtu	Fc scf/MMBtu
COAL			
Anthrocite 2	○ 10100	○ 10540	○ 1970
Bituminous 2	○ 9780	○ 10640	○ 1800
Lignite	○ 9860	○ 11950	○ 1910
OIL	○ 9190	○ 320	○ 1420
GAS			
Natural	○ 8710	○ 10610	○ 1040
Propane	○ 8710	○ 10200	○ 1190
Butane	○ 8710	○ 10390	○ 1250

☐ F factor used

lbs/MMBtu
○ O2
○ CO2

Summary

Division of Air Quality

Reference Methods 5 - TSP

Compliance Demonstration of

Geneva Nitrogen - Prill Tower

Testing Results				
Test Date	11/13/2014	11/13/2014	11/13/2014	11/13/2014
Rectangular	Run 1	Run 2	Run 3	Run 4
As ft^2	704.00	704.00	704.00	
Pbar	25.30	25.30	25.30	
Pq (static)	0.00	0.00	0.00	
Ps	25.30	25.30	25.30	
Avg. Ts F	56.97	58.33	56.06	
CO2 - F_{CO2}	0.00	0.00	0.00	
O2	20.90	20.90	20.90	
N2+C	79.10	79.10	79.10	
Md	28.84	28.84	28.84	
Ms	28.67	28.70	28.73	
Y	1.00	1.00	1.00	
Cp	0.84	0.84	0.84	
Vm cf	47.81	46.30	45.27	
Vlc	14.10	10.60	8.10	
$A_{VG.}$ Tm F	55.25	58.63	59.43	
Vm std	41.45	39.89	38.94	
Vw std	0.66	0.50	0.38	
Bws	0.02	0.01	0.01	
S Bws	0.02	0.02	0.02	
Avg. Sqrt Dlp	0.04	0.05	0.05	
Vs	2.55	2.89	2.81	
scfm wet	92860.61	105291.51	102514.48	
acfm	107523.87	122238.67	118491.67	
Qsd dscfh	5483828.1	6239453.1	6091222.9	
# Sample Points	12.00	12.00	12.00	
Dn	0.663	0.663	0.663	
An	2.39E-03	2.39E-03	2.39E-03	
Start Time				
End Time				
Total Test time	126.00	108.00	108.00	
Time @ point	3.50	3.00	3.00	

	Lab Data - grams collected		
Lab Data	Probe	Filter	Back
Run 1	0.0025	0.0185	0.0019
Run 2	0.0013	0.0126	0.0013
Run 3	0.0144	-0.0022	0.0004
Run 4			

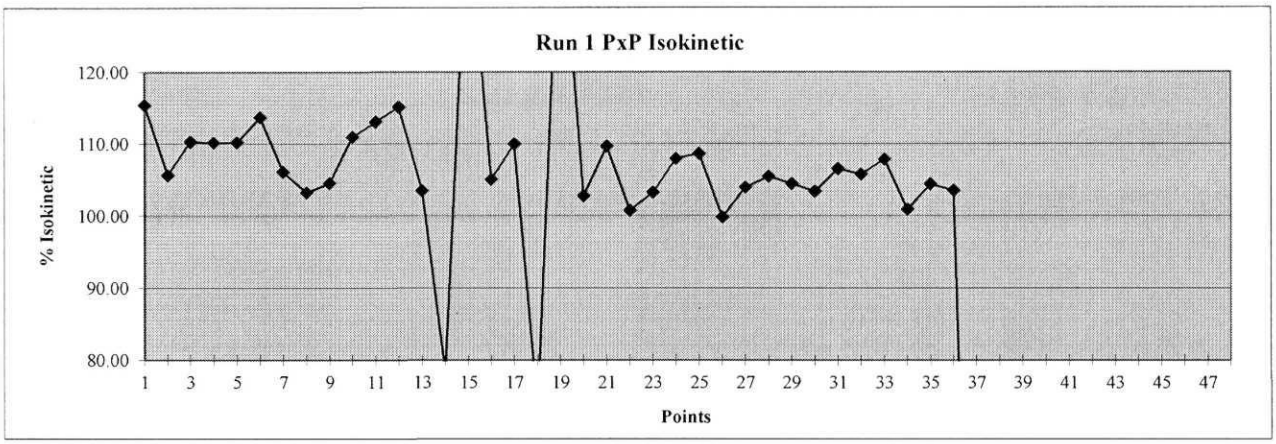
Front Half Emissions Summary					
	Run 1	Run 2	Run 3	Run 4	Avg.
gr./dscf	0.0078	0.0054	0.0048		0.0060
lbs/hr	6.1263	4.7938	4.2084		5.0428
lbs/MMBtu					
Tons/Day	0.073516077	0.057525164	0.050501296		0.060514179

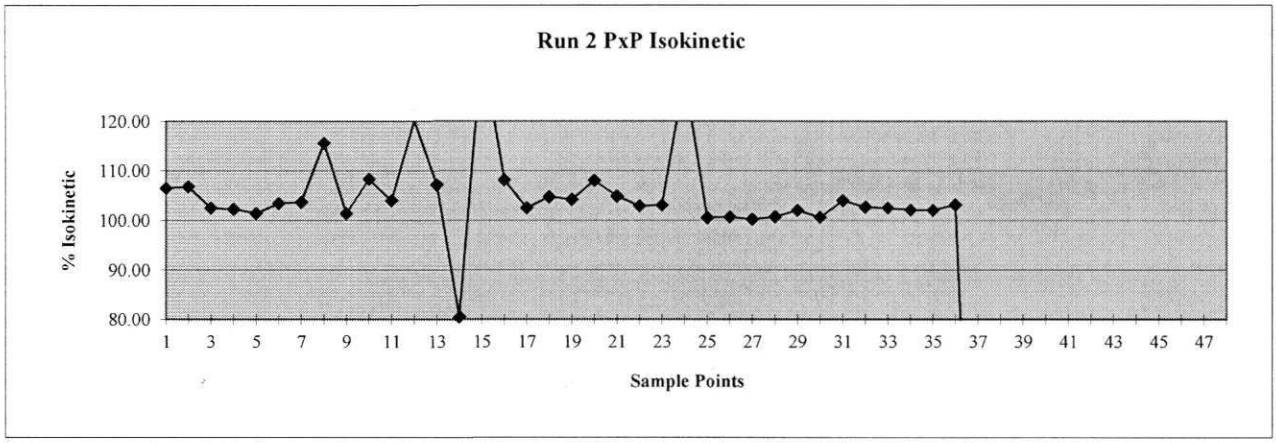
Total Emissions Summary w/back half condensable					
	Run 1	Run 2	Run 3	Run 4	Avg.
gr./dscf	0.0085	0.0059	0.0050		0.0065
lbs/hr	6.6806	5.2421	4.3464		5.4231
lbs/MMBtu					

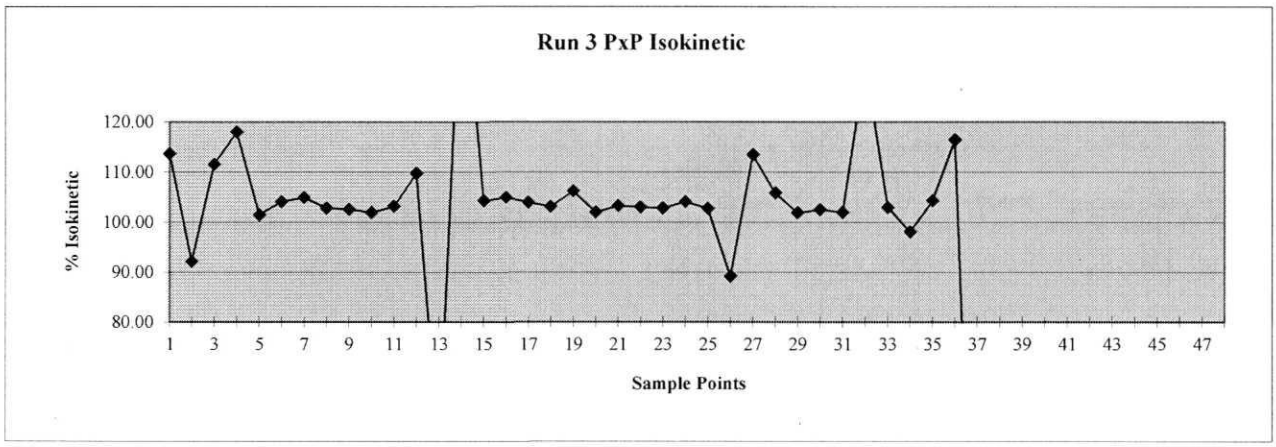
O2

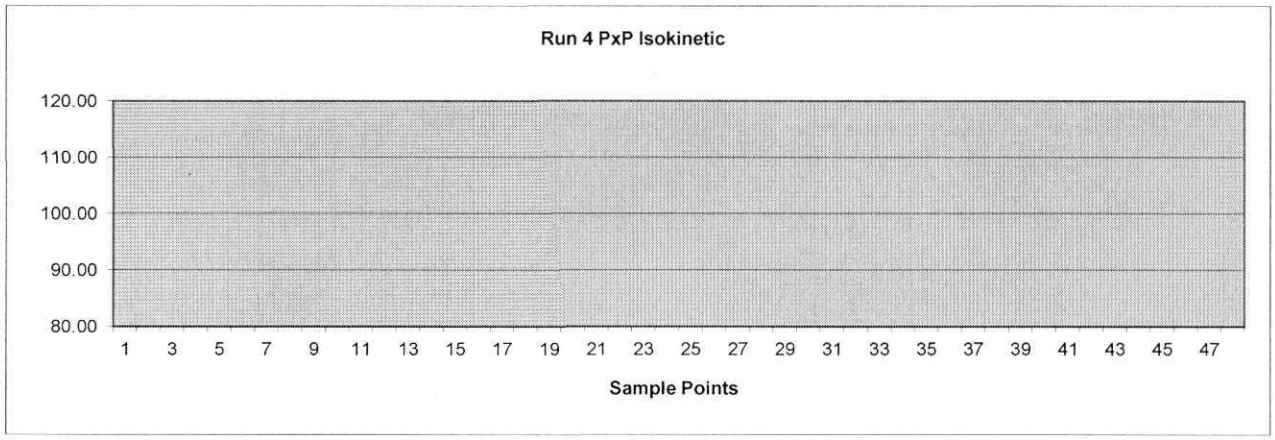
CO2

F factor used


Run 1 PxP Isokinetic
% Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Points


Run 2 PxP Isokinetic
% Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Sample Points


Run 3 PxP Isokinetic
% Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Sample Points


Run 4 PxP Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Sample Points

Geneva Nitrogen - Prill Tow				Flow & Moisture			Test Date	11/13/2014	
As ft^2	Pbar	Pq (static)	Ps	Avg. Ts F	CO2 - F_{CO2}	O2	N2+C	Md	Ms
704.00	25.30	0.00	25.30	57	0.00	20.90	79.10	28.84	28.67
Y	Cp	Vm cf	Vlc	Avg. Tm F	Vm std	Vw std	Bws	S Bws	0.0186
1.0000	0.84	47.808	14.10	55.25	41.449	0.664	0.0158	0.0186	0.999
Avg. Sqrt Dlp	Vs	scfm wet	acfm	Qsd dscfh	# Sample Points	Dn	Total Test time (minutes)	Time @ point (minutes)	Avg. Dlh
0.042	2.55	92,861	107,524	5.48E+06	12	0.6625	126	3.50	0.324167
					TRUE				

Point No.	Meter (cf)	dl "p"	dl "h"	ts F	tm F (in)	tm F (out)
1	333.261	0.0008	0.14	50	49	49
2	334.231	0.0008	0.14	50	49	49
3	335.119	0.0008	0.14	50	49	49
4	336.046	0.0008	0.14	53	49	50
5	336.970	0.0008	0.14	49	50	50
6	337.899	0.0008	0.14	46	50	50
7	338.860	0.0008	0.14	48	52	50
8	339.757	0.0017	0.29	53	51	53
9	341.025	0.0017	0.29	50	52	53
10	342.314	0.0008	0.14	54	52	55
11	343.251	0.0008	0.14	57	53	55
12	344.204	0.0014	0.29	51	54	56
13	345.497	0.0031	0.53	62	55	57
14	347.211	0.0031	0.53	63	55	59
15	348.511	0.0017	0.29	64	54	59
16	350.264	0.0031	0.53	63	54	58
17	352.002	0.0031	0.53	57	55	57
18	353.832	0.0031	0.53	57	55	58
19	355.055	0.0017	0.29	56	56	59
20	356.858	0.0017	0.29	54	55	59
21	358.131	0.0008	0.14	57	56	57
22	359.060	0.0031	0.53	57	56	57
23	360.738	0.0031	0.53	62	56	58
24	362.451	0.0017	0.29	61	56	59
25	363.781	0.0017	0.29	60	56	57
26	365.118	0.0031	0.53	61	56	58
27	366.776	0.0031	0.53	60	56	58
28	368.504	0.0031	0.53	62	56	59
29	370.256	0.0031	0.53	58	56	59
30	371.998	0.0031	0.53	60	57	61
31	373.724	0.0017	0.29	60	56	60
32	375.039	0.0017	0.29	60	56	60
33	376.345	0.0008	0.14	61	57	59
34	377.258	0.0017	0.29	62	57	59
35	378.501	0.0017	0.29	61	58	60
36	379.791	0.0017	0.29	62	58	60
37	381.069					
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						

Imp. Liquid Collected		
Wt. (Final)	Wt. (Initial)	lc
655.6	655.4	0.2
710.2	706.3	3.9
520.4	519.1	1.3
974.8	966.1	8.7
		0.0

Isokinetics	105.9	
Test Date	11/13/2014	
Start Time	enter	enter
End Time	enter	

Geneva Nitrogen - Prill Tow				Flow & Moisture			Test Date	5/13/2009	
As ft^2	Pbar	Pq (static)	Ps	Avg. Ts F	CO2 - F_{CO2}	O2	N2+C	Md	Ms
704.00	25.30	0.00	25.30	58	0.00	20.90	79.10	28.84	28.70
Y	Cp	Vm cf	Vlc	Avg. Tm F	Vm std	Vw std	Bws	S Bws	0.0195
1.0000	0.84	46.304	10.60	59	39.893	0.499	0.0124	0.0195	0.999
Avg. Sqrt Dlp	Vs	scfm wet	acfm	Qsd dscfh	# Sample Points	Dn	Total Test time (minutes)	Time @ point (minutes)	Avg. Dlh
0.048	2.89	105,292	122,239	6.24E+06	12	0.6625	108	3.00	0.40
					TRUE				

Point No.	Meter (cf)	dl "p"	dl "h"	ts F	tm F (in)	tm F (out)
1	381.761	0.0008	0.14	50.0	57.0	56.0
2	382.542	0.0008	0.14	50.0	57.0	56.0
3	383.325	0.0017	0.29	50.0	57.0	57.0
4	384.421	0.0017	0.29	48.0	57.0	57.0
5	385.517	0.0030	0.51	49.0	57.0	58.0
6	386.960	0.0017	0.29	49.0	57.0	58.0
7	388.068	0.0017	0.29	54.0	57.0	59.0
8	389.175	0.0008	0.14	56.0	57.0	59.0
9	390.020	0.0030	0.51	52.0	57.0	59.0
10	391.460	0.0017	0.29	52.0	57.0	59.0
11	392.618	0.0017	0.29	54.0	57.0	59.0
12	393.728	0.0008	0.14	55.0	57.0	59.0
13	394.607	0.0017	0.29	62.0	57.0	58.0
14	395.741	0.0030	0.51	61.0	57.0	58.0
15	396.873	0.0017	0.29	65.0	57.0	59.0
16	398.300	0.0017	0.29	66.0	57.0	59.0
17	399.441	0.0030	0.51	65.0	57.0	59.0
18	400.878	0.0030	0.51	66.0	58.0	60.0
19	402.348	0.0030	0.51	66.0	58.0	61.0
20	403.812	0.0017	0.29	66.0	58.0	61.0
21	404.955	0.0030	0.51	66.0	58.0	61.0
22	406.428	0.0030	0.51	65.0	58.0	61.0
23	407.875	0.0047	0.80	65.0	58.0	61.0
24	409.688	0.0030	0.51	64.0	58.0	62.0
25	411.505	0.0030	0.51	60.0	59.0	62.0
26	412.928	0.0030	0.51	59.0	59.0	62.0
27	414.355	0.0030	0.51	59.0	59.0	62.0
28	415.775	0.0030	0.51	60.0	58.0	62.0
29	417.200	0.0030	0.51	61.0	58.0	60.0
30	418.639	0.0030	0.51	58.0	58.0	60.0
31	420.062	0.0017	0.51	57.0	57.0	60.0
32	421.169	0.0017	0.29	58.0	58.0	60.0
33	422.263	0.0030	0.29	59.0	58.0	60.0
34	423.712	0.0030	0.51	57.0	58.0	61.0
35	425.159	0.0030	0.51	58.0	58.0	61.0
36	426.604	0.0030	0.51	58.0	59.0	61.0
37	428.065					
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						

Imp. Liquid Collected		
Wt. (Final)	Wt. (Initial)	lc
640.50	640.20	0.3
666.30	663.20	3.1
594.00	593.10	0.9
950.50	944.20	6.3
		0.0

Isokinetics	104.5
Test Date	11/13/2014
Start Time	enter
End Time	enter

Geneva Nitrogen - Prill Tow				Flow & Moisture			Test Date	5/13/2009	
As ft^2	Pbar	Pq (static)	Ps	Avg. Ts F	CO2 - F_{CO2}	O2	N2+C	Md	Ms
704.00	25.30	0.00	25.30	56	0.00	20.90	79.10	28.84	28.73
Y	Cp	Vm cf	Vlc	Avg. Tm F	Vm std	Vw std	Bws	S Bws	0.0180
1.0000	0.84	45.267	8.10	59	38.936	0.381	0.0097	0.0180	0.999
Avg. Sqrt Dlp	Vs	scfm wet	acfm	Qsd dscfh	# Sample Points	Dn	Total Test time (minutes)	Time @ point (minutes)	Avg. Dlh
0.046	2.81	102,514	118,492	6.09E+06	12	0.6625	108	3.00	0.38
					TRUE				

Point No.	Meter (cf)	dl "p"	dl "h"	ts F	tm F (in)	tm F (out)
1	428.600	0.0017	0.29	45.0	56.0	56.0
2	429.821	0.0017	0.29	49.0	56.0	56.0
3	430.807	0.0017	0.29	50.0	56.0	56.0
4	432.000	0.0008	0.14	51.0	56.0	56.0
5	432.865	0.0030	0.51	53.0	56.0	56.0
6	434.301	0.0017	0.29	55.0	57.0	57.0
7	435.411	0.0030	0.51	58.0	57.0	27.0
8	436.849	0.0030	0.51	60.0	57.0	59.0
9	438.300	0.0017	0.29	58.0	58.0	60.0
10	439.395	0.0030	0.51	61.0	58.0	60.0
11	440.835	0.0017	0.29	60.0	58.0	61.0
12	441.935	0.0008	0.14	61.0	59.0	61.0
13	442.738	0.0017	0.29	58.0	59.0	61.0
14	443.321	0.0017	0.29	54.0	59.0	61.0
15	444.968	0.0017	0.29	63.0	59.0	61.0
16	446.078	0.0017	0.29	63.0	59.0	61.0
17	447.195	0.0008	0.14	54.0	59.0	61.0
18	447.961	0.0017	0.29	56.0	59.0	60.0
19	449.065	0.0017	0.29	56.0	59.0	60.0
20	450.202	0.0030	0.51	55.0	59.0	60.0
21	451.653	0.0030	0.51	54.0	59.0	61.0
22	453.125	0.0017	0.29	57.0	59.0	61.0
23	454.228	0.0030	0.51	59.0	59.0	62.0
24	455.687	0.0030	0.51	59.0	59.0	62.0
25	457.165	0.0030	0.51	54.0	58.0	59.0
26	458.625	0.0038	0.65	53.0	59.0	63.0
27	460.058	0.0030	0.51	57.0	60.0	63.0
28	461.675	0.0017	0.29	58.0	60.0	64.0
29	462.811	0.0030	0.51	56.0	61.0	64.0
30	464.267	0.0030	0.51	54.0	61.0	65.0
31	465.736	0.0030	0.51	56.0	62.0	65.0
32	467.196	0.0017	0.29	62.0	62.0	66.0
33	468.608	0.0017	0.29	53.0	61.0	64.0
34	469.720	0.0030	0.51	54.0	61.0	63.0
35	471.123	0.0030	0.51	56.0	61.0	64.0
36	472.614	0.0017	0.29	56.0	61.0	64.0
37	473.867					
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						

Imp. Liquid Collected		
Wt. (Final)	Wt. (Initial)	lc
700.1	701.1	-1.0
619.8	617.7	2.1
540.6	539.7	0.9
923.0	916.9	6.1
		0.0

Isokinetics	104.5
Test Date	11/13/2014
Start Time	enter
End Time	enter

State of Utah

Department of
Environmental Quality

Dianne R. Nielson, Ph.D.
Executive Director

DIVISION OF AIR QUALITY
Richard W. Sprott
Director

OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

DAQE-AN0825005-03

December 9, 2003

Steven Thompson
Geneva Nitrogen, LLC
1165 N 1600 W
Vineyard, Utah 84057

Dear Mr. Thompson:

Re: Approval Order: Replacement of an Emergency Backup Boiler, Utah County, CDS A; NA; TITLE V MAJOR, NSPS, SIP
Project Code: N0825-005

The attached document is the Approval Order (AO) for the above-referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Jon Black. He may be reached at (801) 536-4047.

Sincerely,

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

RWS:JB:jc

cc: Utah County Health Department

Mike Owens, EPA Region VIII

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER: REPLACEMENT OF AN EMERGENCY BACKUP BOILER

Prepared By: Jon Black, Engineer
(801) 536-4047
Email: jlblack@utah.gov

APPROVAL ORDER NUMBER

DAQE-AN0825005-03

Date: December 9, 2003

Geneva Nitrogen Inc.
Source Contact
Steven Thompson
(801) 227-7300

Richard W. Sprott
Executive Secretary
Utah Air Quality Board

Abstract

Geneva Nitrogen LLC has submitted a Notice of Intent to modify their current Approval Order DAQE AN0825004-03. The proposed modification includes the replacement of a 14.65 MMBTU/hr boiler with a 25 MMBTU/hr boiler with Low NOx burners. Best Available Control Technology will require that this replacement boiler have Low NOx burners, burn natural gas, and be limited to a 10% opacity limitation. Geneva Nitrogen is located in Utah County, which is a non-attainment area of the National Ambient Air Quality Standards (NAAQS) for PM_{10}. New Source Performance Standards (NSPS) 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generation Units) applies to this source. National Emission Standards for Hazardous Air Pollutants (NESHAP) and Maximum Available Control Technology (MACT) regulations do not apply to this source. Title V of the 1990 Clean Air Act applies to this source. The Title V operating permit for this source shall be amended prior to the operation of the boiler installation. The emissions, in tons per year, will change as follows: PM_{10} (+) 0.17, NO_x (-) 0.47, SO_2 (+) 0.01, CO (+) 4.60, and VOC (+) 0.30. The changes in emissions will result in the following potential to emit totals, in tons per year: PM_{10} 111.17, NO_x 227.53, SO_2 0.03, CO 4.6, and VOC 0.3.

The project has been evaluated and found to be consistent with the requirements of the Utah Administrative Code Rule 307 (UAC R307). A public comment period was held in accordance with UAC R307-401-4 and no comments were received. This air quality Approval Order (AO) authorizes the project with the following conditions, and failure to comply with any of the conditions may constitute a violation of this order.

General Conditions:

1. This Approval Order (AO) applies to the following company:

   Office Location
   Geneva Nitrogen LLC
   1165 North 1600 West
   Vineyard, Utah 84057
   Phone Number (801) 227-7300
   Fax Number (801) 227-7303

   The equipment listed in this AO shall be operated at the following location:

   1165 North 1600 West, Vineyard, Utah 84057, Utah County

   Universal Transverse Mercator (UTM) Coordinate System: UTM Datum NAD27
   4,461.15 km. Northing, 436.88 km. Easting, Zone 12

2. All definitions, terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code (UAC) Rule 307 (R307) and Title 40 of the Code of Federal Regulations (40 CFR). Unless noted otherwise, references cited in these AO conditions refer to those rules.

3. The limits set forth in this AO shall not be exceeded without prior approval in accordance with R307-401.

4. Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved in accordance with R307-401-1.

5. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request, and the records shall include the two-year period prior to the date of the request. Records shall be kept for the following minimum periods:

A.	Emission inventories	Five years from the due date of each emission statement or until the next inventory is due, whichever is longer.
B.	All other records	Two years

6. Geneva Nitrogen LLC, shall install and operate the emergency back-up boiler and shall conduct its operations of the nitric acid plant in accordance with the terms and conditions of this AO, which was written pursuant to Geneva Nitrogen's Notice of Intent submitted to the Division of Air Quality (DAQ) on April 1, 2003.

7. Regardless of any inconsistency between conditions of this AO and Section IX, Part H, Subpart 1.b.A for Geneva Nitrogen LLC, of Section IX, Part H (Emission Limitations) of the SIP, this AO shall take precedence as provided by R307-305-2. The language of Section IX, Part H.1.a and Section IX, Part H, 1.b. A have been incorporated into this AO.

8. This AO shall replace the AO (DAQE-AN0825004-03) dated March 7, 2003.

9. The approved installations shall consist of the following equipment or equivalent*:

A. Montecatini Acid Plant with low temperature selective catalytic reduction unit

B. Weatherly Acid Plant with low temperature selective catalytic reduction unit

C. Predryer with cyclone scrubber system

D. Dryer with cyclone scrubber system

E. Cooler with cyclone scrubber system

F. Cooling Tower

G. Prill Tower

H. Natural Gas fired Boiler*
Manufacturer: Cleaver Brooks
MMBTU/hr: 25.0
Burners: Low Nox

* Equivalency shall be determined by the Executive Secretary

10. Geneva Nitrogen LLC shall calibrate, maintain, and operate the semi-continuous NO_x monitoring systems supplied with the selective catalytic reduction units installed on the Montecatini Acid Plant Vent and the Weatherly Acid Plant Vent. A record of the output of the monitoring system shall be made available to the Executive Secretary or a representative upon request.

11. Geneva Nitrogen LLC shall notify the Executive Secretary in writing when the installation of the equipment listed in Condition #9.J has been completed and is operational, as an initial compliance inspection is required. To insure proper credit when notifying the Executive Secretary, send your correspondence to the Executive Secretary, attn: Compliance Section

    If installation has not been completed within eighteen months from the date of this AO, the Executive Secretary shall be notified in writing on the status of the installation. At that time, the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-401-11.

Limitations and Tests Procedures

12. Emissions to the atmosphere at all times from the indicated emission points shall not exceed the following rates and concentrations:

Source: Montecatini Acid Plant Vent

Pollutant	lb/hr	ppmdv
NO_X	32.4	267.0

Source: Weatherly Acid Plant Vent

Pollutant	lb/hr	ppmdv
NO_X	19.4	438.0

13. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below:

A.

Emissions Point	Pollutant	Testing Status	Test Frequency
Montecatini Acid Plant Vent	NO_X	*	@
Weatherly Acid Plant Vent	NO_X	*	#

B. Testing Status (To be applied above)

* The latest compliance testing was completed on September 3-4, 2003.

@ Test every two years. The Executive Secretary may require testing at any time. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

Test every three years. The Executive Secretary may require testing at any time. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

At least 30 days prior to conducting any emission testing required under any part of UAC, R307, the owner or operator shall notify the Executive Secretary of the date, time and place of such testing and, if determined necessary by the Executive Secretary, the owner or operator shall attend a pretest conference. A source test protocol shall be submitted to DAQ when the testing notification is submitted to the Executive Secretary. The source test protocol shall be approved by the Executive Secretary prior to performing the test(s). The source test protocol shall outline the proposed test methodologies, stack to be tested, and procedures to be used. A pretest conference shall be held, if directed by the Executive Secretary. The pretest conference shall include representation from the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or other methods as approved by the Executive Secretary. An Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approved access shall be provided to the test location.

D. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2

E. Nitrogen Oxides

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E

F. Calculations

To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary, to give the results in the specified units of the emission limitation.

G. New Source Operation

For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production rate listed in this AO. If the maximum AO allowable production rate has not been achieved at the time of the test, the following procedure shall be followed:

1) Testing shall be at no less than 90% of the production rate achieved to date.

2) If the test is passed, the new maximum allowable production rate shall be 110% of the tested achieved rate, but not more than the maximum allowable production rate. This new allowable maximum production rate shall remain in effect until successfully tested at a higher rate.

3) The owner/operator shall request a higher production rate when necessary. Testing at no less than 90% of the higher rate shall be conducted. A new maximum production rate (110% of the new rate) will then be allowed if the test is successful. This process may be repeated until the maximum AO production rate is achieved.

H. Existing Source Operation

For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

14. Visible emissions from the following emission points shall not exceed the following values:

A. Prill Tower- 20% opacity
B. Boiler Exhaust Stack – 10% opacity
C. All other points - 10% opacity

Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

15. The following production and/or consumption limits shall not be exceeded:

A. 14 tons/hr Solid Ammonium Nitrate

B. 122,640 tons/rolling 12-month period Solid Ammonium Nitrate

C. 13.5 tons/hr Nitric Acid (based on 100% acid)

D. 113,400 tons/rolling 12-month period Nitric Acid (based on 100% acid)

E. 8,640 hours per rolling12-month period operation

F. 109.5 x 10^6 standard cubic feet of natural gas consumed by the boiler per rolling 12-month period

Compliance with the limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of production/consumption shall be kept for all periods when the plant is in operation. Records of production/consumption shall be made available to the Executive Secretary or a representative upon request and shall include a period of two years ending with the date of the request.

Plant records shall determine nitric acid production. Solid phase ammonium nitrate production shall be determined by examining sales/shipping records, tons shipped minus tons received from off-site production equals tons produced on-site. All records shall be kept on a daily basis. A fuel meter or natural gas fuel bills shall determine records of natural gas usage. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

16. Geneva Nitrogen LLC shall use natural gas as fuel in the boiler.

Federal Limitations and Requirements

17. In addition to the requirements of this AO, all applicable provisions of 40 CFR 60, New Source Performance Standards (NSPS) Subpart A, 40 CFR 60.1 to 60.18 (General Provisions), and Subpart Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) apply to this installation. To be in compliance, this facility must operate in accordance with the most current version of 40 CFR 60 applicable to this installation/plant/source.

Records & Miscellaneous

18. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this Approval Order including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded.

19. Geneva Nitrogen LLC shall comply with R307-150 Series. Inventories, Testing and Monitoring.

20. Geneva Nitrogen LLC shall comply with R307-107. General Requirements: Unavoidable Breakdowns.

The Executive Secretary shall be notified in writing if the company is sold or changes its name.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including R307.

A copy of the rules, regulations and/or attachments addressed in this AO may be obtained by contacting the Division of Air Quality. The Utah Administrative Code R307 rules used by DAQ, the Notice of Intent (NOI) guide, and other air quality documents and forms may also be obtained on the Internet at the following web site:
http://www.airquality.utah.gov/

The annual emissions estimations below include point source emissions. These emissions are for the purpose of determining the applicability of Prevention of Significant Deterioration, non-attainment area, maintenance area, and Title V source requirements of the R307. They are not to be used for determining compliance.

The Potential To Emit (PTE) emissions for this source (the entire plant) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	111.17
B.	SO_2	0.03
C.	NO_x	227.53
D.	CO	4.60
E.	VOC	0.30

Approved By:

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

DAQC-1014-12
Site ID # 10825-B4

MEMORANDUM

To: **STACK TEST FILE – GENEVA NITROGEN**

Through: Harold Burge, Major Source Compliance Section Manager

From: Rob Leishman, Environmental Scientist

Date: 8/21/2012

Subject:

Company:	Geneva Nitrogen
Location:	1165 North 1600 West, Vineyard, Utah County, Utah
Contact:	Terry Gasser – 801-227-7300
Tester:	TETCO
Source:	Prill Tower
Airs #:	049-00082
Action Code:	TR
Subject:	Review of Stack Test Report dated 12/19/2011

On 12/21/2011 DAQ received a test report for the Geneva Nitrogen Prill Tower in Vineyard, Utah. Testing was performed on 11/30/2011, to demonstrate compliance with the Title V operating permit dated January 15, 2009, Condition II.B.5.a for PM_{10} emissions. The DAQ-calculated test results are:

Source	Test Date	Pollutant	Result	Limit
Prill Tower (EU #4)	11/30/2011	PM_{10}	4.76 lb/hr 0.06 tons/day 21 tons/yr	N/A 0.24 tons/day 86 tons/yr

Note: Tons/day emissions are based on lb/hr rate for 24 hours. Tons/yr emissions are based on 24 hrs per day for 365 days a year.

DEVIATIONS: None noted.

CONCLUSION: The PM_{10} emissions were in compliance with the applicable limits at the time of testing.

RECOMMENDATION: No further action is necessary.

HPV: No compliance action is recommended.

Document Date 8/21/2012
DAQ-2012-007256

Division of Air Quality
Compliance Demonstration

Source Information

Company Name	**Geneva Nitrogen - Prill Tower**
Company Contact:	**Terry Gasser**
Contact Phone No.	**801-227-7300**
Source Designation:	**Prill Tower**

Test & Review Dates

Test Date:	11/30/2011	
Review Date:	8/16/2012	Tabs Are Shown
Observer:	**Not Observed**	
Reviewer:	**Rob Leishman**	

Particulate Emission Limits

lbs/MMBtu	lbs/hr	gr/dscf		
0.240	5.000	0.007		

Emission Rates - "Front Half"

lbs/MMBtu	**lbs/hr**	**gr/dscf**		
	4.7580	**0.0051**		

Test Information

Equivalent Diameter (ft.)	**As ft^2**	Y	Dl H @	Cp	Pbar	Pq (static)	**Dn**
26.07	704.00	0.9930	1.668	0.84	25.2	0	0.655

Rectangular

Contractor Information

Contracting Company:	American Environmental
Contact:	Brent Benson
Phone No.:	801-266-7111
Project No.:	

F factors for Coal, Oil, and Gas

	Fd scf/MMBtu	Fw scf/MMBtu	Fc scf/MMBtu
COAL			
Anthrocite 2	10100	10540	1970
Bituminous 2	9780	10640	1800
Lignite	9860	11950	1910
OIL	9190	320	1420
GAS			
Natural	8710	10610	1040
Propane	8710	10200	1190
Butane	8710	10390	1250

☐ F factor used

lbs/MMBtu

○ O2

○ CO2

Summary

Division of Air Quality

Reference Methods 5 - TSP

Compliance Demonstration of

Geneva Nitrogen - Prill Tower

Testing Results				
Test Date	11/30/2011	11/30/2011	11/30/2011	11/30/2011
Rectangular	Run 1	Run 2	Run 3	Run 4
As ft^2	704.00	704.00	704.00	
Pbar	25.20	25.20	25.20	
Pq (static)	0.00	0.00	0.00	
Ps	25.20	25.20	25.20	
Avg. Ts F	60.47	58.83	56.00	
CO2 - F_{CO2}	0.00	0.00	0.00	
O2	20.90	20.90	20.90	
N2+C	79.10	79.10	79.10	
Md	28.84	28.84	28.84	
Ms	28.75	28.74	28.73	
Y	0.99	0.99	0.99	
Cp	0.84	0.84	0.84	
Vm cf	55.05	52.14	51.96	
Vlc	8.00	7.90	8.70	
$A_{VG.}$ Tm F	81.36	78.60	83.94	
Vm std	44.93	42.80	42.23	
Vw std	0.38	0.37	0.41	
Bws	0.01	0.01	0.01	
S Bws	0.02	0.02	0.02	
Avg. Sqrt Dlp	0.04	0.05	0.05	
Vs	2.56	3.27	3.25	
scfm wet	92377.52	118387.75	118462.73	
acfm	108116.00	138121.32	137454.05	
Qsd dscfh	5496584.54	7042087.12	7039508.42	
# Sample Points	12.00	12.00	12.00	
Dn	0.655	0.655	0.655	
An	2.34E-03	2.34E-03	2.34E-03	
Start Time				
End Time				
Total Test time	144.00	108.00	108.00	
Time @ point	4.00	3.00	3.00	

	Lab Data - grams collected		
Lab Data	Probe	Filter	Back
Run 1	0.0067	0.0098	0.0019
Run 2	0.0039	0.0094	0.0006
Run 3	0.0042	0.0094	0.0008
Run 4			

Front Half Emissions Summary					
	Run 1	Run 2	Run 3	Run 4	Avg.
gr./dscf	0.0057	0.0048	0.0050		0.0051
lbs/hr	4.4509	4.8248	4.9983		4.7580
lbs/MMBtu					

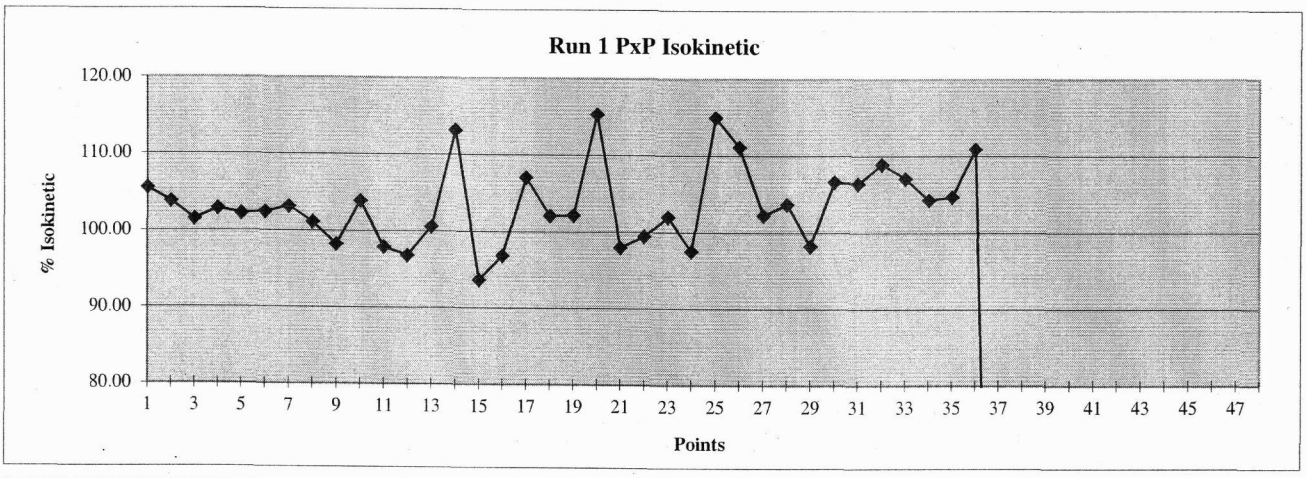
Total Emissions Summary w/back half condensable					
	Run 1	Run 2	Run 3	Run 4	Avg.
gr./dscf	0.0063	0.0050	0.0053		0.0055
lbs/hr	4.9634	5.0425	5.2923		5.0994
lbs/MMBtu					

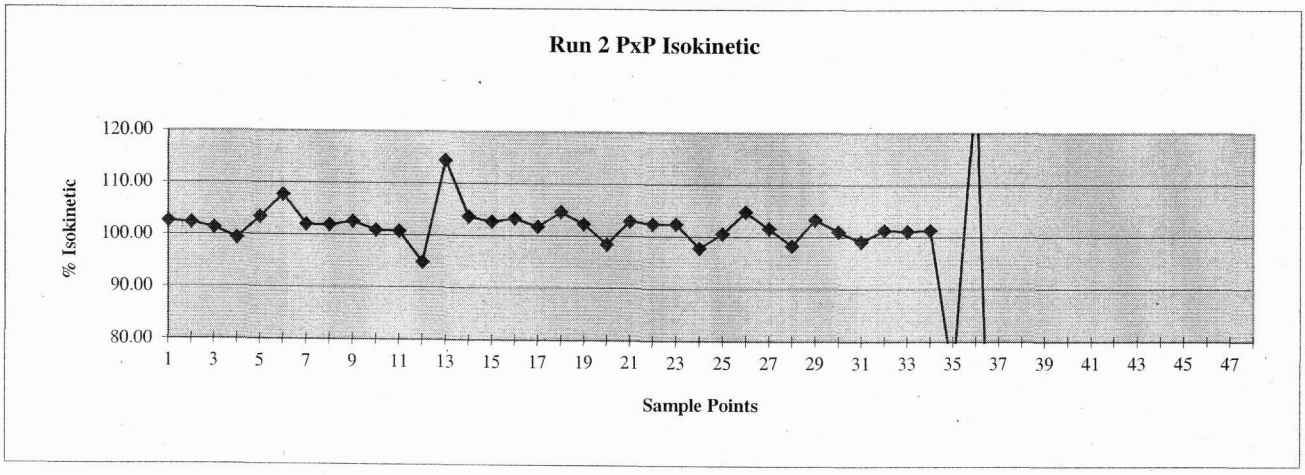
lbs/MMBtu

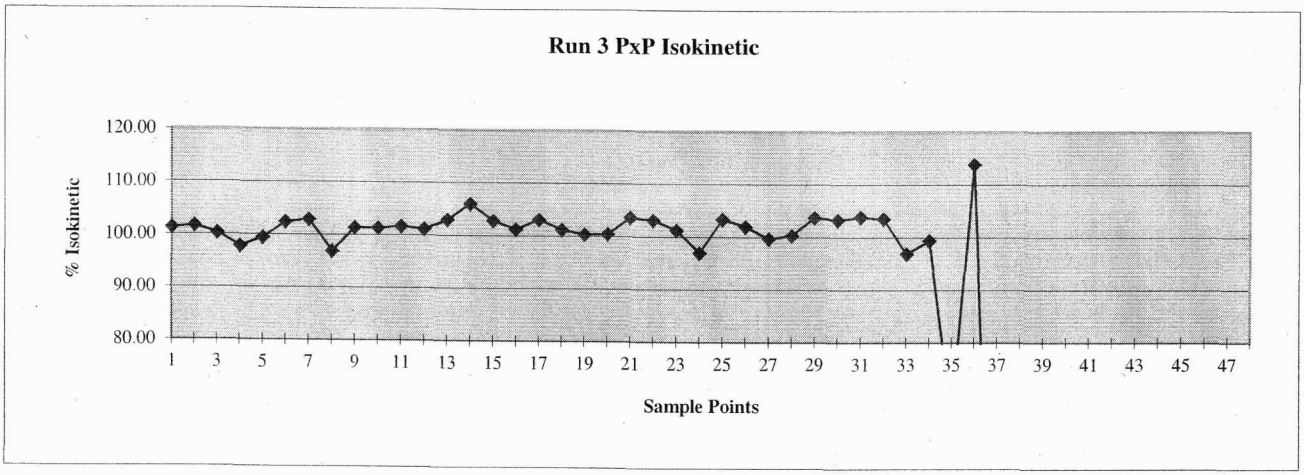
O2

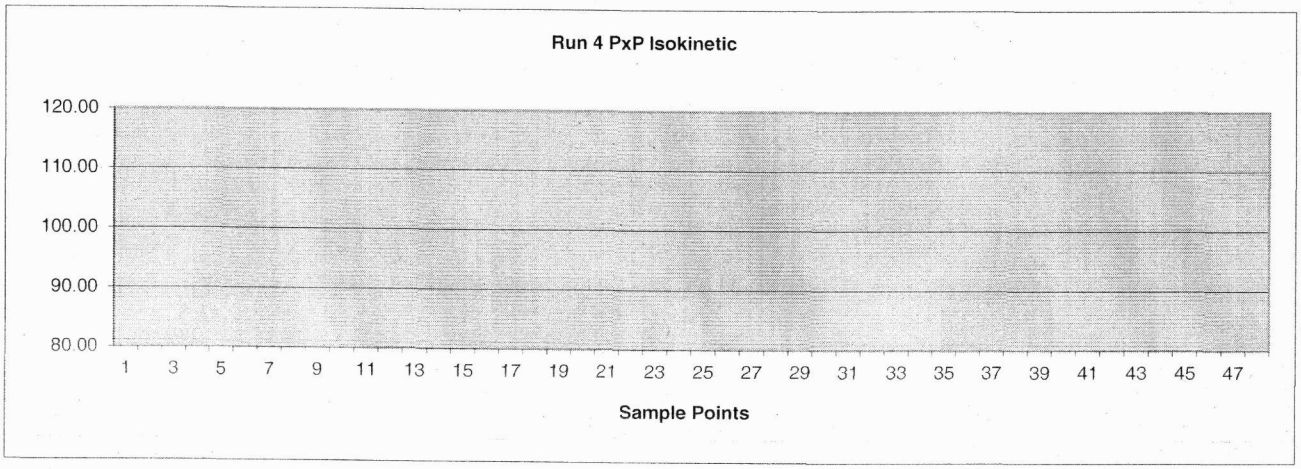
CO2

F factor used


Run 1 PxP Isokinetic
% Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Points


Run 2 PxP Isokinetic
% Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Sample Points


Run 3 PxP Isokinetic
% Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Sample Points


Run 4 PxP Isokinetic
120.00
110.00
100.00
90.00
80.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Sample Points

Geneva Nitrogen - Prill Tow				Flow & Moisture			Test Date	11/30/2011	
As ft^2	Pbar	Pq (static)	Ps	Avg. Ts F	CO2 - F_{CO2}	O2	N2+C	Md	Ms
704.00	25.20	0.00	25.20	60	0.00	20.90	79.10	28.84	28.75
Y	Cp	Vm cf	Vlc	Avg. Tm F	Vm std	Vw std	Bws	S Bws	0.0212
0.9930	0.84	55.046	8.00	81.36	44.930	0.377	0.0083	0.0212	0.999
Avg. Sqrt Dlp	Vs	scfm wet	acfm	Qsd dscfh	# Sample Points	Dn	Total Test time (minutes)	Time @ point (minutes)	Avg. Dlh
0.042	2.56	92,378	108,116	5.50E+06	12	0.655	144	4.00	0.358056
					TRUE				
Point No.	Meter (cf)	dl "p"	dl "h"	ts F	tm F (in)	tm F (out)	Imp. Liquid Collected		
1	99.044	0.0007	0.12	53	53	52	Wt. (Final)	Wt. (Initial)	lc
2	99.989	0.0030	0.53	54	54	52	708.8	716.5	-7.7
3	101.910	0.0030	0.53	55	61	55	612.3	609.5	2.8
4	103.805	0.0007	0.12	54	65	57	530.1	529.8	0.3
5	104.740	0.0030	0.53	56	68	61	886.7	874.1	12.6
6	106.671	0.0007	0.12	58	72	63			0.0
7	107.610	0.0007	0.12	61	72	65			
8	108.555	0.0030	0.53	61	72	66	Isokinetics	102.5	
9	110.473	0.0030	0.53	57	74	68	Test Date	11/30/2011	
10	112.350	0.0007	0.12	60	77	68	Start Time	enter	enter
11	113.310	0.0030	0.53	61	76	70	End Time	enter	
12	115.180	0.0030	0.53	61	81	71			
13	117.040	0.0030	0.53	55	75	75			
14	118.980	0.0030	0.53	60	77	77			
15	121.160	0.0030	0.53	61	91	79			
16	122.990	0.0030	0.53	61	92	80			
17	124.885	0.0017	0.32	56	92	83			
18	126.475	0.0030	0.56	61	94	85			
19	128.485	0.0030	0.56	64	95	86			
20	130.495	0.0007	0.13	62	95	87			
21	131.595	0.0007	0.13	58	91	87			
22	132.530	0.0047	0.88	60	89	87			
23	134.975	0.0030	0.56	63	93	86			
24	136.980	0.0030	0.56	62	94	86			
25	138.900	0.0007	0.13	60	95	88			
26	140.000	0.0007	0.13	63	95	88			
27	141.060	0.0030	0.56	66	95	90			
28	143.075	0.0030	0.56	67	97	90			
29	145.120	0.0007	0.13	62	94	91			
30	146.060	0.0017	0.33	65	96	90			
31	147.646	0.0017	0.33	67	96	90			
32	149.225	0.0007	0.13	65	95	90			
33	150.264	0.0004	0.07	64	92	90			
34	151.035	0.0007	0.13	61	92	89			
35	152.030	0.0007	0.13	61	93	89			
36	153.030	0.0007	0.13	62	94	90			
37	154.090								
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									

Geneva Nitrogen - Prill Tow				Flow & Moisture			Test Date	5/13/2009	
As ft^2	Pbar	Pq (static)	Ps	Avg. Ts F	CO2 - F_{CO2}	O2	N2+C	Md	Ms
704.00	25.20	0.00	25.20	59	0.00	20.90	79.10	28.84	28.74
Y	Cp	Vm cf	Vlc	Avg. Tm F	Vm std	Vw std	Bws	S Bws	0.0200
0.9930	0.84	52.138	7.90	79	42.804	0.372	0.0086	0.0200	0.999
Avg. Sqrt Dlp	Vs	scfm wet	acfm	Qsd dscfh	# Sample Points	Dn	Total Test time (minutes)	Time @ point (minutes)	Avg. Dlh
0.054	3.27	118,388	138,121	7.04E+06	12	0.655	108	3.00	0.59
					TRUE				

Point No.	Meter (cf)	dl "p"	dl "h"	ts F	tm F (in)	tm F (out)
1	54.655	0.0030	0.56	62.0	73.0	78.0
2	56.130	0.0030	0.56	60.0	72.0	77.0
3	57.600	0.0030	0.56	61.0	73.0	76.0
4	59.055	0.0046	0.86	61.0	74.0	75.0
5	60.820	0.0030	0.56	62.0	76.0	74.0
6	62.305	0.0017	0.32	63.0	77.0	74.0
7	63.470	0.0030	0.56	67.0	78.0	74.0
8	64.930	0.0046	0.86	65.0	79.0	74.0
9	66.740	0.0030	0.56	60.0	79.0	74.0
10	68.220	0.0046	0.86	62.0	80.0	74.0
11	70.020	0.0046	0.86	65.0	82.0	74.0
12	71.815	0.0067	1.25	65.0	82.0	75.0
13	73.853	0.0017	0.32	60.0	81.0	75.0
14	75.100	0.0017	0.32	63.0	80.0	75.0
15	76.225	0.0030	0.56	64.0	81.0	75.0
16	77.705	0.0017	0.32	61.0	81.0	75.0
17	78.830	0.0017	0.32	58.0	79.0	76.0
18	79.940	0.0017	0.32	59.0	80.0	75.0
19	81.080	0.0030	0.56	61.0	81.0	76.0
20	82.560	0.0067	1.25	59.0	82.0	76.0
21	84.690	0.0030	0.56	55.0	83.0	76.0
22	86.190	0.0030	0.56	58.0	84.0	76.0
23	87.680	0.0030	0.56	59.0	85.0	76.0
24	89.170	0.0067	1.25	60.0	85.0	76.0
25	91.290	0.0030	0.56	55.0	86.0	76.0
26	92.760	0.0017	0.32	55.0	86.0	77.0
27	93.915	0.0030	0.56	55.0	85.0	77.0
28	95.400	0.0046	0.86	56.0	86.0	77.0
29	97.178	0.0007	0.13	54.0	85.0	78.0
30	97.910	0.0007	0.13	53.0	84.0	77.0
31	98.625	0.0030	0.56	53.0	83.0	78.0
32	100.075	0.0017	0.32	54.0	85.0	78.0
33	101.193	0.0007	0.13	52.0	84.0	78.0
34	101.910	0.0007	0.13	53.0	83.0	78.0
35	102.627	0.0046	0.86	54.0	83.0	78.0
36	103.950	0.0067	1.25	54.0	86.0	78.0
37	106.793					
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						

Imp. Liquid Collected		
Wt. (Final)	Wt. (Initial)	lc
695.80	700.90	-5.1
637.40	635.30	2.1
513.90	512.70	1.2
960.90	951.20	9.7
		0.0

Isokinetics	101.6
Test Date	11/30/2011
Start Time	enter
End Time	enter

Geneva Nitrogen - Prill Tow				Flow & Moisture			Test Date	5/13/2009	
As ft^2	Pbar	Pq (static)	Ps	Avg. Ts F	CO2 - F_{CO2}	O2	N2+C	Md	Ms
704.00	25.20	0.00	25.20	56	0.00	20.90	79.10	28.84	28.73
Y	Cp	Vm cf	Vlc	Avg. Tm F	Vm std	Vw std	Bws	S Bws	0.0180
0.9930	0.84	51.958	8.70	84	42.235	0.410	0.0096	0.0180	0.999
Avg. Sqrt Dlp	Vs	scfm wet	acfm	Qsd dscfh	# Sample Points	Dn	Total Test time (minutes)	Time @ point (minutes)	Avg. Dlh
0.054	3.25	118,463	137,454	7.04E+06	12	0.655	108	3.00	0.57

TRUE

Point No.	Meter (cf)	dl "p"	dl "h"	ts F	tm F (in)	tm F (out)
1	7.430	0.0047	0.88	54.0	71.0	72.0
2	9.250	0.0047	0.88	55.0	72.0	71.0
3	11.075	0.0047	0.88	55.0	75.0	71.0
4	12.880	0.0092	1.72	55.0	78.0	72.0
5	15.345	0.0047	0.88	57.0	84.0	73.0
6	17.150	0.0030	0.56	59.0	85.0	73.0
7	18.635	0.0030	0.56	59.0	86.0	74.0
8	20.130	0.0047	0.88	61.0	87.0	75.0
9	21.890	0.0030	0.56	57.0	87.0	76.0
10	23.370	0.0030	0.56	56.0	87.0	76.0
11	24.850	0.0030	0.56	60.0	88.0	77.0
12	26.333	0.0030	0.56	61.0	88.0	77.0
13	27.807	0.0017	0.32	57.0	88.0	78.0
14	28.942	0.0017	0.32	56.0	87.0	78.0
15	30.111	0.0017	0.32	59.0	88.0	80.0
16	31.245	0.0030	0.56	58.0	87.0	79.0
17	32.725	0.0017	0.32	55.0	88.0	79.0
18	33.865	0.0017	0.32	55.0	88.0	80.0
19	34.985	0.0047	0.88	60.0	88.0	80.0
20	36.820	0.0047	0.88	60.0	90.0	80.0
21	38.660	0.0017	0.32	56.0	91.0	81.0
22	39.810	0.0017	0.32	55.0	90.0	81.0
23	40.955	0.0030	0.56	59.0	90.0	81.0
24	42.441	0.0030	0.56	59.0	91.0	82.0
25	43.867	0.0017	0.32	53.0	92.0	82.0
26	45.020	0.0017	0.32	56.0	92.0	83.0
27	46.155	0.0030	0.56	58.0	92.0	83.0
28	47.625	0.0030	0.56	57.0	94.0	84.0
29	49.110	0.0007	0.13	54.0	93.0	85.0
30	49.855	0.0017	0.32	53.0	92.0	85.0
31	51.010	0.0017	0.32	54.0	92.0	85.0
32	52.170	0.0017	0.32	52.0	93.0	85.0
33	53.330	0.0030	0.56	51.0	94.0	86.0
34	54.775	0.0030	0.56	50.0	95.0	86.0
35	56.260	0.0030	0.56	50.0	97.0	87.0
36	57.250	0.0047	0.88	50.0	99.0	88.0
37	59.388					
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						

Imp. Liquid Collected		
Wt. (Final)	Wt, (Initial)	lc
718.4	721.1	-2.7
610.8	608.9	1.9
530.0	528.9	1.1
886.3	877.9	8.4
		0.0

Isokinetics	100.3
Test Date	11/30/2011
Start Time	enter
End Time	enter

Geneva Nitrogen LLC

UTAH DEPARTMENT OF
ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

December 19, 2011

Executive Secretary
Utah Air Quality Board

Dear Executive Secretary;

Geneva Nitrogen LLC has been issued a Title V Operating Permit (permit number 4900082003). This permit states that the Prill Tower (designated as EU#4) shall be tested every three years. Accordingly this unit is due for testing during the year 2011.

Geneva Nitrogen LLC sent a copy of the testing protocol for the Prill Tower (EU#4) to the office of the Executive Secretary on October 26, 2011. The Division of Air Quality reviewed the emission testing protocol and found it acceptable in a letter to Geneva Nitrogen LLC dated November 15, 2011.

TETCO of American Fork conducted this testing according to protocol on November 30, 2011. This testing was conducted while the sources were operating at the rate and/or conditions specified in the approval order, Title V Operating Permit, and/or Federal regulation. During the sources combusted fuels, used raw materials and maintained process conditions representative of normal operations and operated under such other relevant conditions specified by the Executive Secretary. Results of the emission testing are enclosed.

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

Sincerely,

Steven Thompson
Vice President
Geneva Nitrogen LLC

1165 North 1600 West, Vineyard, UT 84057 PHONE 801-227-7300 FAX 801-227-7303

UTAH DEPARTMENT OF
ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

COMPLIANCE PARTICULATE MATTER (PM) EMISSION TEST CONDUCTED AT GENEVA NITROGEN INDUSTRIES OREM, UTAH

Source Tested:

Prill Tower

November 30, 2011

by:

TETCO
391 East 620 South
American Fork, UT 84003

Prepared for:

Geneva Nitrogen
1165 N 1600 W
Orem, UT 84057

Date of Report:

December 7, 2011

CERTIFICATION OF REPORT INTEGRITY

Technical Emissions Testing Company (TETCO) certifies that this report represents the truth as well as can be derived by the methods employed. Every effort was made to obtain accurate and representative data and to comply with procedures set forth in the Federal Register.

Dean A. Kitchen

Reviewer: _____

Date: 12-6-11

Doug Olsen

Reviewer: _____

Date: 12/6/11

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INTRODUCTION

Test Purpose

This test was conducted to determine the particulate matter (PM) emissions from the Prill Tower. Geneva Nitrogen's Title V operating permit requires testing this sources once every three years for PM_{10} emissions. The tower was tested for PM instead of PM_{10} because of extremely low flows as explained in the test protocol. Emissions are expressed in terms of grains per dry standard cubic foot (gr/dscf) and pounds per hour (lb/hr).

Test Location and Type of Process

Geneva Nitrogen Industries operates an ammonium nitrate manufacturing facility located in Orem, Utah. Ammonium nitrate is formed by ejecting droplets of concentrated solution into the air at the top of the prill tower. As the solution falls, it cools and solidifies into small prills, or granules. The prills are passed through a series of rotating drums where it is further dried and cooled into the final product. The Prill Tower was tested at the same elevation where the concentrated ammonium nitrate solution is ejected in the air. This source is identified in the Title V Operating Permit, Permit Number 4900082003, last revised January 15, 2009, as Emission Unit #4.

Test Dates

Three test runs were completed November 30, 2011.

Pollutants Tested

This particulate matter test was conducted according to 40 CFR 60, Appendix A, Reference Methods 1-5 and as explained in the pretest protocol. Low flow rates required an unconventional method for measuring the tower flow rate. The back-half was not sampled for condensible particulate matter since the exhaust stream is ambient air and is typically less than 85 degrees Fahrenheit.

Test Participants

Geneva Nitrogen	Terry Gasser	
State	None	
TETCO	Dean Kitchen	Kawai McNamara

Methods Applied

EPA Methods 1-5 and those describe in the test protocol were used for the tests.

Deviations From EPA Methods

Testing cannot be conducted for PM_{10} emissions because the exhaust flow rate does not meet the criteria for acceptable ΔP_{min} and ΔP_{max} measurements allowed by Method 201A. The facility Title V permit states that all particulate captured according to EPA Method 5 will be considered PM_{10} in lieu of testing according to Method 201A.

Unusual conditions required measuring the Prill Tower flow rate different than using a conventional manometer. The conditions and configuration of the top of the Prill Tower are similar to those described in Method 5D for positive pressure baghouses with low exhaust gas velocities and nonstandard locations for measuring the flow. Concentrated ammonium nitrate is emitted from as many as eight lines of nozzles in the top of the prill tower. These nozzle lines are supported by a grate that spans the entire top of the tower. This grate also provides access for maintaining the nozzles. The rectangular tower dimensions at this location are 32 by 22 feet. Emissions from the Prill Tower are a result from carryover of particles by the prill cooling air flowing through the tower. The air flow at this level is extremely low and cannot be measured accurately with a manometer that has graduation marks of 0.005 inches of water.

As many as six axial fans provide cooling air to the Prill Tower. Usually, four to six fans are operating depending upon the ambient temperature; as the temperature cools less fans are needed to obtain the desired heat exchange across the concentrated ammonium nitrate solution. There are not any inlet ducts available for measuring the fan inlet or outlet flow rates.

As proposed in the test protocol, a "hot wire" anemometer was used to measure the Prill Tower exhaust flow rate because of the conditions described above. These measurements were taken before each test run at the same locations where the probe nozzle was placed. These flow rates were then converted to a ΔP in inches of water (based upon a C_p factor of 0.84 and for the convenience of state agency personnel) and used to establish isokinetic sampling rates for each sample point.

Quality Assurance

Testing Procedures and sample recovery techniques were according to those outlined in the Federal Register and the *Quality Assurance Handbook for Air Pollution Measurement Systems*.

SUMMARY OF RESULTS

Emission Results

Table I presents the PM test results. Table IV in Appendix A has more detailed testing data.

TABLE I Measured Particulate Matter Emissions

Run #	gr/dscf	lb/hr
1	0.0057	4.45
2	0.0048	4.82
3	0.0049	4.98
Avg.	**0.0051**	**4.75**

Process Data

The process was operated according to standard procedures. All pertinent process data was available for recording by agency personnel. Production rates were maintained by Geneva Nitrogen and are included in Appendix D.

Allowable Emissions

The allowable PM_{10} emissions for this source are 0.24 tons per day.

Discussion of Errors or Irregularities

The sample filters may demonstrate a negative weight. This is due to a portion of the filter adhering to the gasket between the filter media and the glass frit filter support. This filter material is carefully scrapped and washed from the gasket and included in the probe wash.

Filter scrapings are added to the wash because they often have a static charge. If placed with the filter, they tend to "jump" and adhere to the filter container or "leap" out of the container when opened. These pieces remain with the sample by placing them in the wash.

Description of Collected Samples

There was no visible particulate on any of the test filters; however, the particulate matter was white in color and hard to distinguish from the filter media. The front washes appeared clear.

Percent Isokinetic Sampling

Each particulate matter test run was isokinetic within the ±10% of 100% criterion specified in the Federal Register. They also meet the Utah Division of Air Quality specification of point-by-point isokinetics. Isokinetic values for each EPA Method 5 test run are presented in Table II.

TABLE II Percent Isokinetics

Run #	percent
1	103
2	102
3	101

SOURCE OPERATION

Process Control Devices Operation

There are no control devices for this source.

Process Representativeness

The facility operated normally during the tests. Production rates were maintained by Geneva Nitrogen and are included in Appendix D.

SAMPLING AND ANALYSIS PROCEDURES

Sampling Port Location

The inside dimensions of the Prill Tower are 32 X 22 feet at the level where the sampling was conducted.

Sampling Point Location

Table III shows the distance of each sampling point from the north, or south, inside walls according to EPA Method 1. Each point was marked on both side walls with a spot of spray paint. The sample nozzle was positioned above each sample point during the test. There were eight rows of nozzles. There were 36 sample points, four between each row of nozzles and four on each end.

TABLE III Sampling Point Location

Sample Point	Distance (feet from North, or South Wall)
1	2.75
2	8.25
3	13.75
4	19.25

Sampling Train Description

The PM tests were conducted according to 40 CFR 60, Appendix A, Methods 1-5 and as described in the pretest protocol.

The sampling train was made of inert materials, (i.e., Teflon, stainless steel, glass, etc.) to prevent sampled gas and particulate interference.

The stack analyzer used to conduct these methods is constructed to meet the specifications outlined in the CFR. The temperature sensors are K-type thermocouples. Heater, vacuum and pitot line connections are designed to be interchangeable with all units used by the tester. The probe liners were stainless steel.

Sample boxes were prepared for testing by following the prescribed procedure outlined in Method 5.

Sampling and Analytical Procedures

All sampling and analytical procedures employed were as specified in 40 CFR 60 and as described in the test protocol.

Quality Assurance

All equipment set-up, sampling procedures, sample recovery and equipment calibrations were carried out according to the procedures specified in 40 CFR 60, the *Quality Assurance Handbook for Air Pollution Measurement Systems*, and as described in the test protocol.

APPENDIX

A: Complete Results and Sample Calculations
B: Raw Field Data
C: Laboratory Data and Chain of Custody
D: Production Data
E: Calibration Procedures and Results
F: Related Correspondence

APPENDIX A

Table IV Complete Results, Prill Tower
Nomenclature
Sample Equations

TABLE IV
COMPLETE RESULTS
GENEVA NITROGEN, OREM, UTAH
PRILL TOWER EXHAUST

Symbol	Description	Dimensions				
Run #			1	2	3	
Date			11/30/11	11/30/11	11/30/11	
Filter #			5848	5849	5892	
Begin	Time Test Began		8:41	11:59	14:18	
End	Time Test Ended		11:14	13:45	16:14	
Pb_m	Barometric Pressure	In. Hg Abs	25.20	25.20	25.20	
dH	Orifice Pressure Drop	In. H_2O	0.358	0.586	0.571	
Y	Meter Calibration Y Factor		0.993	0.993	0.993	
V_m	Volume Gas Sampled-- Meter Conditions	cf	55.046	52.138	52.158	
T_m	Ave. Meter Temperature	°F	81.5	78.6	84.0	
dPsqrt	Sq. Root Velocity Head	Root In. H_2O	0.04205	0.05380	0.05368	
Wt_{wc}	Weight Water Collected	Grams	8.0	7.9	8.7	
Tt	Duration of Test	Minutes	144	108	108	
C_p	Pitot Tube Coefficient		0.84	0.84	0.84	
D_n	Nozzle Diameter	Inches	0.6550	0.6550	0.6550	
CO_2	Volume % Carbon Dioxide	Percent	0.00	0.00	0.00	
O_2	Volume % Oxygen	Percent	20.90	20.90	20.90	
N_2&CO	Volume % Nitrogen and Carbon Monoxide	Percent	79.10	79.10	79.10	
Vm_{std}	Volume Gas Sampled (Standard)	dscf	44.937	42.821	42.410	
V_w	Volume Water Vapor	scf	0.377	0.372	0.410	
B_{wo}	Fraction H_2O in Stack Gas	Fraction	0.008	0.009	0.010	
X_d	Fraction of Dry Gas	Fraction	0.992	0.991	0.990	
M_d	Molecular Wt. Dry Gas	lb/lbmol	28.84	28.84	28.84	
M_s	Molecular Wt. Stack Gas	lb/lbmol	28.75	28.74	28.73	
%I	Percent Isokinetic	Percent	102.5	101.6	100.7	
T_s	Ave. Stack Temperature	°F	60.5	58.8	56.0	
A_s	Stack Cross-Sectional Area	Sq. ft	704.000	704.000	704.000	
P_g	Stack Static Pressure	In. H_2O	0.000	0.000	0.000	
Pb_p	Barometric Pressure at Sample Point	In. Hg	25.20	25.20	25.20	
P_s	Stack Pressure	In. Hg Abs	25.200	25.200	25.200	
Q_s	Stack Gas Volumetric Flow Rate (Std)	dscfm	9.16E+04	1.17E+05	1.17E+05	
Q_a	Stack Gas Volumetric Flow Rate (Actual)	cfm	1.08E+05	1.38E+05	1.37E+05	
V_s	Velocity of Stack Gas	fpm	1.54E+02	1.96E+02	1.95E+02	
M_f	Filter Weight Particulate	mg	9.8	9.4	9.4	
M_p	Probe Wash Weight Particulate	mg	6.7	3.9	4.2	
M_{fp}	Total Front Half Particulate (Filter & Probe)	mg	16.5	13.3	13.6	
M_{BH}	Back Half Mass	mg	0.2	0.3	0.4	**AVE**
C_f	Particulate Concentration (Front)	Grains/dscf	0.0057	0.0048	0.0049	**0.0051**
C_{BH}	Back Half Concentration	Grains/dscf	0.0001	0.0001	0.0001	**0.0001**
ER_f	Emission Rate Front Half	lb/hr	4.448	4.821	4.975	**4.748**
ER_{BH}	Emission Rate of Back Half	lb/hr	0.054	0.109	0.146	**0.103**

%I = percent isokinetic, percent

A_s = stack cross-sectional area (ft^3)

ASΔP = see $\sqrt{\Delta P}$

Btu = unit heat value (British thermal unit)

B_{ws} = fraction of water in stack gas

C_B = concentration of particulate matter, back half (gr/dscf,lb/dscf, etc.)

C_f = concentration of particulate matter, front half (gr/dscf,lb/dscf, etc.)

C_{metal} = concentration of metals (ppm, $\mu g/ft^3$, etc.) atomic symbol replaces "metal"

CO_2 = percent carbon dioxide in the stack gas

C_p = pitot tube coefficient (0.84)

$C_{X\ (avg)}$ = species symbol replaces *x*.

$C_{X\ (corr)}$ = actual gas concentration corrected to required percent O_2

ΔH = orifice pressure drop (inches H_2O)

$\Delta H_@$ = orifice pressure (inches H_2O)

ΔP = stack flow pressure differential (inches H_2O)

D_s = diameter of the stack (feet)

D_n = nozzle diameter (inches)

EA = percent excess air

ER_B = emission rate of back half particulate (lb/hr)

ER_F = emission rate of front half particulate (lb/hr)

ER_{mmBtu} = emission rate per mmBtu or ton of fuel etc.

ER_X = emission rate of compound which replaces x

k-fact = multiplier of test point ΔP to determine test point ΔH

L = length of rectangular stack (inches)

mBtu = thousand Btu

M_d = molecular weight of stack gas, dry basis (lb/lb-mol)

M_F = mass of particulate on filter (mg)

M_{FP} = mass of particulate matter on filter and probe (mg)

mmBtu = million Btu

M_P = mass of particulate matter in probe (mg)

M_s = molecular weight of stack gas, wet basis (g/gmol)

N_2 = percent nitrogen in the stack gas

O_2 = percent oxygen in the stack gas

$\sqrt{\Delta P}$ = average of the square roots of ΔP (may also be referred to as ASΔP)

Pb_m = absolute barometric pressure at the dry gas meter (inches Hg)

Pb_p = absolute barometric pressure at the sample location (inches Hg)

P_G = stack static pressure (inches H_2O)

P_s = absolute stack pressure (inches Hg)

P_{std} = absolute pressure at standard conditions (29.92 inches Hg.)

θ = time of test (minutes)

Q_a = stack gas volumetric flow rate (acfm)

Q_s = stack gas volumetric flow rate (dscfm)

Q_W = wet stack gas std. volumetric flow (ft^3/min, wscfm)

T_s = stack temperature (^oF)

T_{std} = absolute temperature at standard conditions (528^oR)

Tt = see θ

u_m = mean molecular speed (cm/s)

Vm = sample volume (ft^3) at meter conditions

Vm_{std} = volume standard (dscf), sample volume adjusted to 68°F and 29.92 inches Hg.

V_s = velocity of stack gas (fpm)

V_{wc} = volume water vapor (scf) at 68°F and 29.92 inches Hg.

W = Width of rectangular stack (inches)

Wt_{wc} = weight of the condensed water collected (grams)

X_d = fraction of dry gas

Y = meter calibration Y-factor (dimensionless)

$$\%I = Vm_{std} \bullet (T_s + 460) \bullet 1039 / (\theta \bullet V_s \bullet P_s \bullet X_d \bullet D_n^2)$$

$$A_s = (Ds^2 / 4) \bullet \pi$$

$$B_{ws} = V_w / (Vm_{std} + V_w)$$

$$C_B = M_B \bullet 0.01543 / Vm_{std}$$

$$C_f = M_{fp} \bullet 0.01543 / Vm_{std}$$

$$C_{X\ (corr)} = C_{X\ (avg)} \bullet (20.9 - \text{desired } \%O_2) / (20.9 - \text{actual } \%O_2)$$

$$D_{eq} = 2 \bullet L \bullet W / (L + W)$$

$$D_{n\ des} = \sqrt{\{0.0269 \bullet (Pb_m + 0.0735) / [(T_m + 460) \bullet C_p \bullet X_d \bullet \sqrt{[(T_s + 460) \bullet M_s) / (P_s \bullet \Delta P)]}\}}$$

$$EA = (\%O_2 - 0.5\ \%CO) / [0.264\ \%N_2 - (\%O_2 - 0.5\ \%CO)]$$

$$ER_B = C_B \bullet Q_s \bullet 0.00857$$

$$ER_F = C_f \bullet Q_s \bullet 0.00857$$

$$ER_{mmBtu} = ER_X / (mmBtu / hr)$$

$$K\text{-fact} = 846.72 \bullet Dn^4 \bullet \Delta H_@ \bullet C_p^2 \bullet X_d^2 \bullet M_d \bullet P_s \bullet (T_m + 460) / [M_s \bullet (T_s + 460) \bullet (Pb_m + \Delta H / 13.6)]$$

$$M_d = CO_2 \bullet 0.44 + O_2 \bullet 0.32 + N_2 \bullet 0.28$$

$$M_s = (M_d \bullet X_d) + (18 \bullet B_{ws})$$

$$P_s = Pb_p + (P_G / 13.6)$$

$$Q_a = V_s \bullet A_s$$

$$Q_s = Qa \bullet Xd \bullet Ps \bullet T_{std} / [(Ts + 460) \bullet P_{std}]$$

$$Q_W = Q_s / X_d$$

$$Vm_{std} = Vm \bullet Y \bullet T_{std} \bullet (Pb_m + \Delta H / 13.6) / [P_{std} \bullet (T_m + 460)]$$

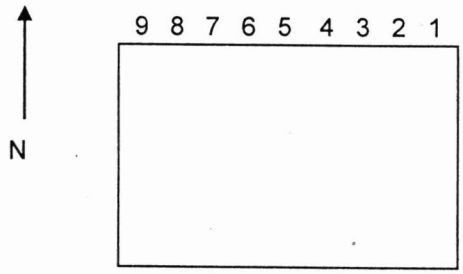
$$V_s = 85.49 \bullet 60 \bullet Cp \bullet \sqrt{\Delta P} \bullet \sqrt{[(T_s + 460) / (P_s \bullet M_s)]}$$

$$V_{wc} = Wt_{wc} \bullet 0.04715$$

$$X_d = 1 - B_{ws}$$

APPENDIX B

Preliminary Velocity Traverse and Sampling Point Location Data
Particulate Field Data
Velocity Conversion Charts



Stack Dia. 32' X 22' Reference: NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Facility Geneva Nitrogen

Stack Identification Prill Tower

Date 11-30-11

Barometric Pressure

Pb_m _____ in Hg Pb_p _____ in Hg

Static Pressure (P_G) _____ in H_2O

Estimated Moisture (Bw_s) 4 %

Sample Height from Ground 175 feet

Comments:

Time:

Traverse Point	Percent Diameter	Distance From: ID	Distance From: Reference	Ports A	B	C	D	E	F
1		2.75'							
2		8.25'							
3		13.75'							
4		19.25'							

Averages:

T_S _____ ∠ Flow _____

ΔP _____ √ΔP _____

KEY => T_S ∠ Flow ΔP

M5 Field Data Sheet

TETCO

Filter 5948 Sample Box D

Page 1 of 2 Run # 1

Plant: Geneva Nitrogen

Date: 11-30-11

Location: Prill Tower

Operator: R. Kitchen

N

9 8 7 6 5 4 3 2 1

Stack Diameter 32" X 22" Port Reference NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Assumed Moisture 1.0 %

Probe 1P-6 Cp 0.84

Nozzle Calibration

.655 .655 .655 .655

Avg D_n .6550 inches

Gas Bag Amb. Air

Console 6

Y-Factor ~~1.657~~ .997

$\Delta H@$ 1.657 in H_2O

Barometric Pressures

Pb_m 25.20 in Hg

Pb_p 25.20 in Hg

P_G 0.0 in H_2O

Leak Check	Pre	Post
ft^3/min	.005	.001
vac in Hg	22.0	5.0

Pitot Rate NA NA

In H_2O

Water Collected ~~7.9~~ 8.0 g

Time Sampled 144 min

Review

	Traverse Point	Time Clock	Time Min (0)	DGM (ft^3)	ΔP (in H_2O)	ΔH (in H_2O) Desired	ΔH (in H_2O) Actual	Vacuum (in Hg)	Stack (T_s)	Probe	Probe Out	Filter	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
1	1	841	0	99.044	.0007	.12	.12	1	53	270	229	240	57	52	53
	2		4	99.989	.0030	.53	.53	1	54	271	246	241	55	52	54
	3		8	101.910	.0030	.53	.53	1	55	240	254	250	53	55	61
	4		12	103.805	.0007	.12	.12	1	54	238	259	270	51	57	65
2	1	854	16	104.740	.0030	.53	.53	1	56	231	268	264	57	61	68
	2		20	106.671	~~.0030~~ .0007	.12	.12	1	58	227	268	264	55	63	72
	3		24	107.610	.0007	.12	.12	1	61	235	262	259	61	65	72
	4		28	108.555	.0030	.53	.53	1	61	244	268	256	62	66	72
3	1	916	32	110.473	.0030	.53	.53	1	57	253	263	258	60	68	74
	2		36	112.350	.0007	.12	.12	1	60	261	260	257	57	68	77
	3		40	113.310	.0030	.53	.53	1	61	264	260	253	61	70	76
	4		44	115.180	.0030	.53	.53	1	61	249	258	257	57	71	81
4	1	937	48	117.040	.0030	.53	.53	1	55	235	256	250	58	75	75
	2	119.980	52	118.980	.0030	.53	.53	1	60	228	253	252	59	77	77
	3		56	121.760	.0030	.53	.53	1	61	227	253	260	59	79	91
	4		60	122.940	.0030	.53	.53	1	61	237	252	260	59	80	92
5	1	957	64	124.895	.0017	.22	.22	1	56	270	261	250	60	83	92
	2		68	126.475	.0030	.56	.56	1	61	269	252	259	62	85	94
	3		72	128.485	.0030	.56	.56	1	64	272	252	261	61	86	95
	4		76	130.445	.0007	.13	.13	1	62	255	257	260	62	87	95
6	1	1007	80	131.575	.0007	.13	.13	1	58	254	252	261	64	87	91
	2		84	132.530	.0047	.88	.88	1	60	228	252	261	66	87	89
	3		88	134.475	.0030	.56	.56	1	62	229	250	257	61	86	93
	4		92	136.980	.0030	.56	.56	1	62	229	247	254	62	86	94
		1023	96	138.400	~~.0007~~										
Total				55.046	1.5138	17.89			2177 (1414)					5869	
Average					.04205	.358			60.5					81.5	

1573

2087

K = @T_m

K = @T_m

Comments:

M5 Field Data Sheet

TETCO

Filter 5848 Sample Box D

Plant: Geneva Nitrogen

Date: 11-30-11

Location: Prill Tower

Operator: D. Kitchen

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe Out	Filter	Effluent	DGM Temp (T_m) Out	In
7 1	1024	96	138.900	.0007	.13	.13	1	60	226	245	253	63	88	95
2		100	140.000	.0007	.13	.13	1	63	229	245	254	66	88	95
3		104	141.030	.0030	.56	.56	1	66	226	247	254	67	90	95
4		108	143.075	.0030	.56	.56	1	67	230	245	253	64	90	97
8 1	1041	112	144.[illegible]	.0007	.13	.13	1	62	265	247	265	67	91	94
2		116	146.060	.0007	.33	.33	1	65	263	248	254	64	90	96
3		120	147.646	.0007	.33	.33	1	67	265	249	256	65	90	96
4		124	149.275	.0007	.13	.13	1	65	266	249	258	65	90	95
9 1	1058	128	150.264	.0004	.07	.07	1	64	258	243	248	68	90	92
2		132	151.035	.0007	.13	.13	1	61	226	239	244	68	89	92
3		136	152.030	.0007	.13	.13	1	61	227	235	241	68	89	93
4		140	153.030	.0007	.13	.13	1	62	225	231	235	68	90	94
	1114	144	154.090											

Total ____ √____ ____ ____ ____

Average √____ ____ ____ ____

Comments: * DGM = 145.120

N ↑

9 8 7 6 5 4 3 2 1

Stack Diameter 32" X 22" Port Reference NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Assumed Moisture 1.0 %

Probe 18-6 Cp 0.84

Nozzle Calibration

1480 .655 .655 .655 .655

Avg D_n .6550 inches

Gas Bag Amb. Air

Console 6

Y-Factor .999

ΔH@ 1.657 in H_2O

Barometric Pressures

Pb_m 25.20 in Hg

Pb_p 25.20 in Hg

P_G 0.0 in H_2O

Leak Check	Pre	Post
ft³/min		
vac in Hg		
Pitot Rate		
In H_2O		

Water Collected ____ g

Time Sampled ____ min

Review ____

K @T_m

K @T_m

Geneva Nitrogen Velocity to DP Conversion Chart

Run # 1

Row # (From East)	Point # (From North)	Velocity (ft/min)	DP ("H_2O)
1	1	100	.0007
	2	200	.0030
	3	200	.0030
	4	100	.0007
2	1	~~150~~ 200	.0030
	2	100	.0007
	3	100	.0007
	4	200	.0030
3	1	200	.0030
	2	100	.0007
	3	200	.0030
	4	200	.0030
4	1	200	.0030
	2	200	
	3	200	
	4	200	
5	1	150	.0017
	2	200	.0030
	3	200	.0030
	4	100	.0007
6	1	100	.0007
	2	250	.0047
	3	200	.0030
	4	200	.0030
7	1	100	.0007
	2	100	.0007
	3	200	.0030
	4	200	.0030
8	1	100	.0007
	2	100	.0007
	3	~~100~~ 150	~~.0007~~ .0017
	4	~~100~~ 150	~~.0007~~ .0017
9	1	75	.0004
	2	100	.0007
	3	100	.0007
	4	100	.0007

M5 Field Data Sheet

Filter 5849 TETCO Sample Box E

Page 1 of 2 Run # 2

Plant: Geneva Nitrogen

Date: 11-30-11

Location: Prill Tower

Operator: D. Kitchen

N

9 8 7 6 5 4 3 2 1

Stack Diameter 32" X 22" Port Reference NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Assumed Moisture 1.0 %

Probe 18-6 Cp 0.84

Nozzle Calibration

.655 .655 .655 .655

Avg D_n .6550 inches

Gas Bag Amb. Air

Console 6

Y-Factor .993

$\Delta H_@$ 1.657 in H_2O

Barometric Pressures

Pb_m 25.20 in Hg

Pb_p 25.20 in Hg

P_G 0.0 in H_2O

Leak Check	Pre	Post
ft^3/min	.003	.001
vac in Hg	21.0	5.0

Pitot Rate NA NA

In H_2O

Water Collected 7.9 g

Time Sampled 168 min

Review Rm

Traverse Point	Time Clock	Time Min (0)	DGM (m^3)	ΔP ($in H_2O$)	ΔH ($in H_2O$) Desired	ΔH Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe Out	Filter	Effluent	DGM Temp (T_m) Out	In	
1 1	1159	0	54.655	.0070	.56	.56	1	62	226	235	227	61	78	72	
2		3	56.130	.0030	.56	.56	1	60	227	237	237	62	77	72	
3		6	57.600	.0030	.56	.56	1	61	233	247	257	63	76	73	
4		9	59.055	.0046	.86	.86	1	61	236	262	250	63	75	74	
2 1	1212	12	60.820	.0030	.56	.56	1	62	267	231	230	65	74	76	
2		15	62.305	.0017	.32	.32	1	63	253	227	225	65	74	77	
3		18	63.470	.0030	.56	.56	1	67	241	225	226	66	74	78	
4		21	64.930	.0046	.86	.86	1	65	232	232	228	68	74	79	
3 1	1225	24	66.740	.0030	.56	.56	1	60	225	240	237	67	74	79	
2		27	68.222	.0046	.86	.86	1	62	230	243	239	66	74	80	
3		30	70.020	.0046	.86	.86	1	60	226	245	232	67	74	82	
4		33	71.815	.0067	1.25	1.25	2	65	225	246	233	66	75	82	1824
4 1	1238	36	73.853	.0017	.32	.32	1	60	226	250	238	66	75	81	
2		39	75.100	.0017	.32	.32	1	63	235	253	239	66	75	80	
3		42	76.225	.0030	.56	.56	1	64	235	253	240	67	75	81	
4		45	77.705	.0017	.32	.32	1	61	230	253	240	67	75	81	
5 1	1251	48	78.870	.0017	.32	.32	1	58	233	255	250	69	76	79	
2		51	79.940	.0017	.32	.32	1	59	227	254	242	66	75	80	
3		54	81.080	.0030	.56	.56	1	61	235	255	251	66	76	81	
4		57	82.560	.0067	1.25	1.25	2	59	228	256	257	66	76	82	
6 1	1304	60	84.690	.0030	.56	.56	1	55	237	255	250	64	76	83	
2		63	86.190	.0030	.56	.56	1	58	225	255	239	64	76	84	
3		66	87.680	.0030	.56	.56	1	59	227	256	249	64	76	85	
4		69	89.170	.0067	1.25	1.25	2	60	224	257	225	67	76	85	1889
	1316	72	91.290												
Total			52.138	1.9768	21.080			1470 2118					5659		
Average				.05380	.586			58.8					78.6		

K = @T_m

K = @T_m

Comments

M5 Field Data Sheet

TETCO

Filter 1849 Sample Box E

 Run # 2

Plant: Geneva Nitrogen

Date: 11-20-11

Location: Prill Tower

Operator: D. Kitchen

N

9 8 7 6 5 4 3 2 1

Stack Diameter 32" X 22" Port Reference NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Assumed Moisture 1.0 %

Probe 18-6 Cp 0.84

Nozzle Calibration

1298 see page 1

Avg D_n _____ inches

Gas Bag Amb. Air

Console 6

Y-Factor .993

$\Delta H_@$ 1.657 in H_2O

Barometric Pressures

Pb_m 25.10 in Hg

Pb_p 25.20 in Hg

P_G 0.0 in H_2O

Leak Check: Pre Post

ft^3/min _____ _____

vac in Hg _____ _____

Pitot Rate NA NA

In H_2O _____ _____

Water Collected _____ g

Time Sampled _____ min

Review _____

Traverse Point	Time Clock	Time Min (0)	DGM (m^3)	ΔP (in H_2O)	ΔH (in H_2O) Desired	ΔH (in H_2O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe Out	Filter	Effluent	DGM Temp (T_m) Out	In
7 1	1317	72	91.240	.0030	.56	.56	1	55	226	246	241	63	76	86
2		75	92.260	.0017	.32	.32	1	55	229	245	241	62	77	86
3		78	93.915	.0030	.56	.56	1	55	233	243	239	62	77	85
4		81	95.400	.0046	.86	.86	1	56	239	240	236	62	77	86
8 1	1330	84	97.178	.0007	.13	.13	1	54	228	235	232	61	78	85
2		87	97.910	.0007	.13	.13	1	53	225	235	231	61	77	84
3		90	98.625	.0030	.56	.56	1	53	226	233	229	61	78	83
4		93	100.075	.0017	.32	.32	1	54	225	233	229	60	78	85
9 1	1333	96	101.193	.0007	.13	.13	1	52	229	229	226	61	78	84
2		99	101.910	.0007	.13	.13	1	53	228	232	228	60	78	83
3		102	102.627	.0046	.86	.86	1	54	235	231	228	62	78	83
4		105	103.850	.0067	1.25	1.25	2	54	228	237	231	61	78	86
	1345	~~108~~ 108	106.797											

Total _____ √ _____ _____ _____ _____

Average _____ √ _____ _____ _____ _____

K = @T_m

K = @T_m

Comments

Geneva Nitrogen Velocity to DP Conversion Chart

Run # 2

Row # (From East)	Point # (From North)	Velocity (ft/min)	DP ("H_2O)
1	1	200	.0030
	2	200	.0030
	3	200	.0030
	4	250	.0046
2	1	200	.0030
	2	150	.0017
	3	200	.0030
	4	250	.0046
3	1	200	.0030
	2	250	.0046
	3	250	.0046
	4	300	.0067
4	1	150	.0017
	2	150	.0017
	3	200	.0030
	4	150	.0017
5	1	150	.0017
	2	150	.0017
	3	200	.0030
	4	300	.0067
6	1	200	.0030
	2	200	.0030
	3	200	.0030
	4	300	.0067
7	1	200	.0030
	2	150	.0017
	3	200	.0030
	4	250	.0046
8	1	100	.0007
	2	100	.0007
	3	200	.0030
	4	150	.0017
9	1	100	.0007
	2	100	.0007
	3	250	.0046
	4	300	.0067

M5 Field Data Sheet

TETCO

Filter 58892 Sample Box 0

Page 1 of 2 Run # 3

Plant: Geneva Nitrogen

Date: 11-30-11

Location: Prill Tower

Operator: D. Kitchen

N

9 8 7 6 5 4 3 2 1

Stack Diameter 32" X 22" Port Reference NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Assumed Moisture 1.0 %

Probe 1/8 Cp 0.84

Nozzle Calibration

.655 .655 .655 .655

Avg D_n .650 inches

Gas Bag Amb. Air

Console 6

Y-Factor .993

$\Delta H_@$ 1.657 in H_2O

Barometric Pressures

Pb_m 25.20 in Hg

Pb_p 25.20 in Hg

P_G 0.0 in H_2O

Leak Check	Pre	Post
ft^3/min	.006	.001
vac in Hg	21.0	6.0

Pitot Rate NA NA

In H_2O

Water Collected 8.7 g

Time Sampled 108 min

Review

Traverse Point	Time Clock	Time Min (0)	DGM (m^3)	ΔP (in H_2O)	ΔH (in H_2O) Desired	ΔH Actual	Vacuum (in Hg)	Stack (T_s)	Probe	Probe Out	Filter	Effluent	DGM Temp (T_m) Out	DGM Temp In
1 1	1418	0	7.420	.0047	.88	.88	1	54	225	229	236	54	72	71
2		3	9.350	.0047	.88	.88	1	55	234	230	232	48	71	72
3		6	11.075	.0047	.88	.88	1	55	235	232	233	46	71	75
4		9	12.880	.0092	1.72	1.72	2	55	239	234	233	45	72	78
2 1	1431	12	15.345	.0047	.88	.88	1	57	247	235	236	46	73	84
2		15	17.150	.0030	.56	.56	1	59	257	239	232	45	73	85
3		18	18.635	.0030	.56	.56	1	59	263	237	236	47	74	86
4		21	20.130	.0047	.88	.88	1	61	269	243	246	48	75	87
3 1	1444	24	21.890	.0030	.56	.56	1	57	263	242	257	49	76	87
2		27	22.370	.0030	.56	.56	1	56	232	258	260	49	76	87
3		30	24.850	.0030	.56	.56	1	60	221	259	258	51	77	88
4		33	26.333	.0030	.56	.56	1	61	232	260	257	49	77	88
4 1	1457	36	27.807	.0017	.32	.32	1	57	232	261	263	51	78	88
2		39	28.942	.0017	.32	.32	1	56	251	261	260	51	78	87
3		42	30.111	.0017	.32	.32	1	59	263	260	258	52	80	88
4		45	31.245	.0030	.56	.56	1	58	264	263	262	52	79	87
5 1	1500	48	32.775	.0017	.32	.32	1	55	267	256	253	51	79	88
2		51	33.865	.0017	.32	.32	1	55	236	253	250	51	80	88
3		54	34.985	.0047	.88	.88	1	60	238	251	248	51	80	88
4		57	36.820	.0047	.88	.88	1	60	268	228	245	49	80	90
6 1	1522	60	38.660	.0017	.32	.32	1	56	269	248	246	50	81	91
2		63	39.810	.0017	.32	.32	1	55	269	247	245	50	81	90
3		66	40.955	.0030	.56	.56	1	59	266	247	244	52	81	90
4		69	42.411	.0030	.56	.56	1	59	225	248	243	50	82	91
	1535	72	43.867											
Total			52.158	1.9724	20.57	20.16							604.5	
Average				.05368	.571	56.0							84.0	

1878

1857

2045

K = @T_m

K = @T_m

Comments

M5 Field Data Sheet

TETCO

Filter 5892 Sample Box A

 Run # 3

Plant: Geneva Nitrogen

Date: 11-30-11

Location: Prill Tower

Operator: D. Kitchen

Traverse Point	Time Clock	Time Min (0)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe Out	Filter	Effluent	DGM Temp (T_m) Out	In
7 1	1526	72	42.867	.0017	.32	.32	1	53	230	245	242	52	82	92
2		75	45.020	.0017	.32	.32	1	56	226	245	242	52	83	92
3		78	46.155	.0030	.56	.56	1	58	231	245	241	52	83	92
4	1549	81	47.625	.0030	.56	.56	1	57	228	244	241	51	84	94
8 1		84	49.110	.0007	.13	.13	1	54	231	242	236	51	85	93
2		87	49.855	.0017	.32	.32	1	53	236	242	237	52	85	92
3		90	51.010	.0017	.32	.32	1	54	229	242	238	52	85	93
4		93	52.170	.0017	.32	.32	1	52	231	241	236	51	85	93
9 1	1602	96	53.333	.0030	.56	.56	1	51	238	246	244	51	86	94
2		99	54.775	.0030	.56	.56	1	50	244	246	238	50	86	95
3		102	56.260	.0030	.56	.56	1	50	236	240	235	49	87	97
4		105	57.750	.0047	.88	.88	1	50	233	239	232	49	88	99
	1614	108	59.388											

Total ____ √____ ____ ____ ____

Average ____ √____ ____ ____ ____

Comments

N

9 8 7 6 5 4 3 2 1

Stack Diameter 32" X 22" Port Reference NA

Ports are NA Upstream from next disturbance

Ports are NA Downstream from last disturbance

Assumed Moisture 1.0 %

Probe 18C Cp 0.84

Nozzle Calibration

1413 .655 .655 .655 .655

Avg D_n .6550 inches

Gas Bag Amb. Air

Console 6

Y-Factor .993

$\Delta H_@$ 1.657 in H_2O

Barometric Pressures

Pb_m 25.20 in Hg

Pb_p 25.20 in Hg

P_G 0.0 in H_2O

Leak Check	Pre	Post
ft³/min		
vac in Hg		

Pitot Rate		
In H_2O		

Water Collected ____ g

Time Sampled ____ min

Review ____

K = @T_m

K = @T_m

Geneva Nitrogen Velocity to DP Conversion Chart

Run # 7

Row # (From East)	Point # (From North)	Velocity (ft/min)	DP ("H_2O)
1	1	250	.0047
	2	250	.0047
	3	250	.0047
	4	350	.0092
2	1	250	.0047
	2	200	.0030
	3	200	.0030
	4	250	.0047
3	1	200	.0030
	2	200	
	3	200	
	4	200	
4	1	150	.0017
	2	150	.0017
	3	150	.0017
	4	200	.0030
5	1	150	.0017
	2	150	.0017
	3	250	.0047
	4	250	.0047
6	1	150	.0017
	2	150	.0017
	3	200	.0030
	4	200	.0030
7	1	150	.0017
	2	150	.0017
	3	200	.0030
	4	200	.0030
8	1	100	.0007
	2	150	.0017
	3	150	.0017
	4	150	.0017
9	1	200	.0030
	2	200	.0030
	3	200	.0030
	4	250	.0047

APPENDIX C

Sample Recovery
Particulate Analysis
Gas Analysis Data (Ambient Air)
Chain of Custody

Method 5

Facility: Geneva Nitrogen
Stack Identification: Prill Tower

Date: 11-30-11
Meth. 5

IMPINGERS

Run: 1 Sample Box: D

Filter Number: 5848

	Impinger Number 1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	—	Silica Gel		
Final (g)	708.8	612.3	530.1	886.7		
Initial (g)	716.5	609.5	529.8	874.1		
Net (g)	-7.7	2.8	0.3	12.6		

Total (g) 8.0

IMPINGERS

Run: 2 Sample Box: E

Filter Number: 5849

	Impinger Number 1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	—	Silica Gel		
Final (g)	695.8	637.4	513.9	960.9		
Initial (g)	700.9	635.3	512.7	951.2		
Net (g)	-5.1	2.1	1.2	9.7		

Total (g) 7.9

IMPINGERS

Run: 3 Sample Box: D

Filter Number: 5892

	Impinger Number 1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	—	Silica Gel		
Final (g)	718.4	610.8	530.0	886.3		
Initial (g)	721.1	608.9	528.9	877.9		
Net (g)	-2.7	1.9	1.1	8.4		

Total (g) 8.7

Facility: Geneva Nitrogen | Date: 11/30/11
Stack Identification: Prill Tower | Run: 1
Filter Number: 5848 | Sample Box: D

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	125	ml
Water (H_2O)	0.0000	g/100ml	Water (H_2O)	200	ml

Filter

Final$_1$:	0.6823	g	Date: 12/5/11	Time:	16:00
Final$_2$:	0.6827	g	Date: 12/6/11	Time:	14:00
Final$_{AVG}$:	0.6825	g			
Filter Preweight:	0.6727	g			
Net	0.0098	g			
Net	**9.8**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

Final$_1$:	103.3945	g	Date: 12/5/11	Time:	16:00
Final$_2$:	103.3940	g	Date: 12/6/11	Time:	14:00
Final$_{AVG}$:	103.3943	g			
Initial$_1$:	103.3874	g	Date: 10/20/11	Time:	8:00
Initial$_2$:	103.3876	g	Date: 10/20/11	Time:	14:00
Initial$_{AVG}$:	103.3875	g			
Gross:	0.0068	g			
Beaker Number: 53 — Blank:	0.0001	g			
Net	0.0067	g			
Net	**6.7**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Back Half

Final$_1$:	104.2594	g	Date: 12/5/11	Time:	16:00
Final$_2$:	104.2592	g	Date: 12/6/11	Time:	14:00
Final$_{AVG}$:	104.2593	g			
Initial$_1$:	104.2574	g	Date: 10/20/11	Time:	8:00
Initial$_2$:	104.2573	g	Date: 10/20/11	Time:	14:00
Initial$_{AVG}$:	104.2574	g			
Gross:	0.0019	g			
Beaker Number: 54 — Blank:	0.0000	g			
Net	0.0019	g			
Net	**1.9**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half		Back Half	
Filter	9.8	mg		
Wash	6.7	mg		
Total	16.5	**mg**	**Back** 1.9	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: AH | Date: 12-6-11
Lab Technician: [illegible] | Date: 12/6/11

Facility: Geneva Nitrogen | Date: 11/30/11
Stack Identification: Prill Tower | Run: 2
Filter Number: 5849 | Sample Box: E

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	110	ml
Water (H_2O)	0.0000	g/100ml	Water (H_2O)	200	ml

Filter

$Final_1$:	0.6909	g	Date: 12/5/11	Time:	16:00
$Final_2$:	0.6908	g	Date: 12/6/11	Time:	14:00
$Final_{AVG}$:	0.6909	g			
Filter Preweight:	0.6815	g			
Net	0.0094	g			
Net	**9.4**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	91.9926	g	Date: 12/5/11	Time:	16:00
$Final_2$:	91.9930	g	Date: 12/6/11	Time:	14:00
$Final_{AVG}$:	91.9928	g			
$Initial_1$:	91.9887	g	Date: 10/20/11	Time:	8:00
$Initial_2$:	91.9888	g	Date: 10/20/11	Time:	14:00
$Initial_{AVG}$:	91.9888	g			
Gross:	0.0040	g			
Beaker Number: 55	Blank:	0.0001	g		
Net	0.0039	g			
Net	**3.9**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Back Half

$Final_1$:	88.3819	g	Date: 12/5/11	Time:	16:00
$Final_2$:	88.3817	g	Date: 12/6/11	Time:	14:00
$Final_{AVG}$:	88.3818	g			
$Initial_1$:	88.3814	g	Date: 10/20/11	Time:	8:00
$Initial_2$:	88.3809	g	Date: 10/20/11	Time:	14:00
$Initial_{AVG}$:	88.3812	g			
Gross:	0.0006	g			
Beaker Number: 56	Blank:	0.0000	g		
Net	0.0006	g			
Net	**0.6**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half		Back Half		
Filter	9.4	mg			
Wash	3.9	mg			
Total	13.3	**mg**	**Back**	0.6	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: OK | Date: 12-6-11
Lab Technician: [illegible] | Date: 12/6/11

Facility: Geneva Nitrogen — Date: 11/30/11

Stack Identification: Prill Tower — Run: 3

Filter Number: 5892 — Sample Box: D

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	125	ml
Water (H_2O)	0.0000	g/100ml	Water (H_2O)	200	ml

Filter

Final$_1$:	0.6763 g	Date:	12/5/11	Time:	16:00
Final$_2$:	0.6765 g	Date:	12/6/11	Time:	14:00
Final$_{AVG}$:	0.6764 g				
Filter Preweight:	0.6670 g				
Net	0.0094 g				
Net	**9.4 mg**				

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

Final$_1$:	90.1723 g	Date:	12/5/11	Time:	16:00
Final$_2$:	90.1727 g	Date:	12/6/11	Time:	14:00
Final$_{AVG}$:	90.1725 g				
Initial$_1$:	90.1684 g	Date:	10/20/11	Time:	8:00
Initial$_2$:	90.1680 g	Date:	10/20/11	Time:	14:00
Initial$_{AVG}$:	90.1682 g				
Gross:	0.0043 g				
Beaker Number: 57 — Blank:	0.0001 g				
Net	0.0042 g				
Net	**4.2 mg**				

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Back Half

Final$_1$:	101.3138 g	Date:	12/5/11	Time:	16:00
Final$_2$:	101.3135 g	Date:	12/6/11	Time:	14:00
Final$_{AVG}$:	101.3137 g				
Initial$_1$:	101.3130 g	Date:	10/20/11	Time:	8:00
Initial$_2$:	101.3127 g	Date:	10/20/11	Time:	14:00
Initial$_{AVG}$:	101.3129 g				
Gross:	0.0008 g				
Beaker Number: 58 — Blank:	0.0000 g				
Net	0.0008 g				
Net	**0.8 mg**				

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half		Back Half	
Filter	9.4	mg		
Wash	4.2	mg		
Total	**13.6**	**mg**	**Back**	**0.8 mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: DK — Date: 12-6-11

Lab Technician: [illegible] — Date: 12/6/11

TETCO **Stack Emission Analysis**
Accurate • Reliable • Qualified

391 East 620 South, American Fork, Utah 84003 • 801-492-9106 • FAX 801-492-9107

Chain of Custody

Sample Identification		Method of Analysis	Recovery Date	Sample Description
5848	Filter	EPA Method 5 Gravimetric	11-30-11	Filter
	Front	EPA Method 5 Gravimetric		Probe Acetone Wash
	Back	EPA Method 5 Gravimetric		Impinger Catch
5849	Filter	EPA Method 5 Gravimetric		Filter
	Front	EPA Method 5 Gravimetric		Probe Acetone Wash
	Back	EPA Method 5 Gravimetric		Impinger Catch
5892	Filter	EPA Method 5 Gravimetric		Filter
	Front	EPA Method 5 Gravimetric		Probe Acetone Wash
	Back	EPA Method 5 Gravimetric		Impinger Catch

Sampled by:	DA Kitchen	Date:	11-30-11
Recovered by:		Date:	
Relinquished by:		Date:	
Received by:		Date:	
Relinquished by:		Date:	
Received By:		Date:	
Analyzed By:	DA Kitchen	Date:	12-1-11

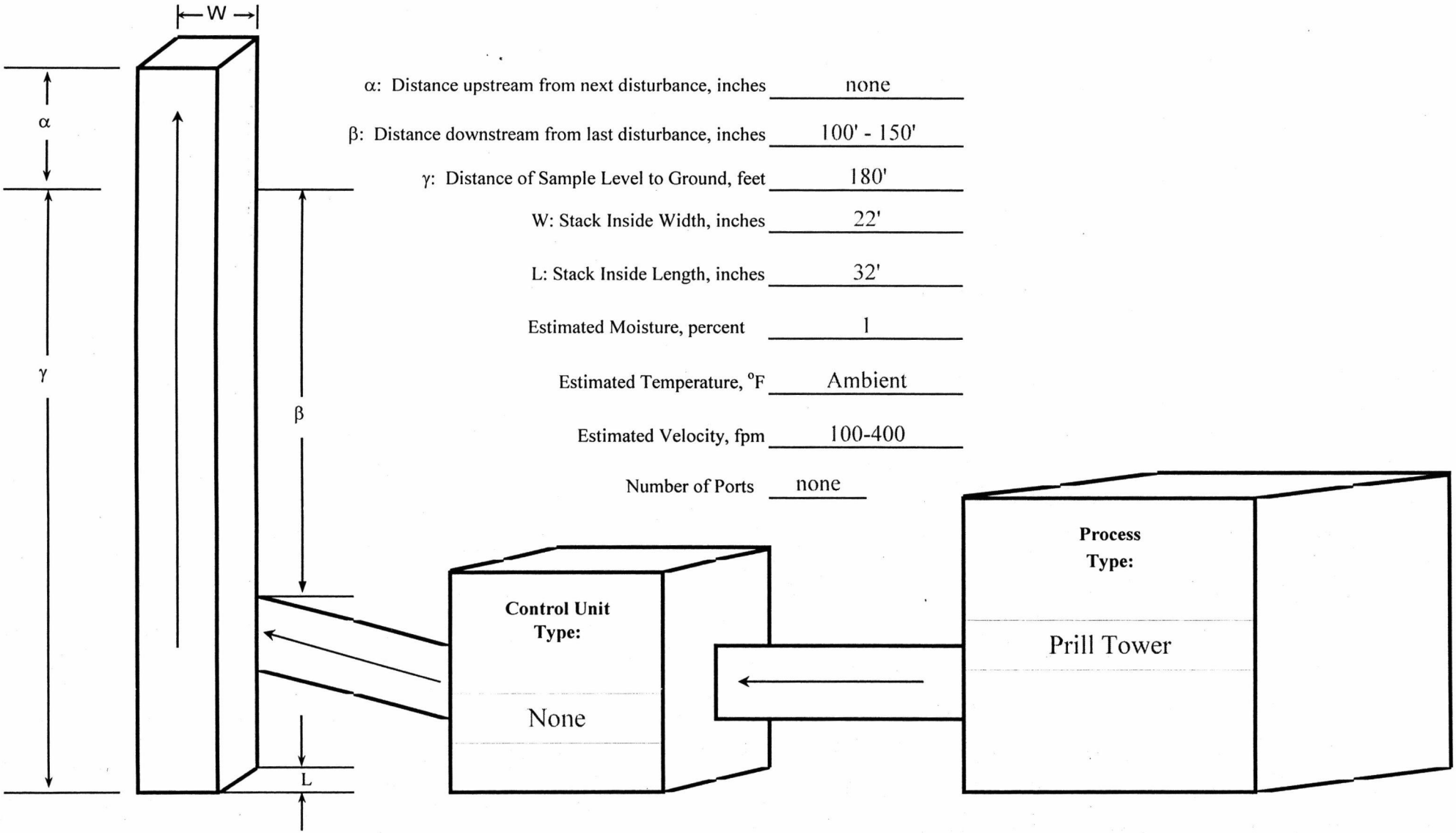
Unless otherwise indicated, all samples remain in the Custody of TETCO.

APPENDIX D

Figure 1. Facility Schematic Representation
Production Data

Facility: Geneva Nitrogen

Stack Identification: Prill Tower



α: Distance upstream from next disturbance, inches	none
β: Distance downstream from last disturbance, inches	100' - 150'
γ: Distance of Sample Level to Ground, feet	180'
W: Stack Inside Width, inches	22'
L: Stack Inside Length, inches	32'
Estimated Moisture, percent	1
Estimated Temperature, °F	Ambient
Estimated Velocity, fpm	100-400
Number of Ports	none

Figure 1. Facility Schematic Representation

Ammonium Nitrate Prill
Monthly Manufacturing Report
November 2011

Date	Hours production	Opening balance tons	Daily production tons	Hourly production tons	Shipments tons	Ending balance tons
November 1	24	1240.4	174.65	7.28	144.75	1270.3
November 2	24	1270.3	174.33	7.26	125.27	1319.36
November 3	13	1319.36	84.43	6.49	86.27	1317.52
November 4	0	1317.52	0	0	33.86	1283.66
November 5	0	1283.66	0	0	28.94	1254.72
November 6	12	1254.72	121.29	10.11	0	1376.01
November 7	24	1376.01	208.55	8.69	97.84	1486.72
November 8	24	1486.72	208.47	8.69	91.85	1603.34
November 9	24	1603.34	208.30	8.69	137.48	1674.16
November 10	5	1674.16	43.22	8.64	82.65	1634.73
November 11	0	1634.73	0	0	52.32	1582.41
November 12	18	1582.41	42.51	2.36	0	1624.92
November 13	24	1624.92	188.91	7.87	38.68	1775.15
November 14	24	1775.15	174.77	7.28	123.25	1826.67
November 15	24	1826.67	174.76	7.28	225.87	1775.57
November 16	24	1775.57	174.62	7.28	399.58	1550.61
November 17	5.5	1550.61	40.94	6.86	241.08	1350.47
November 18	5	1350.47	34.30	6.86	79.14	1305.63
November 19	24	1305.63	174.54	7.27	138.72	1341.45
November 20	24	1341.45	174.62	7.28	189.23	1326.84
November 21	24	1326.84	174.07	7.27	181.07	1320.34
November 22	24	1320.34	174.41	7.27	111.82	1382.93
November 23	24	1382.93	174.64	7.28	174.34	1383.23
November 24	24	1383.23	175.03	7.29	77.65	1480.61
November 25	24	1480.61	175.00	7.29	77.57	1578.04
November 26	24	1578.04	174.82	7.28	102.62	1650.24
November 27	24	1650.24	174.78	7.28	99.39	1725.63
November 28	24	1725.63	174.82	7.28	148.46	1751.99
November 29	24	1751.99	174.77	7.28	285.48	1641.27
November 30	24	1641.27	173.65	7.23	453.38	1361.55

GNi

Solids Log

Date: 11-30-11

		4:00 AM	8:00 AM	12:00 AM	4:00 PM	8:00 PM	12:00 PM
Tower Fans		0	1	2	2	2	2
Tower Temp.	TT - 1203	184	185	187	186	185	184
Sapphyr Head Tank Temp.	TI - 1249	76	74	74	75	75	74
Sapphyr Flow (GPM)	FIT - 1254	.11	10	.10	.10	.11	.11
Solution Flow (GPM)	FI - 1104	21.7	18.6	18.6	21.3	21.4	21.1
Head Tank Temp.	TIC - 1106	305	304	307	306	305	305
Head Tank Level	LI - 1105	80	80	80	80	80	79
Sapphyr Storage Tank Temp.	TIC - 1242	84	82	83	84	84	83
Pre-Dryer Air Inlet Temp.	TIC - 1207	234	237	233	235	235	234
Pre-Dryer Air Outlet Temp.	TI - 1201	130	133	130	130	125	128
Pre-Dryer Prill Outlet Temp.	TI - 1204	137	141	151	143	139	137
Dryer Air Inlet Temp.	TIC - 1208	238	242	240	240	239	240
Dryer Air Outlet Temp.	TI - 1202	83	86	92	89	86	86
Dryer Prill Outlet Temp.	TI - 1205	112	116	120	118	112	112
Cooler Air Inlet Temp.	TIC - 1210	70	66	50	97	92	87
Cooler Air Outlet Temp.	TI - 1211	80	85	88	87	83	82
Cooler Prill Outlet Temp.	TI - 1283	74	74	71	81	78	78
Prill Production (TPH)	WT - 1076	12.9	12.7	12.7	12.6	12.8	12.5
Galoryl Pressure (P.S.I.)	PI - 1148	60	60	60	60	60.1	60.2
Galoryl Valve Position	FCV - 1147	46.5	46.5	46.5	46.5	46.5	46.5
Galoryl Delivery Temp.	TI - 1146	218	220	220	219	217	221
Galoryl Tank Temp.	TI - 1154	230	230	232	231	232	231
Reclaim Tank Level	LI - 1441						
Wash Out Storage Tank Level	LI - 1444		52%			52%	
Heads		15	15	15		15	15

GNi

Solutions Log

Date: 11-30-11

		4:00 AM	8:00 AM	12:00 PM	4:00 PM	8:00 PM	12:00 AM
Primary Ammonia Pressure	PI - 1005	105	112	105	103	114	106
Secondary Ammonia Pressure	PI - 1006	53	60	56	53	59	54
Vaporizer Temp.	TI - 1026	186	186	183	183	183	184
Super Heater Temp.	TI - 1027	236	234	232	233	233	234
Neutralizer Pressure	PI - 1010	0	0	0	0	0	0
Neutralizer Temp.	TI - 1015	275	273	274	273	274	273
Neutralizer Main Condenser Vacuum	PI - 1016	-.50	-.51	-.54	-.51	-.51	-.43
Neutralizer Condenser p.H.	AIT - 1023	11.5	11.3	11.4	11.7	11.4	11.7
Neutralizer Acid Feed Rate	FIC - 1000	50	50	50	50	50	50
Neutralizer Ammonia Flow PPH	FI - 1008	4798	5017	4978	4940	4951	4851
Neutralizer Ammonia Flow Ratio	FFIC - 1008	.3362	.3364	.3364	.3363	3363	3360
Nitric Acid Heater Temp.	TI - 1001	140	141	140	140	140	140
Adjusting Tank p.H.	AIT - 1011	5.0	4.9	5.3	5.1	5.3	5.0
Adjusting Tank p.H. Probe Temp.	TI - 1011	144	143	143	142	142	144
83% Surge Tank Temp.	TI - 1013	261	260	260	260	261	260
83% Storage Tank Temp.	TI - 1402	255	257	256	256	256	257
# 1 Evaporator Solution Temp.	TI -1109	291	291	291	292	289	289
83 Leg	TI - 1135	283	282	281	283	283	283
96 Leg	TI - 1136	310	310	309	310	311	310
Vacuum	PI - 1112	16.4	16.2	16.2	16.2	16.4	16.2
# 2 Evaporator Solution Temp.	TI -1114						
83 Leg	TI - 1137						
96 Leg	TI - 1138						
Vacuum	PI - 1117						
# 1 96% Tank Temp.	TI - 1100	301	300	301	302	304	304
# 2 96% Tank Temp.	TI - 1101						

	Solution	Neutralizer		Adj. Tank	# 1 96		# 2 96		Notes
	Worksheet	Conc.	pH	pH	Conc.	pH	Conc.	pH	
Date	12:00								
11-27-11	4:00								
Sunday	8:00								
	12:00								
	4:00								
	8:00	85.5	2.6	5.6	96.6	5.6			
Date	12:00	85.6	2.6	5.6	96.6	5.5			
11-28-11	4:00	85.6	2.7	5.6	96.6	5.5			
Monday	8:00								
	12:00								
	4:00								
	8:00	85.7	2.6	5.5	96.6	5.5			
Date	12:00	85.7	3.2	5.5	96.6	5.5			
11-29-11	4:00	85.8	2.6	5.6	96.6	5.5			
Tuesday	8:00	85.7	2.7	5.6	96.6	5.5			
	12:00	85.7	2.6	5.5	96.6	5.5			
	4:00	85.7	2.8	5.7	96.6	5.5			
	8:00	85.7	2.6	5.7					
Date	12:00	85.7	2.6	5.8	96.6	5.5			
11-30-11	4:00	85.7	2.6	5.7	96.6	5.5			
Wednesday	8:00	85.7	2.6	5.7	96.6	5.5			
	12:00	85.7	2.7	5.7	96.6	5.5			
	4:00	85.8	2.7	5.7	96.6	5.5			
	8:00	85.6	2.9	5.7	96.6	5.7			
Date	12:00	85.6	3.5	5.7	96.6	5.7			
12-1-11	4:00	85.6	2.8	5.7	96.6	5.6			
Thursday	8:00	85.6	2.8	5.7	96.6	5.6			
	12:00	85.4	2.7	5.7	96.6	5.6			
	4:00	84.9	2.8	5.6	96.6	5.7			
	8:00	84.9	2.9	5.6	96.5	5.6			
Date	12:00	85.1	5.3	5.7	96.5	5.6			
12-2-11	4:00	85.4	2.9	5.8	96.5	5.6			
Friday	8:00	85.4	2.6	5.8	96.5	5.6			
	12:00	85.0	2.3	5.9	96.6	5.6			
	4:00	84.8	2.3	5.9	96.6	5.7			
	8:00	85.6	2.7	5.5	96.6	5.6			
Date	12:00	85.6	2.6	5.9	96.6	5.6			
12-3-11	4:00	85.6	2.4	5.7	96.6	5.6			
Saturday	8:00	85.6	2.6	5.7	96.6	5.6			
	12:00	85.6	2.4	5.7	96.6	5.6			
	4:00	85.6	2.4	5.7	96.6	5.6			
	8:00	85.6	2.5	5.7	96.6	5.6			

APPENDIX E

Calibration of the console dry gas meter(s), pitot tubes, nozzles diameters, and temperature sensors were carried out in accordance with the procedures outlined in the Quality Assurance Handbook. The appropriate calibration data are presented in the following pages. The nozzle calibrations are recorded on the first page of the field data sheets.

Figure 2. Schematic of Method 5 Sampling Train
Meter Box Calibration Data and Calculations Forms
Post-test Dry Gas Meter Calibration Data Forms
Kurz Anemometer Calibration
Type-S Pitot Tube Inspection Data
Sample Box Temperature Sensor Calibration
Filter Balance Calibration

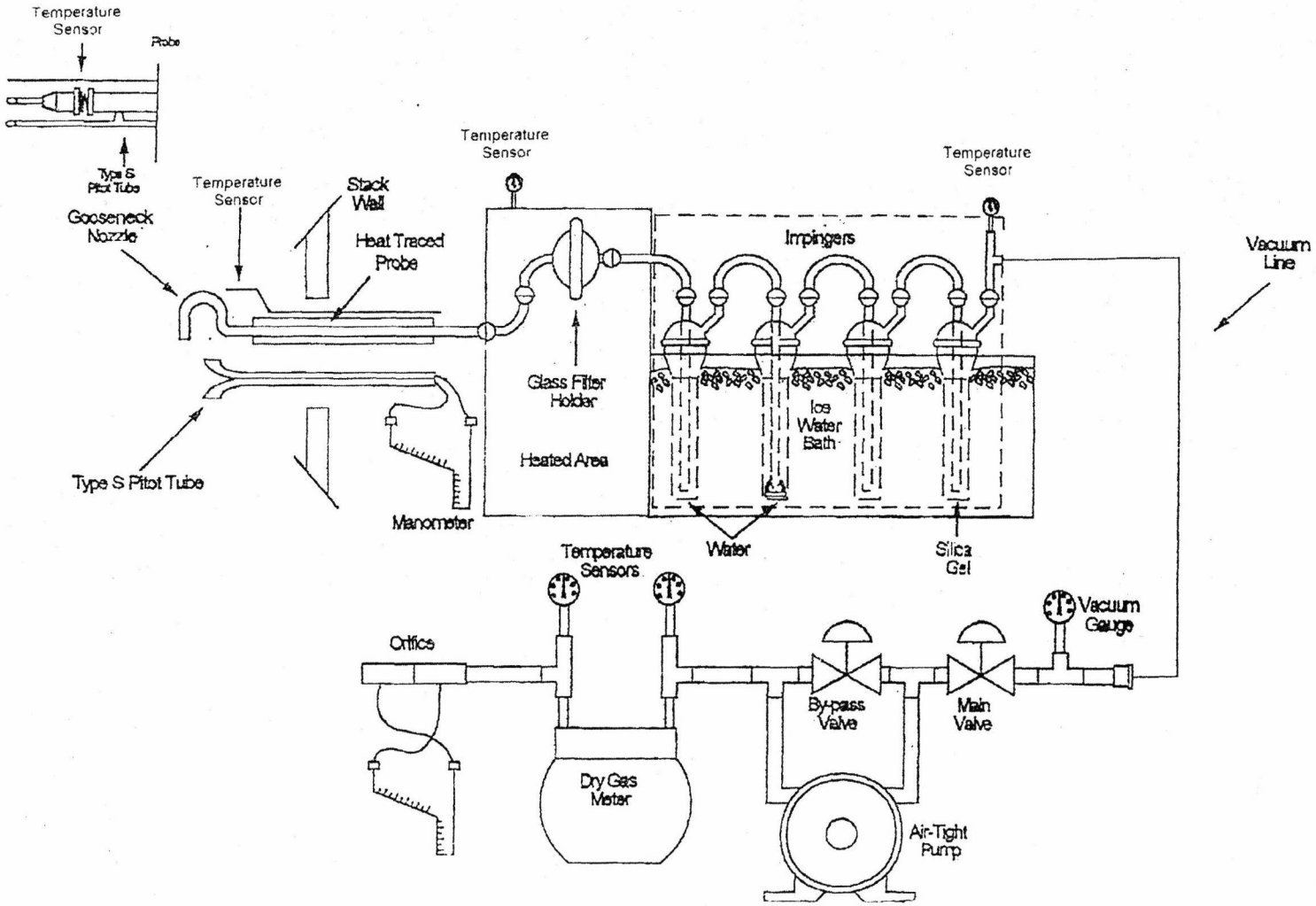


Figure 2. Schematic of Method 5 Sampling Train

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

Quality - Service - Reliability

2011 Pre-Calibration

DATE: 12/14/2010
METER PART #: Console 6
METER SERIAL #: 26144
CRITICAL ORIFICE SET SERIAL #: 1453S
BAROMETRIC PRESSURE (in Hg): INITIAL 25.20 | FINAL 25.20 | AVG (P_{bar}) 25.20
EQUIPMENT ID #: **Console #6**

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	443.725	449.104	5.379	71	73	79	73	73	74.5	5.00	3.00	4.5153	4.4506	0.986		1.788
	2	0.8137	13	449.104	454.492	5.388	71	79	82	73	73	76.75	5.00	3.00	4.5039	4.4506	0.988		1.780
	3	0.8137	13	454.492	459.885	5.393	71	82	85	73	74	78.5	5.00	3.00	4.4934	4.4506	0.990		1.775
																AVG =	0.988	-0.51	
19	1	0.5317	12	460.802	466.60	5.798	72	78	80	75	75	77.00	8.25	1.20	4.8192	4.7939	0.995		1.662
	2	0.5317	12	466.60	471.872	5.272	72	80	81	75	75	77.75	7.50	1.20	4.3759	4.3581	0.996		1.659
	3	0.5317	12	471.872	477.157	5.285	72	81	81	75	76	78.25	7.50	1.20	4.3826	4.3581	0.994		1.658
																AVG =	0.995	0.19	
12	1	0.3307	12	477.70	482.955	5.255	72	78	79	76	77	77.50	12.00	0.43	4.3540	4.3370	0.996		1.534
	2	0.3307	12	482.955	488.227	5.272	72	79	82	77	78	79.00	12.00	0.43	4.3559	4.3370	0.996		1.530
	3	0.3307	12	488.227	493.613	5.386	72	82	82	78	80	80.50	12.25	0.43	4.4378	4.4273	0.998		1.526
																AVG =	0.996	0.33	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.993

AVERAGE $\Delta H_@$ = 1.657

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
33	33	34
68	67	67
202	202	202

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Quality - Service - Reliability

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

Geneva Nitrogen

DATE: 12/1/2011

METER PART #: Console 6

METER SERIAL #: 26144

CRITICAL ORIFICE SET SERIAL #: 1453S

EQUIPMENT ID #: **Console #6**

	INITIAL	FINAL	AVG (P_{bar})
BAROMETRIC PRESSURE (in Hg):	25.65	25.65	25.65

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
12	1	0.3307	19	669.504	674.955	5.451	62	64	80	73	77	73.5	12.50	0.45	4.6317	4.6422	1.002		1.559
	2	0.3307	19	674.955	680.680	5.725	62	80	74	77	77	77	13.00	0.45	4.8328	4.8279	0.999		1.549
	3	0.3307	19	680.680	686.210	5.530	62	74	77	77	81	77.25	12.50	0.45	4.6660	4.6422	0.995		1.549
																AVG =	0.999	0.00	
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.999

AVERAGE $\Delta H_@$ = 1.552

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
33	34	34
67	66	66
121	120	120

Post test Console #6

CALIBRATION DATA AND CERTIFICATION DOCUMENT

KURZ INSTRUMENTS, INC.
2411 GARDEN ROAD
MONTEREY, CA. 93940
1-(800)-424-7356 (831)-646-5911
FAX (831)-646-8901 Web Site:www.kurz-instruments.com

CERTIFICATION OF CALIBRATION

CUSTOMER CODE : 630184
MODEL NO. : 490
SERIAL NO. : LVE4700K
FLOW UNITS : SFPM
FLUID TYPE : AIR
STD. CONDITIONS: _77 Degrees F and _29.92 inHg

LFE MODEL NO.:400A	SERIAL NO.:1050	DUE DATE:03-15-12
	SERIAL NO.:1034	DUE DATE:01-23-12
DVM SERIAL NO.:2106		DUE DATE:06-30-11
THERM SERIAL NO.:13062		DUE DATE:06-30-11
BAROMETER SERIAL NO.:4016		DUE DATE:06-24-11
FREQU. CRT. SERIAL NO.: N/A		DUE DATE: N/A

BV HI:2.194BV LO:.932 Humidity N/A Temp.64.4 F Bar.Pres.30.07

This instrument was calibrated with measuring and test equipment with NIST traceability.(Copies with applicable NIST numbers are available upon request).The calibration of this instrument was performed to meet or exceed the requirements of:A.ISO-9001,B.ANSI/NCSLZ540 and C.ISO/IEC GUIDE 25. Procedure NO. B47949

CALIBRATION TECHNICIAN: E Dwent DATE: 4-15-11

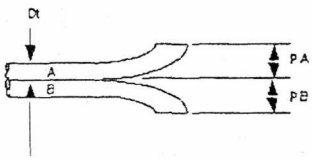
QUALITY CONTROL: BG DATE: 4-18-11

Type S Pitot Tube Inspection Data

Date: 12-9-10

Pitot Tube Identification: 9-18

Technician: K. McNamara



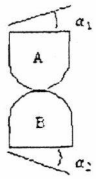
Dt= .375 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

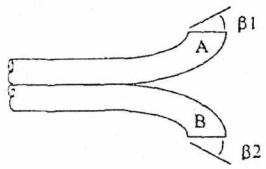
P_A = .450 in.

P_B = .450 in.



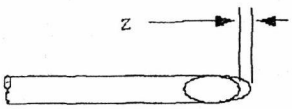
$\alpha_1 < 10°$ α_1 = 1 °

$\alpha_2 < 10°$ α_2 = 2 °

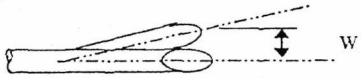


$\beta_1 < 5°$ β_1 = 1 °

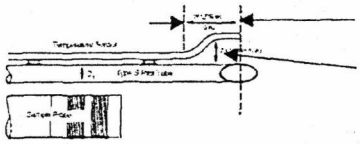
$\beta_2 < 5°$ β_2 = 0 °



Z ≤ 0.125 in. Z = .002 in.

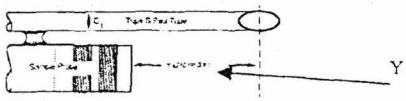


W ≤ 0.03125 in. W = .002 in.



W > 3 inches W = 6 1/2 in.

Z > 3/4 inch Z = 7/8 in.



Y ≥ 3 inches Y = 3 3/4 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	70	70	0
	Continuity			yes
	Heat Check 248		Yes	240
Stack	AIR	70	70	0
	ICE WATER	30	30	1
	BOIL WATER	204	203	1
	SILICONE OIL			

TETCO

Sample Box Temperature Sensor Calibration

Date: 12/29/10 Calibrator: Mike McNamara Reference: Omega CL3512A

Unit ID	Thermocouple Location	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temp. Diff. or Result (°F), P/F
A	Oven	Water	34	34	0
		Water	203	203	0
	Probe Out	Water	34	33	1
		Water	203	204	-1
	Impinger Out	Water	34	36	-2
		Water	203	203	0
B	Oven	Water	32	34	-2
		Water	203	204	-1
	Probe Out	Water	32	33	-1
		Water	202	204	-2
	Impinger Out	Water	31	31	0
		Water	203	205	-2
C	Oven	Water	34	36	-2
		Water	204	205	-1
	Probe Out	Water	34	36	-2
		Water	203	205	-2
	Impinger Out	Water	34	36	-2
		Water	203	201	2
D	Oven	Water	33	33	0
		Water	203	203	0
	Probe Out	Water	33	33	0
		Water	202	203	-1
	Impinger Out	Water	33	33	0
		Water	203	201	2
E	Oven	Water	33	34	-1
		Water	203	203	0
	Probe Out	Water	33	34	-1
		Water	203	204	-1
	Impinger Out	Water	33	33	0
		Water	203	204	-1
F	Oven	Water	33	33	0
		Water	203	202	1
	Probe Out	Water	33	33	0
		Water	203	201	2
	Impinger Out	Water	33	34	-1
		Water	203	201	2
	Impinger Out G	Water	33	34	-1
		Water	203	202	1
	Impinger Out H	Water	33	35	-2
		Water	203	202	1
	Impinger Out I	Water	33	33	0
		Water	203	204	-1
	Impinger Out J	Water	33	33	0
		Water	203	204	-1

Since **Heusser Neweigh** 1906

Certificate of Balance Calibration

Company Name: Tetco
Address: 391 East 620 South
City/State/Zip: American Fork, Utah 84003

Next Calibration Due: **December, 2011**
Reference Weights Cal ID.: 74

Certificate No.: 2105
Calibration Date: 2010, December 13
Metrologist: Rebecca
Order Number: None

Manufacturer:	Model	Serial Number	Identification No.	Location	Nominal Mass	Indication
Ohaus	EP214	1122121229	None	Lab	1	1.0000
					200	199.9999

Comments:

Pertinent Information:
The artifact described herein has been calibrated using standards traceable to NIST. This is to certify the data reported herein is true and correct as of the date calibrated. The procedure used to calibrate the artifact meets the requirements and guidelines of the Heusser Neweigh Quality Assurance Program (Revision 2006-1) and the purchase requisition referenced herein, if any.

Authorized Signature: Rebecca Lewis

© Heusser Neweigh

Heusser Neweigh, LLC 832 Elgin Ave, Salt Lake City, UT 84106 801.486.0995 Fax 801.486.0995
This certificate may only be reproduced, in full, for internal use, by the customer to whom it is issued.

Rev. 061210

APPENDIX F

The testing protocol and other correspondence related to the tests are included here.

State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

November 15, 2011

DAQC-1262-11
Site ID 10825 (B4)

Terry Gasser
Geneva Nitrogen
1165 North 1600 West
Vineyard, Utah 84057

Dear Mr. Gasser

Re: Geneva Nitrogen – Prill Tower - Protocol Review and Test Date Confirmation – Utah County

The testing protocol for the Geneva Nitrogen Prill Tower dated October 26, 2011, has been reviewed and found acceptable. The agreed upon test date is November 30-December 2, 2011.

Acceptance of a protocol does not relieve the owner/operator and the testing contractor from strict adherence to all applicable EPA methods, Utah Division of Air Quality (DAQ) policies, Utah Air Quality Rules (UAQR), and methods approved by the Executive Secretary. Any deviation from EPA methods, DAQ policies, UAQR, and methods approved by the Executive Secretary must be addressed separately and express written consent given prior to commencement of testing.

The DAQ requires that all test reports include a statement signed by a responsible official certifying that:

A. Testing was conducted while the source was operating at the rate and/or conditions specified in the applicable approval order, operating permit, or federal regulation.

B. During testing, the source combusted fuels, used raw materials, and maintained process conditions representative of normal operations, and operated under such other relevant conditions specified by the Executive Secretary.

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

If you have any questions, call me at (801) 536-4438 or e-mail me at rleishman@utah.gov.

Sincerely,

Rob Leishman, Environmental Scientist
Division of Air Quality

RL:lk

cc: Utah County Health Department
TETCO

COMPLIANCE EMISSION TESTING PROTOCOL FOR PARTICULATE MATTER AT GENEVA NITROGEN, OREM, UTAH

Prill Tower, Emission Unit #4

Project Organization and Responsibility

The following personnel and the testing contractor are presently anticipated to be involved in the testing program. The Utah Department of Environmental Quality, Division of Air Quality (DAQ) and EPA may have their own personnel to observe all phases including the process.

Company	**Contacts**
Geneva Nitrogen 1165 N 1600 W Orem, UT 84057	Terry Gasser (801) 227-7300
Test Contractor: TETCO 391 East 620 South American Fork, UT 84003	Dean Kitchen (801) 492-9106 Paul Kitchen

Facility and Location

Geneva Nitrogen operates an ammonium nitrate manufacturing facility located in Orem, Utah. Ammonium nitrate is formed by ejecting droplets of concentrated solution into the air at the top of the Prill Tower. As the solution falls, it cools and solidifies into small prills, or granules. The prills are passed through a series of rotating drums where it is further dried and cooled into the final product. The Prill Tower will be tested at approximately the same elevation where the concentrated ammonium nitrate is ejected into the air. This source is identified in the Title V Operating Permit, Permit Number 4900082003, as Emission Unit #4.

Test Objective

This stack is being tested to comply with the requirements of the facility's Title V Operating Permit which requires testing this source once every three years.

It is proposed to not test this source for condensible particulate matter according to Method 202 because this is an ambient air source and the exhaust stream temperature is expected to be less than 85 °F.

Test Date and Time

It is planned to complete this test November 30 to December 1, 2011. The test crew will set up and begin testing (time permitting) on the 30th. Testing will continue on the 1st and 2nd as needed. If necessary, a pretest meeting may be scheduled by DAQ or Geneva Nitrogen.

Unusual Testing Conditions

Particulate matter testing will be conducted on this source according to EPA Method 5 with changes discussed in this protocol. The reason for using Method 5 instead of Method 201A for PM_{10} is because the exhaust flow rate does not meet the criteria for acceptable ΔP_{min} and ΔP_{max} measurements allowed by Method 201A. There are several reasons for deviating from Method 5.

The conditions and configuration of the top of the Prill Tower are similar to those described in Method 5D for positive pressure baghouses with low exhaust gas velocities and nonstandard locations for measuring the flow. Concentrated ammonium nitrate is emitted from as many as eight lines of nozzles in the top of the Prill Tower. These nozzles are supported by a grate that spans the entire top of the tower. The grate also provides access for maintaining the nozzles. The rectangular tower dimensions at this location are 32 feet by 22 feet. Emission from the Prill Tower are a result of carryover of particles by the prill cooling air flowing through the tower. The air flow at this level can be extremely low (as low as 100 feet per minute (fpm)) and usually cannot be measured accurately with a manometer that has graduations marks of 0.005 inches of water.

As many as six axial fans provide cooling air to the Prill Tower. Usually, four to six are operating depending upon the ambient temperature; as the temperature cools less fans are needed to obtain the desired heat exchange across the concentrated ammonium nitrate solution. There are no inlet or outlet ducts available for measuring the flow rate.

It is proposed to use a "hot wire" anemometer to measure the Prill Tower exhaust flow rate because of the conditions described above. These measurements would be taken before each test run at the same locations where the probe nozzle would be placed. The exhaust air escapes the tower from the side windows located 4 feet above the support grate and from louvers located on each side of the tower approximately 9 to 18 feet above the grate.

Operational Data and Instrumentation

It is anticipated that all processes affecting the Prill Tower operation will operate normally during the test. All pertinent process data will be made available to DAQ personnel.

Access to Sample Sites

The sample site is accessible via elevator.

Potential Hazards

Moving Equipment	Yes
Hot Equipment	Yes
Chemical	Nitric Acid, Ammonium Nitrate
Other	None

Test Site

See Appendix A for a stack diagram.

Estimates of Test Parameters

The Prill Tower exhaust gas velocity ranges from 100 to 400 feet per minute. The gas temperature is dependent upon ambient conditions.

Test Procedures

Particulate matter testing will be conducted according to EPA Method 5 and as described in this protocol. The back half of the Method 5 sampling train will be not be sampled according to EPA Method 202 because this is an ambient air source and the exhaust stream temperature is expected to be less than 85 °F. Specific procedures are as follows:

1. The sample location will be the top of the Prill Tower near the same elevation (approximately two feet above) as the ammonium nitrate nozzles. There are eight rows of nozzles. There will be 36 sample points, four between each row of nozzles and four on each end.

2. An anemometer will be used to measure the flow due to low velocities. A ΔP will be determined for each sample point from these measurements. For conventional purposes, the ΔP values will be based upon a C_p factor of 0.84 for isokinetic calculations. Velocity measurements will be made at each sampling point prior to beginning each test run. The sample nozzle position will be approximately 20 inches above the grate supporting the ammonium nitrate nozzles. Direction of gas flow cannot be checked for cyclonics due to the low velocities. The anemometer has been calibrated within the past year and is submitted with this protocol.

3. Test run time will be at least 90 minutes for these tests.

4. There are no combustion gases in this exhaust but ambient air only; therefore, a dry molecular weight of 28.84 lb/lbmol will be used in all calculations.

5. EPA Method 4 will be followed to determine the gas stream moisture content.

6. Probe liners will be 316 stainless steel.

7. The glass fiber filters used will meet the requirements of EPA Method 5.

8. The barometric pressure will be measured with a barometer which is periodically checked against a mercury barometer. The barometer will be checked prior to testing to assure an accurate barometric pressure.

9. All current calibration data is submitted with this protocol, except nozzle calibration which will be done at the test site. Nozzle calibration will be included on the first page of each set of run sheets for each respective test run. Any calibration that is not current will be re-calibrated prior to the test dates.

10. Any necessary preparation and clean-up by the contractor will be performed in the contractor's sampling trailer. The laboratory work and analysis will be done by the contractor as soon as possible after the test project at 391 East 620 South, American Fork, Utah.

11. Verbal results will be reported to Geneva Nitrogen. The written reports will submitted within 30 days following completion of the tests.

Quality Assurance

All testing and analysis in these compliance tests will be conducted according to Methods 5, as discussed in this protocol and appropriate sections of the EPA *Quality Assurance Handbook for Air Pollution Measurement Systems Volume III.*

Reporting

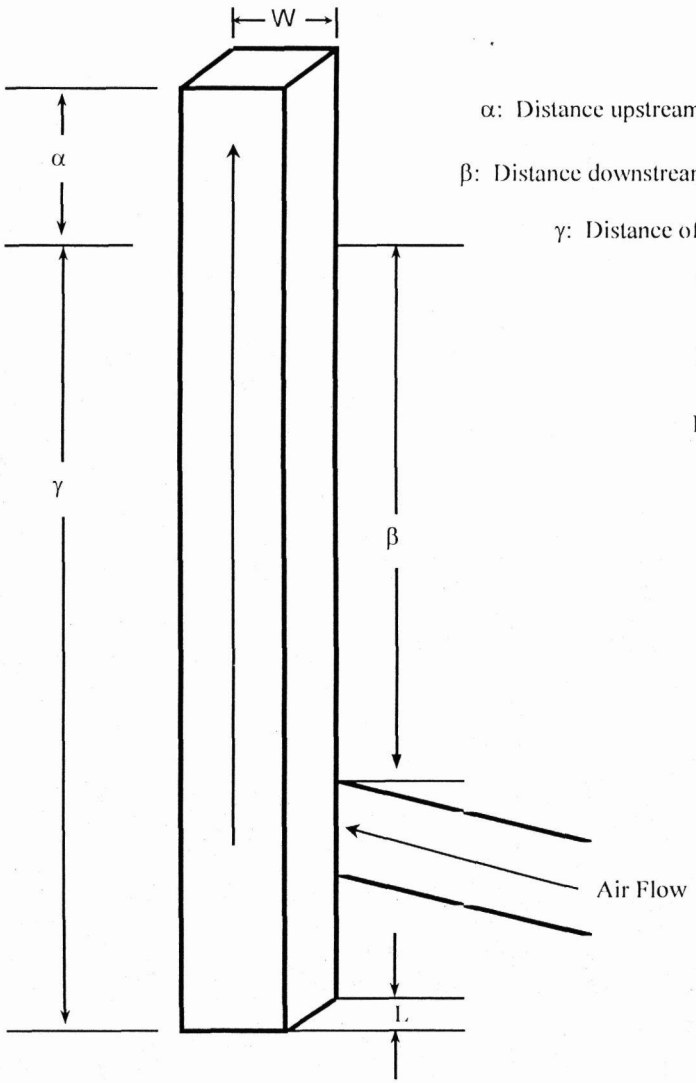
Complete copies of raw data, calculations and summary of test will be included in the test report. All process and production data will be recorded and retained for inspection and copying by DAQ and EPA.

Appendix A

Stack Schematic

Facility: Geneva Nitrogen

Stack Identification: Prill Tower



α: Distance upstream from next disturbance, inches	none
β: Distance downstream from last disturbance, inches	100' - 150'
γ: Distance of Sample Level to Ground, feet	180'
W: Stack Inside Width, inches	22'
L: Stack Inside Length, inches	32'
Estimated Moisture, percent	1
Estimated Temperature, °F	Ambient
Estimated Velocity, fpm	100-400
Number of Ports	none
Process Type	Prill Tower
Control Unit	None

Figure 1. Facility Schematic Representation

Appendix B

Calibration Data

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

ES Quality - Service - Reliability

ENVIRONMENTAL SUPPLY COMPANY

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

Facility: New Calibration 2011

DATE: 12/15/2010

METER PART #: Console 3

METER SERIAL #: 1522588

CRITICAL ORIFICE SET SERIAL #: 1453S

BAROMETRIC PRESSURE (in Hg): INITIAL 25.30 | FINAL 25.30 | AVG (P_{bar}) 25.3

EQUIPMENT ID #: Console #3

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	896.006	901.301	5.295	74	74	76	70	70	72.5	5.00	2.90	4.4778	4.4556	0.995		1.737
	2	0.8137	13	901.301	906.609	5.308	74	76	79	70	72	74.25	5.00	2.90	4.4741	4.4556	0.996		1.731
	3	0.8137	13	906.609	911.936	5.327	74	79	80	72	73	76.00	5.00	2.90	4.4754	4.4556	0.996		1.726
																AVG =	0.996	-0.89	
19	1	0.5317	13	912.40	917.596	5.196	74	79	80	75	82	79.00	7.50	1.20	4.3198	4.3672	1.011		1.655
	2	0.5317	13	917.596	922.809	5.213	74	80	82	74	77	78.25	7.50	1.20	4.340	4.3672	1.006		1.657
	3	0.5317	13	922.809	928.018	5.209	74	82	83	77	78	80.00	7.50	1.20	4.3226	4.3672	1.010		1.652
																AVG =	1.009	0.48	
12	1	0.3307	13	928.304	933.524	5.220	74	82	83	78	79	80.50	12.00	0.44	4.3182	4.3460	1.006		1.561
	2	0.3307	13	933.524	938.841	5.317	74	81	83	79	80	80.75	12.25	0.44	4.3964	4.4366	1.009		1.560
	3	0.3307	13	938.841	944.055	5.214	74	83	84	80	80	81.75	12.00	0.44	4.3032	4.3460	1.010		1.557
																AVG =	1.009	0.41	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = **1.004**

AVERAGE $\Delta H_@$ = **1.649**

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors (4-28-08)

Reference °F	In °F	Out °F
34	34	35
67	67	67
202	202	204

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Quality - Service - Reliability

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

2011 Pre-Calibration

DATE: 12/15/2010
METER PART #: Console 4
METER SERIAL #: 27863
CRITICAL ORIFICE SET SERIAL #: 1453S
BAROMETRIC PRESSURE (in Hg): INITIAL 25.25 | FINAL 25.25 | AVG (P_{bar}) 25.25
EQUIPMENT ID #: Console #4

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	949.501	954.735	5.234	72	68	73	66	68	68.75	5.00	2.60	4.4450	4.4552	1.002		1.564
	2	0.8137	13	954.735	960.015	5.280	72	73	76	68	70	71.75	5.00	2.60	4.4588	4.4552	0.999		1.556
	3	0.8137	13	960.015	965.317	5.302	72	76	80	70	70	74.00	5.00	2.60	4.4585	4.4552	0.999		1.549
																AVG =	1.000	-0.32	
19	1	0.5317	13	966.902	972.124	5.222	72	82	86	72	76	79.00	7.50	1.12	4.3318	4.3668	1.008		1.542
	2	0.5317	13	972.124	977.544	5.420	72	86	88	76	80	82.50	7.75	1.12	4.4671	4.5123	1.010		1.532
	3	0.5317	13	977.544	982.827	5.283	72	88	90	80	83	85.25	7.50	1.12	4.3322	4.3668	1.008		1.524
																AVG =	1.009	0.52	
12	1	0.3307	13	983.4500	988.857	5.407	72	88	89	83	87	86.75	12.25	0.42	4.4127	4.4361	1.005		1.470
	2	0.3307	13	988.857	994.191	5.334	72	89	92	87	89	89.25	12.00	0.42	4.3333	4.3456	1.003		1.464
	3	0.3307	13	994.191	999.697	5.506	72	92	93	90	92	91.75	12.25	0.42	4.4528	4.4361	0.996		1.457
																AVG =	1.001	-0.20	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = **1.003**

AVERAGE $\Delta H_@$ = **1.517**

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
33	34	34
67	67	67
201	203	202

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Quality - Service - Reliability

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

2011 Pre-Calibration

DATE: 12/20/2010
METER PART #: Console 5
METER SERIAL #: 68092
CRITICAL ORIFICE SET SERIAL #: 1453S
EQUIPMENT ID #: Console #5

BAROMETRIC PRESSURE (in Hg):	INITIAL	FINAL	AVG (P_{bar})
	25.10	25.10	25.10

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	12	155.004	161.521	6.517	74	82	83	89	93	86.75	6.00	2.55	5.320	5.3045	0.997		1.498
	2	0.8137	12	161.521	168.043	6.522	74	83	83	93	96	88.75	6.00	2.55	5.3046	5.3045	1.000		1.493
	3	0.8137	12	168.043	174.568	6.525	74	83	83	96	99	90.25	6.00	2.55	5.2926	5.3045	1.002		1.489
																AVG =	1.000	-0.09	
19	1	0.5317	13	136.700	142.672	5.972	74	81	80	84	86	82.75	8.50	1.11	4.8905	4.9104	1.004		1.532
	2	0.5317	13	142.672	148.297	5.625	74	80	81	86	88	83.75	8.00	1.11	4.5978	4.6215	1.005		1.529
	3	0.5317	13	148.297	153.926	5.629	74	81	82	88	89	85.00	8.00	1.11	4.5905	4.6215	1.007		1.526
																AVG =	1.005	0.47	
12	1	0.3307	13	116.20	125.809	9.609	74	76	78	77	80	77.75	22.00	0.40	7.9255	7.9047	0.997		1.437
	2	0.3307	13	125.809	131.075	5.266	74	78	80	80	81	79.75	12.00	0.40	4.3273	4.3117	0.996		1.432
	3	0.3307	13	131.075	136.357	5.282	74	80	81	81	84	81.50	12.00	0.40	4.3264	4.3117	0.997		1.428
																AVG =	0.997	-0.38	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = **1.001**

AVERAGE $\Delta H_@$ = **1.485**

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
32	32	32
72	73	73
203	201	202

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Quality - Service - Reliability

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

2011 Pre-Calibration

DATE: 12/14/2010
METER PART #: Console 6
METER SERIAL #: 26144
CRITICAL ORIFICE SET SERIAL #: 1453S
EQUIPMENT ID #: **Console #6**

BAROMETRIC PRESSURE (in Hg):	INITIAL	FINAL	AVG (P_{bar})
	25.20	25.20	25.20

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	443.725	449.104	5.379	71	73	79	73	73	74.5	5.00	3.00	4.5153	4.4506	0.986		1.788
	2	0.8137	13	449.104	454.492	5.388	71	79	82	73	73	76.75	5.00	3.00	4.5039	4.4506	0.988		1.780
	3	0.8137	13	454.492	459.885	5.393	71	82	85	73	74	78.5	5.00	3.00	4.4934	4.4506	0.990		1.775
																AVG =	0.988	-0.51	
19	1	0.5317	12	460.802	466.60	5.798	72	78	80	75	75	77.00	8.25	1.20	4.8192	4.7939	0.995		1.662
	2	0.5317	12	466.60	471.872	5.272	72	80	81	75	75	77.75	7.50	1.20	4.3759	4.3581	0.996		1.659
	3	0.5317	12	471.872	477.157	5.285	72	81	81	75	76	78.25	7.50	1.20	4.3826	4.3581	0.994		1.658
																AVG =	0.995	0.19	
12	1	0.3307	12	477.70	482.955	5.255	72	78	79	76	77	77.50	12.00	0.43	4.3540	4.3370	0.996		1.534
	2	0.3307	12	482.955	488.227	5.272	72	79	82	77	78	79.00	12.00	0.43	4.3559	4.3370	0.996		1.530
	3	0.3307	12	488.227	493.613	5.386	72	82	82	78	80	80.50	12.25	0.43	4.4378	4.4273	0.998		1.526
																AVG =	0.996	0.33	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.993

AVERAGE $\Delta H_@$ = 1.657

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H/13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
33	33	34
68	67	67
202	202	202

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Quality - Service - Reliability

2010 Pre-Calibration Console 7

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

DATE:	12/16/2010	METER SERIAL #:	68092	BAROMETRIC PRESSURE (in Hg):	INITIAL 25.45	FINAL 25.45	AVG (P_{bar}) 25.45	IF Y VARIATION EXCEEDS 2.00%,
METER PART #:	Console 7	CRITICAL ORIFICE SET SERIAL #:	1453S	EQUIPMENT ID #:	Console #7			ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	12	3.7040	12.435	8.731	75	88	89	89	89	88.75	8.00	3.10	7.2110	7.1646	0.994		1.796
	2	0.8137	12	12.435	19.003	6.568	75	89	89	89	91	89.5	6.00	3.10	5.4171	5.3734	0.992		1.793
	3	0.8137	12	19.003	24.463	5.460	75	89	89	92	93	90.75	5.00	3.10	4.4931	4.4779	0.997		1.789
																AVG =	0.994	-0.38	
19	1	0.5317	12	968.901	974.579	5.678	75	80	81	84	86	82.75	8.00	1.15	4.7149	4.6816	0.993		1.569
	2	0.5317	12	974.579	980.960	6.381	75	81	82	86	88	84.25	9.00	1.15	5.2840	5.2668	0.997		1.564
	3	0.5317	12	980.960	986.636	5.676	75	82	83	88	89	85.50	8.00	1.15	4.6894	4.6816	0.998		1.561
																AVG =	0.996	-0.18	
12	1	0.3307	12	986.900	992.147	5.247	75	82	83	85	86	84.00	12.00	0.47	4.3385	4.3677	1.007		1.650
	2	0.3307	12	992.147	997.419	5.272	75	83	84	86	86	84.75	12.00	0.47	4.3531	4.3677	1.003		1.648
	3	0.3307	12	997.419	1,002.711	5.292	75	84	84	86	86	85.00	12.00	0.47	4.3676	4.3677	1.000		1.647
																AVG =	1.003	0.56	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = **0.998**

AVERAGE $\Delta H_@$ = **1.668**

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

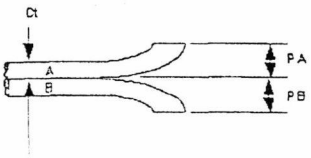
Reference °F	In °F	Out °F
32	33	33
72	73	73
120	120	121

Type S Pitot Tube Inspection Data

Date: 12-10-10

Pitot Tube Identification: 27-2

Technician: K. McNamara



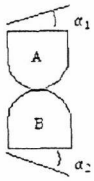
Dt= .250 in.

Is $P_A = P_B$? yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? yes

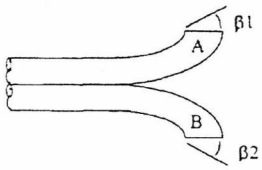
P_A = .348 in.

P_B = .348 in.



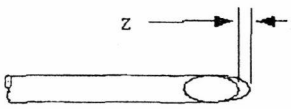
$\alpha_1 < 10°$ α_1 = 3 °

$\alpha_2 < 10°$ α_2 = 2 °

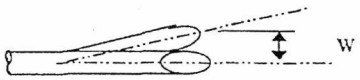


$\beta_1 < 5°$ β_1 = 0 °

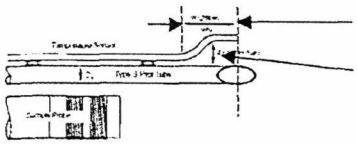
$\beta_2 < 5°$ β_2 = 0 °



$Z \le 0.125$ in. Z = .061 in.

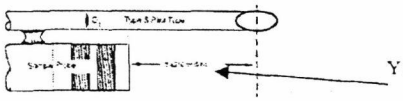


$W \le 0.03125$ in. W = .024 in.



W > 3 inches W = 5 1/2 in.

Z > 3/4 inch Z = 1 in.



Y ≥ 3 inches Y = 3 3/4 in.

The pitot tube meets the specifications for a calibration factor of 0.84? yes

Temperature Sensor Calibration

Reference:

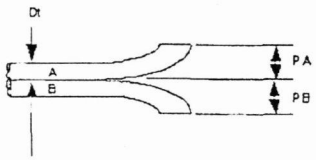
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	68	67	1
	Continuity	→	→	yes
	Heat Check 248	→	yes	248
Stack	AIR	68	67	1
	ICE WATER	33	33	0
	BOIL WATER	205	205	0
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 12-10-10

Pitot Tube Identification: 27-1

Technician: K. McNamara



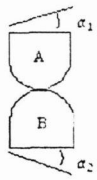
Dt= .250 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

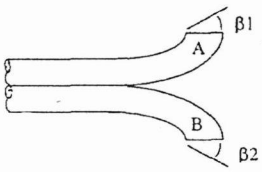
P_A = .478 in.

P_B = .478 in.



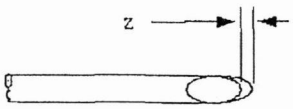
$\alpha_1 < 10°$ α_1 = 2 °

$\alpha_2 < 10°$ α_2 = 2 °

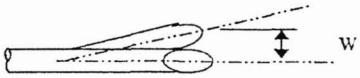


$\beta_1 < 5°$ β_1 = 1 °

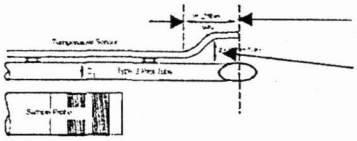
$\beta_2 < 5°$ β_2 = 0 °



Z ≤ 0.125 in. Z = .003 in.

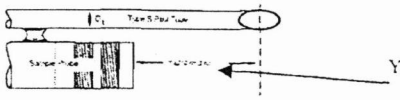


W ≤ 0.03125 in. W = .005 in.



W > 3 inches W = 4 1/4 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 4 1/4 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference: _____

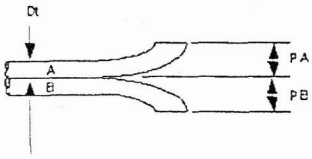
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	62	63	1
	Continuity	→	→	yes
	Heat Check 248	→	yes	260
Stack	AIR	62	63	1
	ICE WATER	34	36	2
	BOIL WATER	202	201	1
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 12-9-10

Pitot Tube Identification: 9-18

Technician: K. McNamara



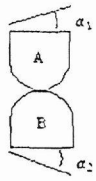
Dt= .375 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

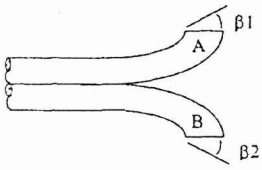
P_A = .450 in.

P_B = .450 in.



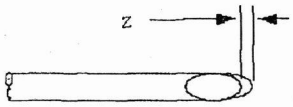
$\alpha_1 < 10°$ α_1 = 1 °

$\alpha_2 < 10°$ α_2 = 2 °

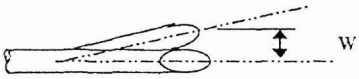


$\beta_1 < 5°$ β_1 = 1 °

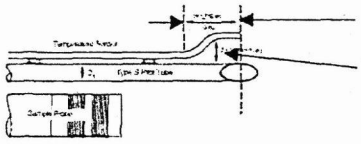
$\beta_2 < 5°$ β_2 = Ø °



Z ≤ 0.125 in. Z = .002 in.

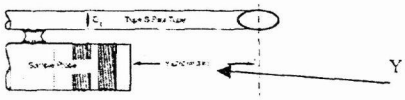


W ≤ 0.03125 in. W = .002 in.



W > 3 inches W = 6 1/2 in.

Z > 3/4 inch Z = 7/8 in.



Y ≥ 3 inches Y = 3 3/4 in.

The pitot tube meets the specifications for a calibration factor of 0.84? yes

Temperature Sensor Calibration

Reference:

	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	70	70	0
	Continuity	→		yes
	Heat Check 248	→	Yes	240
Stack	AIR	70	70	0
	ICE WATER	30	30	1
	BOIL WATER	204	203	1
	SILICONE OIL			

TETCO

Sample Box Temperature Sensor Calibration

Date: 12/29/10 Calibrator: Mike McNamara Reference: Omega CL3512A

Unit ID	Thermocouple Location	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temp. Diff. or Result (°F), P/F
A	Oven	Water	34	34	0
		Water	203	203	0
	Probe Out	Water	34	33	1
		Water	203	204	-1
	Impinger Out	Water	34	36	-2
		Water	203	203	0
B	Oven	Water	32	34	-2
		Water	203	204	-1
	Probe Out	Water	32	33	-1
		Water	202	204	-2
	Impinger Out	Water	31	31	0
		Water	203	205	-2
C	Oven	Water	34	36	-2
		Water	204	205	-1
	Probe Out	Water	34	36	-2
		Water	203	205	-2
	Impinger Out	Water	34	36	-2
		Water	203	201	2
D	Oven	Water	33	33	0
		Water	203	203	0
	Probe Out	Water	33	33	0
		Water	202	203	-1
	Impinger Out	Water	33	33	0
		Water	203	201	2
E	Oven	Water	33	34	-1
		Water	203	203	0
	Probe Out	Water	33	34	-1
		Water	203	204	-1
	Impinger Out	Water	33	33	0
		Water	203	204	-1
F	Oven	Water	33	33	0
		Water	203	202	1
	Probe Out	Water	33	33	0
		Water	203	201	2
	Impinger Out	Water	33	34	-1
		Water	203	201	2
	Impinger Out G	Water	33	34	-1
		Water	203	202	1
	Impinger Out H	Water	33	35	-2
		Water	203	202	1
	Impinger Out I	Water	33	33	0
		Water	203	204	-1
	Impinger Out J	Water	33	33	0
		Water	203	204	-1

Since **Heusser Neweigh** 1906

Certificate of Balance Calibration

Company Name: Tetco
Address: 391 East 620 South
City/State/Zip: American Fork, Utah 84003

Next Calibration Due: **December, 2011**
Reference Weights Cal ID.: 74

Certificate No.: 2105
Calibration Date: 2010, December 13
Metrologist: Rebecca
Order Number: None

Manufacturer:	Model	Serial Number	Identification No.	Location	Nominal Mass	Indication
Ohaus	EP214	1122121229	None	Lab	1	1.0000
					200	199.9999

Comments:

Pertinent Information:
The artifact described herein has been calibrated using standards traceable to NIST. This is to certify the data reported herein is true and correct as of the date calibrated. The procedure used to calibrate the artifact meets the requirements and guidelines of the Heusser Neweigh Quality Assurance Program (Revision 2006-1) and the purchase requisition referenced herein, if any.

Authorized Signature: Rebecca Lewis

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Heusser Neweigh, LLC 832 Elgin Ave, Salt Lake City, UT 84106 801.486.0995 Fax 801.486.0995
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Rev. 061210

A 53% HNO_3 solution is then produced by combining the NO_2 with the H_2O produced during the first stage of the reaction. Additional H_2O is added from the plant's water supply: $3NO_2 + H_2O \Rightarrow 2HNO_3 + NO$

The NO produced during the last stage of the reaction is recycled back into the second stage of the reaction. The 53% HNO_3 solution produced is pumped to storage tanks.

CATALYTIC REDUCTION: Nitrogen oxide (NO_X) laden tail gas emissions are treated by each plant's Selective Catalytic Reduction Unit. Both units operate in the same way as follows:

Tail gas emissions are vented through a direct-fired exhaust heater and reacted with gaseous NH_3 from the Horton Spheres in the presence of a copper catalyst to convert most of the NO_X into elemental nitrogen (N_2). The tail gas is then vented to the ambient air through each plant's stack. The NO_X emissions emitted from both tail gas stacks are monitored by a single Anarad Model AR111 CEM system. All process heating equipment is fired on natural gas or is heated by recovered production steam.

AMMONIUM NITRATE PRODUCTION: Some of the 53% nitric acid (HNO_3) solution produced by the Weatherly and Montecatini plants is pumped to the Ammonium Nitrate Plant, heated, and neutralized with vaporized anhydrous ammonia (NH_3) to produce ammonium nitrate (NH_4NO_3) solution:

$$HNO_3 + NH_3 \Rightarrow NH_4NO_3 + 34{,}700 \text{ Calories}$$

The NH_4NO_3 solution produced has a solution concentration of 83%. Some of this solution is sold to customers. The remainder of the solution is pumped through a water evaporation unit. Using the heat from the neutralization reaction, this unit boils off some of the water in the solution, raising the solution concentration to 96%. Approximately 90 tons of 83% solution is produced each day. In addition, approximately 240 tons of 96% solution is produced.

The 96% NH_4NO_3 solution is then pumped to the top of the Prill Tower and sprayed out through small nozzles. Simultaneously air is blown up from the bottom of the tower. As the droplets of solution fall, they solidify. These small solidified droplets (prills) fall onto a conveyor and are passed through a pre-dryer, dryer, pre-cooler, and cooler. The cooled prills are then coated with Galoryl in a rotating drum coater. The coated prills exit the coater into two 30 ton feed bins via an elevator. It is then pneumatically transported from the feed bins to stockpiles in a large warehouse area. From here the coated prill is moved onto a conveyor transport system and dropped through an enclosed shoot into sealed transport trucks.

The air blown up through the falling solution droplets/prills is vented out the top of the Prill Tower. The pre-dryer, dryer, and cooler are each equipped with a cyclone/scrubber to reclaim any fines generated. All used water is processed through a cooling tower and then recycled back into the three plants.

APPLICABLE REGULATIONS:	Title V Operating Permit 4900082003, dated January 15, 2009. No NESHAP or MACT applicability at this time. NSPS Dc applies to the new boiler.
SOURCE INSPECTION EVALUATION:	

SECTION I: GENERAL PROVISIONS

I.A Federal Enforcement.

All terms and conditions in this permit, including those provisions designed to limit the potential to emit, are enforceable by the EPA and citizens under the Clean Air Act of 1990 (CAA) except those terms and conditions that are specifically designated as "State Requirements". (R307-415-6b)

Status: Compliance determination not required.

I.B Permitted Activity(ies).

Except as provided in R307-415-7b(1), the permittee may not operate except in compliance with this permit. (See also Provision I.E, Application Shield)

Status: In compliance. The permittee appeared to be operating in compliance with this permit at the time of inspection. See each condition below for more specific details.

I.C Duty to Comply.

I.C.1 The permittee must comply with all conditions of the operating permit. Any permit noncompliance constitutes a violation of the Air Conservation Act and is grounds for any of the following: enforcement action; permit termination; revocation and reissuance; modification; or denial of a permit renewal application. [R307-415-6a(6)(a)]

I.C.2 It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [R307-415-6a(6)(b)]

I.C.3 The permittee shall furnish to the Executive Secretary, within a reasonable time, any information that the Executive Secretary may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Executive Secretary copies of records required to be kept by this permit or, for information claimed to be confidential, the permittee may furnish such records directly to the EPA along with a claim of confidentiality. [R307-415-6a(6)(e)]

I.C.4 This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance shall not stay any permit condition, except as provided under R307-415-7f(1) for minor permit modifications. [R307-415-6a(6)(c)]

Status: In compliance. The permittee appeared to be operating in compliance with the permit at the time of inspection. All requested information was provided. The permit is not being revoked, reissued or reopened at this time.

I.D Permit Expiration and Renewal.

I.D.1 This permit is issued for a fixed term of five years and expires on the date shown under "Enforceable Dates and Timelines" at the front of this permit. [R307-415-6a(2)]

I.D.2 Application for renewal of this permit is due on or before the date shown under "Enforceable Dates and Timelines" at the front of this permit. An application may be submitted early for any reason. [R307-415-5a(1)(c)]

I.D.3 An application for renewal submitted after the due date listed in I.D.2 above shall be accepted for processing, but shall not be considered a timely application and shall not relieve the permittee of any enforcement actions resulting from submitting a late application. [R307-415-5a(5)]

I.D.4 Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted consistent with R307-415-7b (see also Provision I.E, Application Shield) and R307-415-5a(1)(c) (see also Provision I.D.2). [R307-415-7c(2)]

Status: In compliance. This permit is current and will expire January 15, 2014.

I.E Application Shield.

If the permittee submits a timely and complete application for renewal, the permittee's failure to have an operating permit will not be a violation of R307-415, until the Executive Secretary takes final action on the permit renewal application. In such case, the terms and conditions of this permit shall remain in force until permit renewal or denial. This protection shall cease to apply if, subsequent to the completeness determination required pursuant to R307-415-7a(3), and as required by R307-415-5a(2), the applicant fails to submit by the deadline specified in writing by the Executive Secretary any additional information identified as being needed to process the application. [R307-415-7b(2)]

Status: In compliance. The application for renewal date is not until July 15, 2013.

I.F Severability.

In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force. [R307-415-6a(5)]

Status: In compliance. The conditions of this permit are valid and in force at this time.

I.G Permit Fee.

I.G.1 The permittee shall pay an annual emission fee to the Executive Secretary consistent with R307-415-9. [R307-415-6a(7)]

I.G.2 The emission fee shall be due on October 1 of each calendar year or 45 days after the source receives notice of the amount of the fee, whichever is later. [R307-415-9(4)(a)]

Status: In compliance. The annual emission fees have been paid as invoiced.

I.H No Property Rights.

This permit does not convey any property rights of any sort, or any exclusive privilege. [R307-415-6a(6)(d)]

Status: Compliance determination not required.

I.I Revision Exception.

No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit. [R307-415-6a(8)]

Status: Compliance determination not required.

I.J Inspection and Entry.

I.J.1 Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Executive Secretary or an authorized representative to perform any of the following:

I.J.1.a Enter upon the permittee's premises where the source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit. [R307-415-6c(2)(a)]

I.J.1.b Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit. [R307-415-6c(2)(b)]

I.J.1.c Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practice, or operation regulated or required under this permit. [R307-415-6c(2)(c)]

I.J.1.d Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with this permit or applicable requirements. [R307-415-6c(2)(d)]

I.J.2 Any claims of confidentiality made on the information obtained during an inspection shall be made pursuant to Utah Code Ann. Section 19-1-306. [R307-415-6c(2)(e)]

Status: In compliance. Entrance to the facility and access to records was permitted at the time of inspection. No claims of confidentiality were made.

I.K Certification.

Any application form, report, or compliance certification submitted pursuant to this permit shall contain certification as to its truth, accuracy, and completeness, by a responsible official as defined in R307-415-3. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. (R307-415-5d)

Status: In compliance. All forms, reports and compliance certifications included the certification statement and were signed by a responsible official.

I.L Compliance Certification.

I.L.1 Permittee shall submit to the Executive Secretary an annual compliance certification, certifying compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. This certification shall be submitted no later than the date shown under "Enforceable Dates and Timelines" at the front of this permit, and that date each year following until this permit expires. The certification shall include all the following (permittee may cross-reference this permit or previous reports): [R307-415-6c(5)]

I.L.1.a The identification of each term or condition of this permit that is the basis of the certification;

I.L.1.b The identification of the methods or other means used by the permittee for determining the compliance status with each term and condition during the certification period, and whether such methods or other means provide continuous or intermittent data. Such methods and other means shall include, at a minimum, the monitoring and related recordkeeping and reporting requirements in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Act, which prohibits knowingly making a false certification or omitting material information;

I.L.1.c The status of compliance with the terms and conditions of the permit for the period covered by the certification, based on the method or means designated in Provision I.L.1.b. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under 40 CFR Part 64 occurred; and

I.L.1.d Such other facts as the Executive Secretary may require to determine the compliance status.

I.L.2 The permittee shall also submit all compliance certifications to the EPA, Region VIII, at the following address or to such other address as may be required by the Executive Secretary: [R307-415-6c(5)(d)]

Environmental Protection Agency, Region VIII
Office of Enforcement, Compliance and Environmental Justice
(Mail code 8ENF)
1595 Wynkoop Street
Denver, CO 80202-1129

Status: In compliance. The last annual compliance certification was received March 27, 2013, which is prior to the due date. This report is reviewed for accuracy under separate cover and a kept in DAQ's source files.

I.M Permit Shield.

I.M.1 Compliance with the provisions of this permit shall be deemed compliance with any applicable requirements as of the date of this permit, provided that:

I.M.1.a Such applicable requirements are included and are specifically identified in this permit, or [R307-415-6f(1)(a)]

I.M.1.b Those requirements not applicable to the source are specifically identified and listed in this permit. [R307-415-6f(1)(b)]

I.M.2 Nothing in this permit shall alter or affect any of the following:

I.M.2.a The emergency provisions of Utah Code Ann. Section 19-1-202 and Section 19-2-112, and the provisions of the CAA Section 303. [R307-415-6f(3)(a)]

I.M.2.b The liability of the owner or operator of the source for any violation of applicable requirements under Utah Code Ann. Section 19-2-107(2)(g) and Section 19-2-110 prior to or at the time of issuance of this permit. [R307-415-6f(3)(b)]

I.M.2.c The applicable requirements of the Acid Rain Program, consistent with the CAA Section 408(a). [R307-415-6f(3)(c)]

I.M.2.d The ability of the Executive Secretary to obtain information from the source under Utah Code Ann. Section 19-2-120, and the ability of the EPA to obtain information from the source under the CAA Section 114. [R307-415-6f(3)(d)]

Status: In compliance. It appears all applicable requirements have been incorporated into this permit. The Source currently is not requesting a permit shield from any additional requirements.

I.N Emergency Provision.

I.N.1 An "emergency" is any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. [R307-415-6g(1)]

I.N.2 An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the affirmative defense is demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

I.N.2.a An emergency occurred and the permittee can identify the causes of the emergency. [R307-415-6g(3)(a)]

I.N.2.b The permitted facility was at the time being properly operated. [R307-415-

6g(3)(b)]

I.N.2.c During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in this permit. [R307-415-6g(3)(c)]

I.N.2.d The permittee submitted notice of the emergency to the Executive Secretary within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirement of Provision I.S.2.c below. [R307-415-6g(3)(d)]

I.N.3 In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof. [R307-415-6g(4)]

I.N.4 This emergency provision is in addition to any emergency or upset provision contained in any other section of this permit. [R307-415-6g(5)]

Status: In compliance. Geneva Nitrogen has not recorded any emergency situations during the previous 12-month period.

I.O Operational Flexibility.
Operational flexibility is governed by R307-415-7d(1).

I.P Off-permit Changes.
Off-permit changes are governed by R307-415-7d(2).

I.Q Administrative Permit Amendments.
Administrative permit amendments are governed by R307-415-7e.

I.R Permit Modifications.
Permit modifications are governed by R307-415-7f.

Status: Compliance determination not required for conditions I.O through I.R.

I.S Records and Reporting.

I.S.1 Records.

I.S.1.a The records of all required monitoring data and support information shall be retained by the permittee for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, all original strip-charts or appropriate recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. [R307-415-6a(3)(b)(ii)]

I.S.1.b For all monitoring requirements described in Section II, Special Provisions, the source shall record the following information, where applicable: [R307-415-6a(3)(b)(i)]

I.S.1.b.1 The date, place as defined in this permit, and time of sampling or

measurement.

I.S.1.b.2 The date analyses were performed.

I.S.1.b.3 The company or entity that performed the analyses.

I.S.1.b.4 The analytical techniques or methods used.

I.S.1.b.5 The results of such analyses.

I.S.1.b.6 The operating conditions as existing at the time of sampling or measurement.

I.S.1.c Additional record keeping requirements, if any, are described in Section II, Special Provisions.

I.S.2 Reports.

I.S.2.a Monitoring reports shall be submitted to the Executive Secretary every six months, or more frequently if specified in Section II. All instances of deviation from permit requirements shall be clearly identified in the reports. [R307-415-6a(3)(c)(i)]

I.S.2.b All reports submitted pursuant to Provision I.S.2.a shall be certified by a responsible official in accordance with Provision I.K of this permit. [R307-415-6a(3)(c)(i)]

I.S.2.c The Executive Secretary shall be notified promptly of any deviations from permit requirements including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventative measures taken. Prompt, as used in this condition, shall be defined as written notification within the number of days shown under "Enforceable Dates and Timelines" at the front of this permit.. Deviations from permit requirements due to unavoidable breakdowns shall be reported in accordance with the provisions of R307-107. [R307-415-6a(3)(c)(ii)]

I.S.3 Notification Addresses.

I.S.3.a All reports, notifications, or other submissions required by this permit to be submitted to the Executive Secretary are to be sent to the following address or to such other address as may be required by the Executive Secretary:

Utah Division of Air Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820
Phone: 801-536-4000

I.S.3.b All reports, notifications or other submissions required by this permit to be submitted to the EPA should be sent to one of the following addresses or to such other address as may be required by the Executive Secretary:

For annual compliance certifications:

Environmental Protection Agency, Region VIII
Office of Enforcement, Compliance and Environmental Justice
(mail code 8ENF)
1595 Wynkoop Street
Denver, CO 80202-1129

For reports, notifications, or other correspondence related to permit modifications, applications, etc.:

Environmental Protection Agency, Region VIII
Office of Partnerships & Regulatory Assistance Air & Radiation Program
(mail code 8P-AR)
1595 Wynkoop Street
Denver, CO 80202-1129
Phone: 303-312-6440

Status: In compliance. Records were reviewed during inspection and appeared to be complete. Semi-annual monitoring reports have been submitted as required.

I.T Reopening for Cause.

I.T.1 A permit shall be reopened and revised under any of the following circumstances:

I.T.1.a New applicable requirements become applicable to the permittee and there is a remaining permit term of three or more years. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire, unless the terms and conditions of this permit have been extended pursuant to R307-415-7c(3), application shield. [R307-415-7g(1)(a)]

I.T.1.b The Executive Secretary or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit. [R307-415-7g(1)(c)]

I.T.1.c EPA or the Executive Secretary determines that this permit must be revised or revoked to assure compliance with applicable requirements. [R307-415-7g(1)(d)]

I.T.1.d Additional applicable requirements are to become effective before the renewal date of this permit and are in conflict with existing permit conditions. [R307-415-7g(1)(e)]

I.T.2 Additional requirements, including excess emissions requirements, become applicable to a Title IV affected source under the Acid Rain Program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into this permit. [R307-415-7g(1)(b)]

I.T.3 Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. [R307-415-7g(2)]

Status: In compliance. The permit is not being reopened at this time.

I.U Inventory Requirements.

An emission inventory shall be submitted in accordance with the procedures of R307-150, Emission Inventories. (R307-150)

Status: In compliance. Emission inventories have been submitted as required.

I.V Title IV and Other, More Stringent Requirements

Where an applicable requirement is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, Acid Deposition Control, both provisions shall be incorporated into this permit. [R307-415-6a(1)(b)]

Status: Compliance determination not required.

SECTION II: SPECIAL PROVISIONS

II.A Emission Unit(s) Permitted to Discharge Air Contaminants.
[R307-415-4(3)(a) and R307-415-4(4)]

II.A.1 Permitted Source
Source-wide

II.A.2 Montecatini Nitric Acid Plant (designated as EU#1)
Weak nitric acid (HNO3) production plant equipped with a low temperature selective catalytic reduction (SCR) unit for controlling NOx emissions.

II.A.3 Weatherly Nitric Acid Plant (designated as EU#2)
Weak HNO3 production plant equipped with a low temperature selective catalytic reduction (SCR) unit for controlling NOx emissions.

II.A.4 Nitric Acid Plant Group (designated as EU #3)
Includes the Montecatini Nitric Acid Plant and the Weatherly Nitric Acid Plant.

II.A.5 Prill Tower (designated as EU #4)
Low density prill production unit with no emission control equipment. The uncontrolled prill tower is the major source of ammonium nitrate (NH4NO3) particulate matter.

II.A.6 Prill Predryer (designated as EU #5)
Prill predryer vent equipped with a cyclone wet scrubber for controlling solid ammonium nitrate TSP and PM10 emissions. No unit-specific applicable requirements.

II.A.7 Prill Dryer (designated as EU #6)
Prill dryer vent equipped with a cyclone wet scrubber for controlling solid ammonium nitrate TSP and PM10 emissions. No unit-specific applicable requirements.

II.A.8 NH4NO3 Solidification Process Units (designated as EU #9)

Prill Tower, Prill Predryer, Dryer, Precooler, and Cooler.

II.A.9 Boiler (designated as EU #10)
Natural gas boiler (25.0 MM Btu/hr) with low NOx burner, for startup when steam is needed. NSPS Subpart Dc.

II.A.10 Evaporative Cooling Tower and Substation (designated as EU #11)
Used for non-contact cooling of all process equipment. No unit-specific applicable requirements.

II.A.11 Evaporative Reactor (designated as EU #12)
Used for evaporating ammonium nitrate solution to produce melt ammonium nitrate. No unit-specific applicable requirements.

II.A.12 Ammonium Nitrate Storage Warehouse Building (designated as EU #13)
Ammonium nitrate storage, loading, and transferring. No unit-specific applicable requirements.

II.A.13 Maintenance Shop (designated as EU #14)
Used for Stoddard solvent parts washer, drill presses, milling machines, and pipe threading operations. No unit-specific applicable requirements.

II.A.14 Storage Area (designated as EU #15)
Used for oil, solvent, oil drums, Stoddard solvent, and gasoline storage (2-gallon can). No unit-specific applicable requirements.

II.A.15 Fuel Dispensing Area (designated as EU #16)
The fuel dispensing area contains one 500 gallon above ground storage (AGS) tank for diesel and one 500 gallon AGS tank for gasoline. No unit-specific applicable requirements.

II.A.16 Prill Cooler (designated as EU #8)
Prill cooler vent equipped with a cyclone wet scrubber for controlling solid ammonium nitrate TSP and PM10 emissions. No unit-specific applicable requirements.

Status: In compliance. No unapproved equipment was observed onsite.

II.B Requirements and Limitations

The following emission limitations, standards, and operational limitations apply to the permitted facility as indicated:

II.B.1 Conditions on permitted source (Source-wide)

II.B.1.a Condition:

At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected emission unit, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [Origin: DAQE-AN0825005-03] [R307-401-8(2)]

II.B.1.a.1 Monitoring:

Records required for this permit condition will serve as monitoring.

II.B.1.a.2 Recordkeeping:

Permittee shall document activities performed to assure proper operation and maintenance. Records shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.1.a.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. The facility appeared to be operating in accordance with good air pollution control practices. Maintenance records are kept electronically and maintained in the control building. A maintenance logbook is also kept for the Weatherly and Montecatini semi-continuous monitoring system.

II.B.1.b Condition:

A Risk Management Plan (RMP) developed in accordance with 40 CFR Part 68 shall be submitted to the United States Environmental Protection Agency not later than the applicable date in 40 CFR 68. [Origin: 40 CFR 68] [40 CFR Part 68]

II.B.1.b.1 Monitoring:

A copy of the Risk Management Plan shall be available upon request along with a copy of the transmittal letter to EPA.

II.B.1.b.2 Recordkeeping:

A copy of the Risk Management Plan shall be available to the Executive Secretary upon request along with a copy of the transmittal letter to EPA.

II.B.1.b.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. A RMP has been developed and submitted to the EPA as required. A copy of the RMP and letter to EPA are kept on file. The RMP was last updated in 2009.

II.B.1.c Condition:

Visible emissions shall be no greater than 10 percent opacity except as specified elsewhere in this permit. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.1.c.1 Monitoring:

A visual opacity survey of each affected emission unit shall be performed on a weekly basis by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9. If visible emissions other than steam are observed from an emission unit, an opacity determination of that emission unit shall be performed by a certified observer within 24 hours of the initial survey. The opacity determination shall be performed in accordance with 40 CFR 60, Appendix A, Method 9.

II.B.1.c.2 Recordkeeping:

A log of the visual opacity survey(s) shall be maintained in accordance with Provision I.S.1 of this permit. If an opacity determination is indicated, a notation of the determination will be made in the log. All data required by 40 CFR 60, Appendix A, Method 9 shall also be maintained in accordance with Provision I.S.1 of this permit.

II.B.1.c.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. Visual opacity surveys have been conducted weekly on each affected emission unit. Method 9 observations are conducted when emissions are observed. Records were maintained as required. No opacity exceedances were reported during the previous 12-month period. A Method 9 VEO was conducted during this inspection with no visible emissions observed. This VEO is attached.

II.B.1.d Condition:

The permittee shall comply with the applicable requirements for recycling and emission reduction for class I and class II refrigerants pursuant to 40 CFR 82, Subpart F - Recycling and Emissions Reduction. [Origin: 40 CFR 82.150(b)] [40 CFR Part 82]

II.B.1.d.1 Monitoring:

The permittee shall certify, in the annual compliance statement required in Section I of this permit, its compliance status with the requirements of 40 CFR 82, Subpart F.

II.B.1.d.2 Recordkeeping:

All records required in 40 CFR 82, Subpart F shall be maintained consistent with the requirements of Provision S.1 in Section I of this permit.

II.B.1.d.3 Reporting:

All reports required in 40 CFR 82, Subpart F shall be submitted as required. There are no additional reporting requirements except as

outlined in Section I of this permit.

Status: In compliance. The source has certified they are in compliance with 40 CFR 82, Subpart F. The source contracts with an outside company for all refrigeration work.

II.B.2 Conditions on Montecatini Nitric Acid Plant (EU #1).

II.B.2.a Condition:

Emissions of NOx shall be no greater than 32.4 lbs/hour and 267 ppmdv. [Origin: DAQE-AN0825005-03] [R307-401-8(1)(a)(BACT) and R307-110-17(SIP Section IX.H.1.b.A)]

II.B.2.a.1 Monitoring:

(a) Stack testing to show compliance with the NOx emission limitations shall be performed as specified below:
(1) Testing and Frequency. Emissions shall be tested every two years. The source may also be tested at any time if directed by the Executive Secretary.
(2) Notification. The applicant shall provide a notification of the test date at least 30 days before the test. A pretest conference shall be held, if directed by the Executive Secretary, between the owner/operator, the tester, and the Executive Secretary.
(3) Methods.
(A) Sample Location - the emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.
(B) 40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E shall be used to determine the pollutant emission rate.
(C) 40 CFR 60, Appendix A, Method 2 shall be used to determine the volumetric flow rate.
(4) Calculations. To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.
(5) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.
(b) NOx concentration (ppmdv) shall be used as an indicator to provide a reasonable assurance of compliance with the NOx emission limitation as specified below:
(1) Measurement Approach: NOx concentration (ppmdv) shall be determined by using a continuous NOx monitoring system.
(2) Indicator Range: An excursion is defined as an one-hour average NOx concentration in excess of 200 ppmdv as measured by the continuous monitoring system. Excursions trigger an inspection, corrective action, and a reporting requirement.
(3) Performance Criteria:

(A). Data Representativeness: Measurements made by a continuous monitoring system shall provide a direct indicator of SCR performance. The low detectable limit is 0.01 ppmdv (in 0.5 ppmdv full scale range) and the precision is 1% of the full scale.
(B). QA/QC Practices and Criteria: The continuous monitoring system shall be operated, calibrated, and maintained in accordance with manufacture's recommendations. Zero and span drift tests shall be conducted on a daily basis.
(C). Monitoring Frequency: Emission should be monitored continuously and a data point should be recorded every 15 seconds.
(D). Data Collection Procedure: NOx concentration (ppmdv) shall be recorded and stored electronically.
(E). Averaging Period: Use 15-second NOx concentration (ppmdv) to calculate the 1-hour average NOx concentration (ppmdv).

II.B.2.a.2 Recordkeeping:

In addition to the recordkeeping requirement described in Provision I.S.1 of this permit,

(a) The permittee shall maintain a file of all stack testing and all other information required by permit provision I.S.1.

(b) The permittee shall maintain a file of continuous monitor measurements, including performance testing measurements, all performance evaluations, all calibration checks, all adjustments, and maintenance.

(c) The permittee shall maintain a file of the occurrence and duration of any excursion, corrective actions taken, and any other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)]

II.B.2.a.3 Reporting:

(a) The monitoring report required in Provision I.S.2 of this permit shall include, at a minimum, the following information, as applicable:

(1) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken; [40 CFR 64.9(a)(2)(i)]

(2) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration

checks, if applicable). [40 CFR 64.9(a)(2)(ii)]

(b) The results of stack testing shall be submitted to the Executive Secretary within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status.

Status: In compliance. Stack testing was last conducted on May 16, 2011, with test results of 17.1 lbs/hr and 163 ppmdv. Test results were reviewed and accepted by DAQ in DAQC-612-11.

The company maintains a file with all semi-continuous monitoring measurement information required above. Zero and span drift tests are conducted automatically each morning. Excursions are addressed immediately by plant personnel and corrective action taken. The source maintains an electronic file with all excursions, deviations and corrective actions taken. Excursion summary information was reported in the most recent semi-annual report.

II.B.3 Conditions on Weatherly Nitric Acid Plant (EU #2).

II.B.3.a Condition:

Emissions of NOx shall be no greater than 19.4 lbs/hour and 438 ppmdv. [Origin: DAQE-AN0825005-03] [R307-401-8(1)(a)(BACT) and R307-110-17 (SIP Section IX.H.1.b.A)]

II.B.3.a.1 Monitoring:

(a) Stack testing to show compliance with the NOx emission limitations shall be performed as specified below:
(1) Testing and Frequency. Emissions shall be tested every three years. The source may also be tested at any time if directed by the Executive Secretary.
(2) Notification. The applicant shall provide a notification of the test date at least 30 days before the test. A pretest conference shall be held, if directed by the Executive Secretary, between the owner/operator, the tester, and the Executive Secretary.
(3) Methods.
(A) Sample Location - the emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.
(B) 40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E shall be used to determine the pollutant emission rate.
(C) 40 CFR 60, Appendix A, Method 2 shall be used to determine the volumetric flow rate.
(4) Calculations. To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.
(5) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production

achieved in the previous three (3) years.

(b) NOx concentration (ppmdv) shall be used as an indicator to provide a reasonable assurance of compliance with the NOx emission limitation as specified below:
(1) Measurement Approach: NOx concentration (ppmdv) shall be determined by using a continuous NOx monitoring system.
(2) Indicator Range: An excursion is defined as an one-hour average NOx concentration in excess of 200 ppmdv as measured by the continuous monitoring system. Excursions trigger an inspection, corrective action, and a reporting requirement.
(3) Performance Criteria:
(A). Data Representativeness: Measurements made by a continuous monitoring system shall provide a direct indicator of SCR performance. The low detectable limit is 0.01 ppmdv (in 0.5 ppmdv full scale range) and the precision is 1% of the full scale.
(B). QA/QC Practices and Criteria: The continuous monitoring system shall be operated, calibrated, and maintained in accordance with manufacture's recommendations. Zero and span drift tests shall be conducted on a daily basis.
(D). Monitoring Frequency: Emission should be monitored continuously and a data point should be recorded every 15 seconds.
(D). Data Collection Procedure: NOx concentration (ppmdv) shall be recorded and stored electronically.
(E). Averaging Period: Use 15-second NOx concentration (ppmdv) to calculate hourly average NOx concentration (ppmdv).

II.B.3.a.2 Recordkeeping:

In addition to the recordkeeping requirement described in Provision I.S.1 of this permit,

(a) The permittee shall maintain a file of all stack testing and all other information required by permit provision I.S.1.

(b) The permittee shall maintain a file of continuous monitor measurements, including performance testing measurements, all performance evaluations, all calibration checks, all adjustments, and maintenance.

(c) The permittee shall maintain a file of the occurrence and duration of any excursion, corrective actions taken, and any other supporting information required to be maintained under 40 CFR 64 (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). Instead of paper records, the permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)]

II.B.3.a.3 Reporting:

(a) The monitoring report required in Provision I.S.2 of this permit shall include, at a minimum, the following information, as applicable:

(1) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken; [40 CFR 64.9(a)(2)(i)]

(2) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable). [40 CFR 64.9(a)(2)(ii)]

(b) The results of stack testing shall be submitted to the Executive Secretary within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status.

Status: In compliance. Stack testing was last conducted on May 22, 2012, with DAQ-calculated test results of 7.63 lbs/hr and 143 ppmdv. Test results were reviewed and accepted by DAQ in memo DAQC-279-13.

The company maintains a file with all semi-continuous monitoring measurement information required above. Zero and span drift tests are conducted automatically each morning. Excursions are addressed immediately by plant personnel and corrective action is taken. The source maintains an electronic file with all excursions, deviations and corrective actions taken. Excursion summary information was reported in the most recent semi-annual report.

II.B.4 Conditions on Nitric Acid Plant Group (EU #3).

II.B.4.a Condition:

Production of nitric acid shall be no greater than 13.5 tons per hour based on 100% acid. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.4.a.1 Monitoring:

Hourly nitric acid production rate shall be determined on daily basis by the following formula: Nitric acid production during each day (tons) divided by operating hours during each day (hours)

Nitric acid production shall be determined by plant records, which include the amount of nitric acid produced and the concentration of nitric acid.

II.B.4.a.2 Recordkeeping:

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.4.a.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. The Source maintains a daily log of production and hours of operation. Production was typically 10.5 tons per hour, which is in line with what was observed during the prior inspection. No excursions have been reported.

II.B.4.b Condition:

Production of nitric acid shall be no greater than 113,400 tons per rolling 12-month total based on 100% acid. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.4.b.1 Monitoring:

The daily production rates shall be recorded and the total production rates shall be summarized for each calendar month. Within the first 15 days of each month, a new 12-month total shall be calculated using data from the previous 12 months.

II.B.4.b.2 Recordkeeping:

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.4.b.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. Nitric Acid production was 88,615.61 tons for the twelve month period ending February 28, 2013. Daily production rates are recorded.

II.B.4.c Condition:

Hours of operation shall be no greater than 8,640 per 12-month rolling period for each affected emission unit. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.4.c.1 Monitoring:

Compliance shall be determined on a rolling 12-month total for each emission unit. The total shall be calculated for each calendar month. Within the first 15 days of each month, a new 12-month total shall be calculated using data from the previous 12 months.

II.B.4.c.2 Recordkeeping:

A log recording all hours of operation for each emission unit shall be maintained on daily basis. The log shall include the results of required monitoring.

II.B.4.c.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. Rolling 12-month total hours of operation in the Nitric Acid group for the twelve month period ending February 28, 2013 were 8,312.00 hours for the Weatherly plant and 8,639 hours for the Montecatini plant. A log of daily operating hours is kept. Mr. Terry Gasser is aware that the Montecatini plant is within one hour of its annual limit and stated that the annual shutdown is planned for the near future.

II.B.5 Conditions on Prill Tower (EU #4).

II.B.5.a Condition:

Emissions of PM10 shall be no greater than 0.24 tons/day and 86 tons/year. [Origin: SIP Section IX.H.1.b.A] [R307-110-17(SIP Section IX.H.1.b.A)]

II.B.5.a.1 Monitoring:

(a) Stack testing shall be performed as specified below:

(1) Frequency. Emissions shall be tested every three years. The source may also be tested at any time if directed by the Executive Secretary.

(2) Notification. At least 30 days before the test, the source shall notify the Executive Secretary of the date, time, and place of testing and provide a copy of the test protocol. The source shall attend a pretest conference if determined necessary by the Executive Secretary.

(3) Methods.
(A) Sample Location - the emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 5B, and Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.
(B) For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. Method 202 may be used to measure condensible particulate matter.
(C) For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using a method specified by the Executive Secretary. All particulate captured shall be considered PM10.
(D) The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

(4) Calculations. To determine mass emission rates (lb/hr, etc.) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary

conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

(5) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

(b) The daily and rolling 12-month mass emissions shall be calculated by multiplying the most recent stack test results (lb/hr) by the appropriate hours of operation for each day and for each rolling 12-month period. Within the first 15 days of each month, a new rolling 12-month total shall be calculated using data from the previous 12 months.

II.B.5.a.2 Recordkeeping:

Results of all stack testing shall be recorded and maintained in accordance with the associated test method and Provision S.1 in Section I of this permit. Additionally, hours of operations shall be logged daily. The results of daily and rolling 12-month emissions shall be maintained in accordance with Provision S.1 in Section 1 of this permit.

II.B.5.a.3 Reporting:

The results of stack testing shall be submitted to the Executive Secretary within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status. There are no additional reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. Stack testing was last conducted on November 30, 2011. Results were submitted to DAQ and were reviewed in DAQC-1014-12. DAQ-calculated test results were 4.76 lb/hr, 0.06 tons/day, and 21 tons/yr.

II.B.5.b Condition:

Visible emissions shall be no greater than 20 percent opacity. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.5.b.1 Monitoring:

A visual opacity survey of each affected emission unit shall be performed on a weekly basis by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9. If visible emissions other than steam are observed from an emission unit, an opacity determination of that emission unit shall be performed by a certified observer within 24 hours of the initial survey. The opacity determination shall be performed in accordance with 40 CFR 60, Appendix A, Method 9.

II.B.5.b.2 Recordkeeping:

A log of the visual opacity survey(s) shall be maintained in accordance with Provision I.S.1 of this permit. If an opacity determination is indicated, a notation of the determination will be made in the log. All data required by 40 CFR 60, Appendix A, Method 9 shall also be maintained in accordance with Provision I.S.1 of this permit.

II.B.5.b.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. Visual opacity surveys are conducted on the Prill Tower on a weekly basis. A log of opacity surveys is maintained on site and appeared to be complete. VEO's are conducted using Method 9 when opacity is observed. An opacity observation was performed during this inspection and confirmed compliance. The VEO form is attached.

II.B.6 Conditions on NH4NO3 Solidification Process Units (EU #9).

II.B.6.a Condition:

Production of solid ammonium nitrate shall be no greater than 14 tons per hour. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.6.a.1 Monitoring:

Hourly solid ammonium nitrate production rate shall be determined by the following formula:

Solid NH4NO3 production on-site during each day (tons) divided by operating hours during each day (hours)

Solid ammonium nitrate production shall be determined by examining plant production records.

II.B.6.a.2 Recordkeeping:

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.6.a.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. No production excursions were noted while reviewing plant records and none have been reported during the previous twelve months. A daily log of production and hours of operation is kept. Production was typically around 6.8 tons per hour in during calendar 2012 and 2013 to date.

II.B.6.b Condition:

Hours of operation shall be no greater than 8,640 per 12-month rolling period for each affected emission unit. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.6.b.1 Monitoring:

Compliance shall be determined on a rolling 12-month total for each emission unit. The total shall be calculated for each calendar month. Within the first 15 days of each month, a new 12-month total shall be calculated using data from the previous 12 months.

II.B.6.b.2 Recordkeeping:

A log recording all hours of operation for each emission unit shall be maintained on daily basis. The log shall include the results of required monitoring.

II.B.6.b.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. There were 7,029.5 operating hours during the twelve month period ending February 28, 2013. A daily log of operating hours is maintained.

II.B.7 Conditions on Boiler (EU #10).

II.B.7.a Condition:

Consumption of natural gas shall be no greater than 109.5 MMSCF per 12 month rolling period. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.7.a.1 Monitoring:

By the 15th day of each month, a new rolling 12-month natural gas consumption total shall be calculated using the appropriate conversion of acf to scf, as recommended by the vendor.

II.B.7.a.2 Recordkeeping:

Records of the amounts of each fuel combusted during each day for each affected unit shall be maintained as described in Provision I.S.1 of this permit.

II.B.7.a.3 Reporting:

There are no reporting requirements for this provision except those specified in Section I of this permit.

Status: In compliance. Fuel usage is recorded electronically on a daily basis. Natural Gas consumption was 3.282 MMSCF for the 12-month period ending February 28, 2013.

II.B.7.b Condition:

The permittee shall use only natural gas for fuel. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.7.b.1 Monitoring:

The annual certification required for this permit condition will serve as monitoring.

II.B.7.b.2 Recordkeeping:

The annual certification required for this permit condition shall be maintained as described in Provision I.S.1 of the permit

II.B.7.b.3 Reporting:

In addition to the reporting requirements specified in Section I of this permit, the permittee will certify with each annual certification report that only pipeline quality natural gas is used as fuel during the reporting year.

Status: In compliance. The most recent annual compliance certification has certified compliance with this condition. No other fuel is available on site.

II.B.7.c Condition:

Visible emissions shall be no greater than 10 percent opacity. [Origin: DAQE-AN0825005-03] [R307- 401- 8(1)(a)(BACT)]

II.B.7.c.1 Monitoring:

In lieu of opacity monitoring, the report required for this permit condition will serve as monitoring.

II.B.7.c.2 Recordkeeping:

The annual certification required for this permit condition shall be maintained as described in Provision I.S.1 of the permit

II.B.7.c.3 Reporting:

In addition to the reporting requirements specified in Section I of this permit, the permittee will certify with each annual certification report that only pipeline quality natural gas is used as fuel during the reporting year.

Status: In compliance. The most recent annual certification states that only pipeline quality natural gas is used as fuel for this unit.

II.C Emissions Trading

[R307-415-6a(10)]
Not applicable to this source.

II.D Alternative Operating Scenarios.
[R307-415-6a(9)]
Not applicable to this source.

II.E Source-specific Definitions.
Not applicable to this source.

EMISSIONS INVENTORY: 2010 emissions inventory:

Pollutant	Tons/yr
PM_{10}	32.23
$PM_{2.5}$	15.35
SO_2	0.01
NO_x	105.89
CO	0.1
VOC	0.007
NH_3	2.69

PREVIOUS ENFORCEMENT ACTIONS: None within the last five years.

COMPLIANCE STATUS & RECOMMENDATIONS: Geneva Nitrogen should be considered in compliance with all Title V Operating Permit conditions at the time of inspection.

HPV STATUS: Not Applicable

RECOMMENDATION FOR NEXT INSPECTION: Inspect as usual.

ATTACHMENT: VEO/Inspection Form

STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
VISIBLE EMISSION OBSERVATION FORM

Type of Inspection: Initial ( ) Partial Initial ( ) Stack Test ( ) CEM ( ) Annual (X) Followup ( ) Surveillance ( ) Complaint ( )

Source Name: Geneva Nitrogen
Street Address: 1165 North 1600 W.
City/County: Vineyard, Utah Co.
Phone:
AIRS ID: T-5 Permit 4900082003

Facility:
Equipment:
Control Equipment:

Emission Point: Prill tower

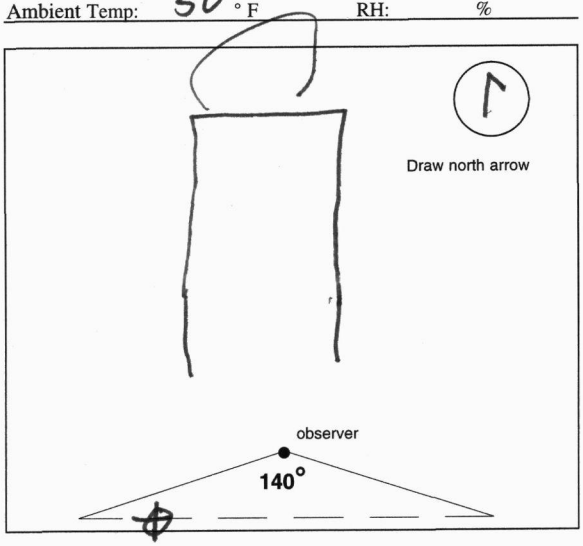
Height of Discharge Relative in Observer: 220'
Distance from Observer: 400'
Condensed Water Vapor Present? Y / N (N)
Attached ☐ Detached ☐
Length of Condensed Water Vapor Plume: N/A
Background: Blue sky with clouds
Sky Conditions: Clear ☐ Partly Cloudy ☒ Overcast ☐
Wind Direction: Wind Speed: mph
Ambient Temp: 50 °F RH: %

Observation Date: 4/9/13
Start Time: 3:34 Stop Time: 3:40 p.m.

sec / min	0	15	30	45
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7				
8				
9				
10				
11				
12				

Average Opacity for Highest Six-Minute Period: 0

Comments: Records provided.



Sun ⊕
Wind ►
Emission Point with Plume
Observation Point X

Observer's Signature: [signature]
Affiliation: State of Utah, Department of Environmental Quality
Division of Air Quality
I Have Received a Copy of These Observations:

SIGNATURE: [signature]
Printed Name: Terry Gasser
Title: SH+E Coordinator

DEM 4/9/13

Distribution: white-file; canary-EPA; pink-inspector; gold-owner/operator