



Verification Report for

Terra Yazoo City #9,
Nitrous Oxide Abatement Project
Yazoo City, MS, USA

Sixth Reporting Period
Climate Action Reserve Project CAR768

Nitric Acid Production
Project Protocol, Version 1.0

January 13, 2015

Report Prepared for

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Project Verification Report

Summary

CF Industries Nitrogen, LLC (“CFIN”) is the project developer for the “Terra Yazoo City #9, Nitrous Oxide Abatement Project” located at Yazoo City, MS. In this sixth reporting period, CFIN reported on its nitrous oxide reduction results during three nitric acid production campaigns that commenced on July 3, 2013, and ended on June 9, 2014. NSF International (NSF) was engaged to verify the nitrous oxide emission reductions achieved during these campaigns in accordance with the requirements of the Climate Action Reserve Nitric Acid Production Project Protocol, Version 1.0. CFIN reduced emissions into the atmosphere by 214,217 metric tons of carbon dioxide-equivalent in this reporting period. CFIN’s nitric acid production operations were described by the NAICS code 325311 (“nitrogenous fertilizer manufacturing”). For this project, CFIN engaged the services of ClimeCo America Corporation, a carbon emissions mitigation consultancy. ClimeCo consultants assisted CFIN with the preparation of emission reduction calculations for the sixth reporting period.

1. Introduction

1.1 Objective

The objective of this verification audit was to determine, with reasonable assurance, that CFIN had quantified, monitored, and fairly reported to the Climate Action Reserve its emission reductions from the abatement of nitrous oxide emissions during nitric acid production and to confirm the project’s eligibility.

1.2 Scope

The scope of the engagement included verification of the quantification, monitoring and reporting of greenhouse gas emission reductions from the project. It also included verification of the project’s eligibility and the calculation of project emissions of nitrous oxide measured in the nitric acid plant stack.

1.3 Criteria

NSF verified the reported project emission reductions against criteria in the Climate Action Reserve Nitric Acid Production Project Protocol, Version 1.0 (December 2, 2009), including the Errata and Clarifications issued by the Climate Action Reserve on March 17, 2011 (hereafter, the “Protocol”). The project also was verified against applicable requirements of the Climate Action Reserve’s Program Manual (October 26, 2011). The verification methodology conformed to requirements in the Climate Action Reserve’s Verification Program Manual (December 20, 2010), and ISO 14064:2006 Part 3, *Greenhouse gases – Specification with guidance for the validation and verification of greenhouse gas assertions*.

1.4 Materiality

In accordance with the Climate Action Reserve Verification Program Manual, the threshold for materiality of emission reduction assertions was based upon annualized rates of issuance of

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Climate Reserve Tonnes (CRTs). As the project claimed more than 100,000 metric tons of emission reductions on an annualized basis during the reporting period, the emission reduction assertion was considered fairly stated if it varied by no more than 1% from a complete statement of the project's emission reductions. Thresholds of materiality defined by the Verification Program Manual allowed verifiers of emission reduction reports to consider as immaterial discrepancies of 1% or less.

1.5 Level of Assurance

This engagement was performed at the reasonable level of assurance.

2. Verification Approach

2.1 Team Appointment and COI Review

This verification was performed by John Shideler, Lead Verifier. The verification was internally reviewed by Janette Lutz, Lead Verifier. Conflict of Interest inquiries were completed for NSF and for the verification team and a finding of low COI risk was confirmed by the Climate Action Reserve.

2.2 Document Review

The verification team conducted a document review to inform the planning process in advance of performing verification activities. Documents and records reviewed were provided by CFIN, the project developer; and by ClimeCo, the project developer's consultant. Documents reviewed included previous project verification reports; project documentation submitted to the Climate Action Reserve; the project Monitoring Plan; spreadsheets providing logged hourly raw operating data and calculations of emission reductions; CEMS, gas flow meter, and methane analyzer calibration and verification records; regulatory compliance information from the US EPA Enforcement & Compliance History Online (ECHO) report and company records; and manufacturer's information related to monitoring equipment.

2.3 Planning

NSF's verification approach is risk-based. It draws upon our understanding of risks to fair statement of reported emissions and the operation of controls to reduce such risks. As a result of the document review and correspondence with ClimeCo personnel, a verification plan and a sampling plan were developed for this engagement.

2.4 Verification Activities

For this sixth reporting period NSF conducted a site visit to CFIN's nitric acid plant #9 in Yazoo City, MS, on November 17-18, 2014. Verification activities for the sixth reporting period commenced on October 13, 2014, with a kick-off teleconference with the project developer consultant, ClimeCo. Verification activities included:

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- Confirmation of the project start date and plant location.
- Verification of the ownership of the emission reduction credits earned by this project.
- Verification that the project monitored legal and regulatory changes and that the project continues to meet the legal requirement test for continuing eligibility under applicable laws and regulations.
- Verification that the project campaigns were operated in material compliance with applicable environmental and safety laws.
- Demonstration by the project developer that none of the exclusions to eligibility applied to the nitric acid production campaigns conducted during this reporting period.
- Review of project compliance with monitoring requirements and that any identified variances have been approved by the Climate Action Reserve and appropriately applied.
- Verification that applicable sources, sinks and reservoirs were included in the project assessment boundary.
- Verification that the project developer correctly calculated permitted operating ranges for temperature and pressure in accordance with protocol requirements.
- Assessment of the adequacy of the control environment, information management systems, and monitoring plans of CFIN.
- Inquiries concerning the records management system implemented at CFIN for acquisition and retention of all Protocol required information.
- Verification of the project emission reduction calculations.

3. Verification Findings

3.1 Project Description

CFIN has implemented a project to abate the emissions of nitrous oxide (N₂O) at its Yazoo City, MS, #9 nitric acid plant. To achieve this, CFIN has installed a secondary abatement catalyst immediately below the ammonia oxidation catalyst in the ammonia oxidation reactor (AOR). In this sixth reporting period of the “Terra Yazoo City #9, Nitrous Oxide Abatement Project” CFIN abated 214,217 metric tons of carbon dioxide–equivalent greenhouse gas that would have been emitted into the atmosphere absent the application of secondary catalytic reduction technology. Reporting period 6 started on July 3, 2013 and concluded on June 9, 2014.

3.2 Eligibility

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Location. CFIN planned its nitric acid production project to abate N₂O emissions at its existing Plant #9 in Yazoo City, MS. This facility met the protocol requirement for location in the United States.

Project Definition. CFIN installed a secondary abatement catalyst in its Plant #9. This plant had not had nonselective secondary catalytic reduction (NSCR) technology installed prior to the beginning of the project, including at any point within 24 months prior to December 2, 2009. The project had installed a dedicated N₂O abatement catalyst inside the Ammonia Oxidation Reactor (AOR). In the sixth reporting period CFIN operated production campaigns 12, 13 and 14 from July 3, 2013 to June 9, 2014 that spanned a period of time that did not exceed 12 months.

Project Start Date. The start date of the project, defined by the Protocol as the date on which production commences after the first installation of a secondary catalyst, was April 16, 2009. This start date was verified by reviewing a verification maintenance report describing work activities during a 45-hour shut down that ended with the restart of the reactor at midnight on April 16, 2009. The project met eligibility requirements because it was submitted for listing on June 4, 2010, a date within 12 months after the adoption on December 2, 2009, of the Nitric Acid Production Protocol; and the project start date was no more than 24 months prior to the adoption by the Climate Action Reserve of the Nitric Acid Production Protocol.

Crediting Period. The crediting period for CFIN's nitric acid abatement project extends to 15 April 2019. This sixth reporting period is within the crediting period for the project.

3.3 Additionality

Legal Requirement Test. During its November 2014 site visit, the verification team interviewed the site's environmental, health and safety manager concerning his methods for monitoring legal and regulatory developments. In accordance with their procedure, CF Industries at the corporate level tracked changes to regulations affecting nitric acid production via trade association newsletters, through corporate compliance audits of the Yazoo City plant, and with fertilizer trade association officials. This information was shared with the relevant site personnel. With respect to nitric acid plant #9, CFIN reported no changes to their Title V operating permit which was renewed for an additional five-year period in November 2013. NSF reviewed the permit (no. 3020-00010, issued November 13, 2013), and found no new limitations of nitrous oxide emissions. Subsequent to its renewal, Yazoo City in February and June 2014 requested permit modifications for nitric acid plants #6 and #8 for the purpose of installing selective catalytic reduction technology to reduce air emissions. These permit modifications did not affect nitric acid plant #9 which is the subject of this Project. In addition, the Yazoo City plant applied for another permit modification under the Prevention of Significant Deterioration section of the Clean Air Act in April 2014 for the purpose of constructing a new ammonium nitrate prill finishing train, and for the removal of two existing finishing trains. These permit applications did not involve changes to the #9 acid plant and no #9 acid plant sources were included in the application. A table of covered sources in the permit application all related to particulate matter emissions that would be typical of a prill finishing train. Moreover, after further engineering calculations were performed, the Yazoo City plant withdrew its PSD permit modification

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application because it had determined that the scrubber to be installed as part of the expansion project would remove particulate matter emissions at an efficiency level that would not trigger PSD permit modification requirements. On the basis of this evidence and NSF's review of the Attestation of Voluntary Implementation signed on October 24, 2014, by CFIN for this reporting period, NSF has concluded that there were no legal requirements that mandated the abatement of N₂O at the project site, that the project met the Protocol's monitoring requirement for voluntary implementation, and that the project continued to pass the legal requirement test.

Performance Standard Test. CFIN had installed a secondary N₂O abatement catalyst in the ammonia oxidation reactor of its nitric acid plant #9 in Yazoo, City, MS. The Yazoo City plant #9 had not been restarted after having been out of operation for a period of 24 months or longer. Plant #9 was not a newly constructed plant after the effective date of the protocol, and it did not have non-selective catalytic reduction technology installed at any point within 24 months prior to the effective date of the protocol. The N₂O abatement technology was installed at a single nitric acid plant at the Yazoo City facility. From the review of evidence collected at the November 2014 site visit, NSF has concluded that CFIN met the Performance Standard Test.

3.4 Regulatory Compliance

Regulatory Compliance. NSF reviewed the Yazoo City site's regulatory compliance status during its site visit on November 18, 2014. NSF reviewed evidence from the US EPA ECHO report that showed that the Yazoo City plant had been found by state officials to be in compliance with its Title V air permit on February 22, 2013 and on March 5, 2014. The Yazoo City plant was subject to provisions of a consent decree agreed with US EPA in February 2011 that covered all CF Industries plants. The consent decree had resulted from compliance issues at a different CF Industries plant. As a result of the decree, NO_x emission limits were imposed upon all CF Industries' nitric acid plants, including Yazoo City nitric acid plant #9. Yazoo City personnel provided evidence that the #9 plant was in compliance with its consent decree NO_x emission limits. NSF reviewed data contained in a US EPA ECHO report with plant environmental personnel related to RCRA and Clean Water Act compliance. Plant personnel explained that no notice of violation had yet been received following a US EPA inspection in November 2012. The date of this inspection occurred prior to the beginning of the project's Reporting Period 6. However, the US EPA inspector provided the plant with a list of potential findings in May 2013 (prior to the beginning of Reporting Period 6) but had not finalized any notices of violation. The plant was contesting a majority of the findings, none of which pertained to the operation of the #9 nitric acid plant. The plant did experience exceedences of its Clean Water Act permit in September 2013 during the 6th Reporting Period. This occurred because an unusually heavy rainstorm event that coincided with a power outage caused elevated levels of ammonium nitrogen and nitrate nitrogen to be found in stormwater samples. Because of the electrical outage, sump pumps did not operate and overflowed. During the same weather event, elevated fecal coliform levels also were found in laboratory analyses. The pollutant source was the plant's sanitary sewage treatment facility which contributes a minor amount of effluent to the total discharge from the site. Neither exceedance was related in any way to the operation of the #9 nitric acid plant. Plant managers also confirmed during the site visit that the plant had not received any notices of violation with respect to safety. NSF also reviewed the Attestation of Regulatory Compliance completed by CFIN for the sixth reporting period dated October 24,

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2014. From these verification activities, NSF concluded that the project was in material compliance with regulatory compliance during the project's sixth reporting period.

3.5 Ownership

Project Developer and Ownership. CF Industries Nitrogen, LLC (CFIN), the project developer, is the owner of the emission reduction credits. For this sixth reporting period CFIN attested to its ownership of the greenhouse gas emission reduction credits through a signed Attestation of Title dated October 24, 2014, which NSF reviewed. The signatory to the attestation of title was the General Manager of CF Industries Nitrogen, LLC, the operator of the Yazoo City plant. NSF also reviewed website information from the Mississippi Department of Environmental Quality which summarized historic and active permits issued by the agency for "CF Industries Nitrogen LLC". From this evidence NSF has concluded that CFIN was the legal owner of the greenhouse gas emission reduction credits during this reporting period.

3.6 Project Boundaries and Emission Sources

Sources, Sinks and Reservoirs. NSF has verified that for this project reporting period, the relevant sources, sinks and reservoirs (SSRs) were identified. Sources included the nitric acid plant #9's AOR from the inlet of the ammonia burner to the waste gas stack, and the production of nitric acid. Nitrous oxide (N₂O) is a by-product of nitric acid production. Secondary catalytic abatement reduces N₂O immediately after it is formed in the ammonia oxidation step of nitric acid production. The project measured the amount of N₂O released to the environment through the AOR stack and subtracted that from the baseline condition of uncontrolled N₂O emissions.

3.7 Project Management System

Management System. NSF reviewed relevant aspects of the Yazoo City plant's management system during its on-site visit on November 17-18, 2014. NSF found a mature management system and competent personnel. Safety training was required for access inside the plant and procedures were in place for plant operation and environmental management. NSF included the following management systems elements in its evaluation:

- Definition and maintenance of an appropriate control environment by CFIN
- Training and competence of project managers and operating/data management personnel
- Identification and management of legal requirements related to nitric acid production
- Identification and maintenance of records required by the project
- Selection, installation, maintenance, calibration and monitoring of Continuous Emissions Monitoring, stack gas analyzer, and flow metering equipment
- Quantification methods and calculations of project emissions; and
- Checking and corrective action mechanisms.

From information gathered during its site visit, NSF has concluded that CFIN's management system continued to meet the requirements described in the Climate Action Reserve's Verification Program Manual.

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Project Documentation and Reserve Tracking System. NSF verified that the required documents for the project had been completed and submitted to the Reserve. These included the Project Submittal form, uploaded at the beginning of the project; signed attestations of title, of regulatory compliance, and of voluntary implementation for this sixth reporting period; a project diagram, and an assertion of Climate Reserve Tonnes earned during campaigns 12, 13 and 14.

3.8 Performance Against Project Protocol/Methodology

The project was implemented in conformity with the Climate Action Reserve Nitric Acid Production Project Protocol (NAPPP) Version 1.0 and the applicable Errata and Clarifications document.

Monitoring and Operations Plan. CFIN's current "Monitoring Plan for Nitrous Oxide Abatement Project Yazoo City AOP #9" addressed monitoring, operations and reporting of relevant parameters included in Table 6.1 of the Protocol, including the frequency of data acquisition, the frequency of instrument field check and calibration activities, and the roles of individuals performing each specific monitoring activity. It also defined record keeping requirements and described the procedure CFIN used to determine that the project at all times met the Legal Requirement Test. NSF concluded from its review that the monitoring plan covered all aspects of monitoring and reporting contained in the Protocol.

Baseline Scenario. In accordance with the Protocol, the baseline emission rate had been established by measuring N₂O emissions during a complete production campaign prior to the installation of the secondary catalyst for the abatement project. The baseline emission factor developed during this pre-project monitoring was verified during CFIN's first reporting period. NSF reviewed the baseline emission factor to ensure that it was consistent with the emissions factor verified in the first reporting period.

Use of CEMS. CFIN used a Continuous Emissions Monitoring System to directly measure N₂O concentration and flow rate in the stack gas of the AOR. An ABB Uras26 non-dispersive infrared sensor installed in the stack pipe analyzed gas concentration. A Rosemount Model 3051 SFA flow meter measured flow in conjunction with a Rosemount differential pressure transmitter. Concentration and flow data were monitored continuously but logged in hourly increments along with stack temperature and pressure and the air to ammonia ratio and ammonia flow. The CEMS was maintained in accordance with a quality assurance/quality control program as defined in Appendix B to Part 75 of the Clean Air Act, Subpart H: NO_x Mass Emissions Provisions. After a review of data logs provided by the project consultant, NSF concluded that the CEMS operated normally during the project reporting period.

Initial Certification of CEMS. CFIN (then operating under the name of Terra Industries or Terra Mississippi Nitrogen, Inc.) installed its CEMS in 2008 prior to the publication of the Nitric Acid Production Project Protocol. At the time it installed and operated the CEMS in accordance with European Norm EN 14181. Once the NAPPP was published it requested a variance from the Climate Action Reserve to allow it to demonstrate conformity with the system installation and certification requirements of EN 14181 rather than section 60.13 of CFR Part 60 and Performance Specification 2 of Appendix B of 40 CFR Part 60 and section 6 of Appendix A of 40 CFR Part 75. The Reserve approved the request and compliance with the variance conditions were verified at the conclusion of the first project reporting period. From evidence reviewed,

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NSF has concluded that the Project met the initial installation and certification requirements as these were modified by the Reserve's variance dated September 14, 2010.

QA/QC and Frequency of Testing. NSF verified that Quality Assurance/Quality Control procedures were implemented in accordance with Clean Air Act requirements of the U.S. Environmental Protection Agency, specifically those included in the Acid Rain Program regulations published at 40 CFR Part 75, Appendix B, as required by the Protocol. QA/QC procedures included daily, quarterly and annual assessments and scheduled preventive maintenance for the CEMS and its components.

Daily Testing. NSF verified that CFIN had performed daily tests of the N₂O analyzer to ensure the accuracy of the CEMS recorded data. Minimum pressures of the certified calibration gases were monitored to ensure accurate daily test results. Data to the CEMS were deemed valid as long as the daily calibration tests resulted in variation of no greater than 5% from the N₂O analyzer span. Variations greater than 2.5% and less than 5% over a two-day period triggered automatic recalibration of the analyzer. Variations greater than 5% were considered calibration failures and were acted upon immediately by plant personnel.

Quarterly Testing. NSF verified that CFIN had performed the following QA/QC on a quarterly basis: linearity checks to determine the accuracy of the gas composition analyzer, flow meter transducer calibration and leak testing. Linearity tests were performed at low, mid and high levels of concentration as required by 40 CFR Part 75 Appendix B. NSF reviewed linearity test records created on April 30, 2013, July 22, 2013, October 30, 2013, February 10, 2014, and June 20, 2014 to determine that the gas analyzer remained in calibration. In each case the average of three test runs returned results that varied by less than five percent from the reference values. NSF also reviewed flow meter transmitter calibration records from April 30, 2013, July 22, 2013, October 29, 2013, March 19, 2014 and June 20, 2014. The electrical output of the transmitter was measured at zero flow and at four intervals of 25%, 50%, 75%, and 100% of the flowmeter's range (0 to 20 milliamps). In the second, third and fourth quarters of 2013, as-found records showed an as-found drift of 0.6 percent of span or less. Following the failed RATA of December 2013, CFIN replaced the flow meter and pressure differential transmitter. The quarterly calibrations of the newly installed equipment showed as found drift of 0.25% of span or less. These results remained well within prescribed calibration tolerances. All five calibration records included records of leak testing on the flow meter transmitter pressure line tubing. NSF determined from these records that the Protocol's monitoring requirements (as updated by the Errata and Clarifications document published on March 17, 2011) were met. Flow-to-load ratio or gross heat rate evaluation was not performed because the nitric acid plant did not also produce electricity or steam.

Relative Accuracy Test Audit. NSF verified that CEMS data had been validated through the performance of a Relative Accuracy Test Audit (RATA) which was conducted on December 4, 2012, by an independent third party in accordance with the requirements of 40 CFR Part 75 Appendix A, 7.4, and the test methods specified in 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6. This laboratory was certified by the Louisiana Department of Environmental Quality (reference 30661). Relative accuracy of the nitrogen analyzer was found to be 5.96%, and a bias adjustment factor of 1.053 was applied. Relative accuracy of the flow meter was found to be 0.56%, and no bias adjustment factor was applied. Flow RATAs were

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performed at a single load level consistent with the steady-state operation of the nitric acid plant. The RATA met the annual testing requirement because the previous RATA had been performed on November 15, 2011 and had the flow and analyzer results were also under 7.5%. However, during an annual RATA on December 10, 2013, the testing service's measurement of N₂O concentration varied by 10.48% from the results of the CEMS. As this was more than 10%, the result constituted a RATA failure per Part 75. Accordingly, a bias adjustment factor (BAF) of 1.11 was applied. The plant next scheduled an N₂O RATA in May 2014. In May 2014 the testing service's difference with the plant measurement system was 8.72% for N₂O, resulting in a BAF of 1.077. A flow RATA was performed on July 10, 2014, with a measured difference of 5.86%, resulting in a BAF of 1.058. Semiannual testing was triggered by the failed RATA of December 2013. Grace period assessments did not apply. NSF concluded from this information that CFIN's monitoring of its CEMS met all Protocol and Part 60 and Part 75 requirements, with the exception that the plant should have more quickly retested after the December 2013 RATA failure. Due to the delay, CFIN applied to the Climate Action Reserve for a variance relating to its monitored data between the dates of December 10, 2013, and May 5, 2014. The details of this variance request are provided in section 3.11 of this report.

Data Management. NSF verified that the project had logged operational data on a continual basis and exported data on an hourly basis for monitoring purposes. Data logged included stack flow, temperature and pressure, N₂O concentration, and stack flow corrected to 0°C. Data were recorded in English measurement units for operating room monitoring and converted for reporting purposes to metric units. NSF reviewed the conversion algorithms and determined that data had been properly reported in metric units. Operational data were checked for values outside permitted operating conditions. NSF verified that the nitric acid plant had not operated outside these limits for more than 50% of the duration of the reporting period. During campaigns 12, 13 and 14 operations outside permitted ranges occurred less than 1% of the time.

Consistency With Past Reporting Periods. NSF compared the emission reductions claimed during the sixth reporting period to those claimed during prior reporting periods, and found comparable rates of CRT generation per ton of nitric acid produced. The following table relates emission reductions to respective rates of nitric acid production in recent reporting periods:

Reporting Period	Campaign Dates	CRTs Quantified	Nitric Acid Produced (mt)	Ratio CRTs/HNO ₃
RP 2		218,069	146,567	1.49
RP 3		221,182	160,700	1.38
RP 4		154,430	122,220	1.26
Campaign 8 (RP 4)	2011-12-14 to 2012-03-07	53,127	41,482	1.28
Campaign 9 (RP 4)	2012-03-08 to 2012-07-31	101,303	80,738	1.25
RP 5	7/31/2012 to 7/2/2013	223,732	167,232	1.34
Campaign 10 (RP 5)	7/31/2012 to 2/5/2013	113,373	82,006	1.38
Campaign 11 (RP 5)	2/05/2013 to 7/2/2013	110,359	85,226	1.29

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RP 6	7/3/2013 to 6/9/2014	223,835	185,551	1.21
<i>Campaign 12 (RP 6)</i>	<i>7/3/2013 to 10/14/2013</i>	60,701	56,387	1.08
<i>Campaign 13 (RP 6)</i>	<i>10/15/2013 to 3/18/2014</i>	94,272 (87,692)*	77,995	1.21
<i>Campaign 14 (RP 6)</i>	<i>3/19/2014 to 6/9/2014</i>	68,862 (65,824)*	51,169	1.35
<p>* Note: During parts of campaigns 13 and 14 (12/10/2013 to 5/20/2014) the project developer has increased by 15% the monitored concentration of N₂O in the stack gas in order to compensate for a period of time when the CEMS exceeded a 10% relative accuracy threshold. In order to provide meaningful comparisons to past campaigns of the ratio of emission reductions to nitric acid production, two values for the ERs quantified for Campaigns 13 and 14 are given. The first number represents the unadjusted ERs. This number was used to calculate the ratio of ERs to HNO₃ produced. In parentheses the number of ERs expressed as CRTs issued is also given. The latter number reflects the adjustment stipulated in the variance granted by the Reserve.</p>				

From this evidence NSF concluded that the reported emission reductions were consistent with those achieved in the previous reporting periods.

3.9 Calculation of GHG Emission Reductions

NSF separately calculated project emission reductions from monitored information and confirmed that CFIN's claimed emission reductions did not vary by a material amount from those calculated by NSF. The verification team reviewed data downloaded from the CEMS and performed check calculations in the spreadsheet on values such as mean concentration of stack gas and the mean stack gas volume flow. The verification team checked the raw logged data to verify that the AOR did not exceed permitted operating conditions during more than 50% of the time during the reporting period, and verified that average operating values obtained during each campaign remained within historical ranges.

NSF confirmed that CFIN had performed the required statistical analysis steps specified in the Errata and Clarifications document (March 17, 2011) to compare the average values of permitted operating conditions (stack gas flow, N₂O concentration, temperature, pressure and maximum ammonia to air ratio) with the average values obtained during the baseline sampling period. NSF found that the results obtained for campaigns 12, 13 and 14 were well within the permitted operating conditions. Equation 5.3 of the protocol incorporated a mean baseline nitrous oxide concentration rate of 2,080 mgN₂O/m³ based on the results of the baseline sampling period. This compares to a mean N₂O concentration rate of 916.34 during campaign 12, a mean N₂O concentration rate of 758.82 during campaign 13, and a mean N₂O concentration rate of 803.53 for campaign 14. HNO_{3,MAX} was selected from the maximum production value in the historical sampling period. HNO_{3,MAX,SCALED} was determined by multiplying the average hourly production rate of HNO_{3,MAX} by the number of operating hours in the campaign. The result of that calculation was compared to the amount of HNO₃ production in the campaign, and the lower of the two values (specifically, HNO_{3n} or HNO_{3,MAX,SCALED}) was retained for the variable HNO_{3,ER}. In campaigns 12 and 13 the value used for calculating emission reductions was HNO_{3n}. In campaign 14 the value used for calculating emission reductions was HNO_{3,MAX,SCALED}.

NSF reviewed the inputs to Equation 5.4 which calculated project emissions as the product of stack gas flow volume multiplied by the N₂O concentration and the operating hours. The input

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numbers for this equation matched operating records provided by CFIN. An emissions factor for each campaign was calculated in accordance with Equation 5.5 as a ratio of product emissions to nitric acid produced.

3.10 Corrective Action Requests

NSF issued a number of clarification requests and no findings of nonconformity to project management during the verification process. Three information items were included in the list of findings. Details are provided to the project developer and to the Reserve in a List of Findings, a private document.

3.11 Approved Variances

CFIN requested a variance to allow for acceptance of a CEMS RATA with results exceeding the 10% allowable threshold between 12/10/13 to 05/20/14. To account for this deviation in relative accuracy, CF Industries proposed applying a conservative adjustment factor to the total emission reductions generated during this time period. The Reserve granted the deviation subject to NSF's verification that the N₂O concentration in the stack gas had been conservatively adjusted by 15% for the affected portion of campaigns 13 and 14.

NSF verified that the stack gas N₂O concentration numbers had been increased by 15% during the period from 12/10/2013 to 5/20/2014 as required by the variance request. NSF also confirmed that the #9 nitric acid plant successfully passed a subsequent flow meter RATA on July 10, 2014. The relative accuracy of that test was 5.86%, well below the 10% limit.

4. Verification Results

4.1 Verification Team Recommendation

Based on the verification activities described above, the verification team has concluded that the CFIN's CAR768 project, "Terra Yazoo City #9, Nitrous Oxide Abatement Project") sixth reporting period, has achieved the following emission reductions:

Emission Reductions, Sixth Reporting Period	Metric tons CO ₂ -e
Secondary abatement emission reductions <i>ER, Campaign 12</i> (vintage 2013)	60,701
Secondary abatement emission reductions <i>ER, Campaign 13</i> (vintage 2013)	43,795
Secondary abatement emission reductions <i>ER, Campaign 13</i> (vintage 2014)	43,897
Secondary abatement emission reductions <i>ER, Campaign 14</i> (vintage 2014)	65,824
Total Emission Reductions, Sixth Reporting Period	214,217

4.2 Verification Audit Summary

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Project Developer	CF Industries Nitrogen LLC 4608 Highway 49 East Yazoo City, MS 39194 (USA)
Project Location	CF Industries Nitrogen LLC 4608 Highway 49 East, Plant #9 Yazoo City, MS 39194 (USA)
Project Type	Nitric Acid N ₂ O – Secondary Catalyst
Project Period	July 3, 2013 – June 9, 2014
Protocol/Methodology	Climate Action Reserve, Nitric Acid Production Project Protocol, v. 1, including Errata and Clarifications issued on March 17, 2011.
Emissions/Removals Verified	Vintage 2013: 104,496 metric tons CO ₂ -e Vintage 2014: 109,721 metric tons CO ₂ -e
Verification Conclusion	Based upon the verification activities described above, NSF has concluded that CF Industries LLC's reported 2013 and 2014 vintage emission reductions of 214,217 metric tons CO ₂ -e reported to the Climate Action Reserve for the period July 3, 2013 – June 9, 2014 are, in all material respects, fairly stated.
Lead Verifier	 John C. Shideler, January 13, 2015
Independent Reviewer	 Janette Lutz, January 19, 2015
<i>This verification statement is valid when signed and dated by an NSF independent reviewer.</i>	