

Nitric Acid N₂O Project Submittal Form

Instructions: Please complete all fields as thoroughly as possible. If the project in question is still in the planning/ development phase, all fields must be completed using best available data and estimates based on the proposed system design. This is an interactive Word form. Upon completion, please save this form as a PDF prior to uploading it to the Reserve. This will lock your answers and protect the document from any further changes. All fields must be completed, even if the answer is also provided elsewhere; if a field is not applicable insert N/A in the space provided.

Section 1: Project Contact Information

Project Name (as it appears in the Reserve software): Terra Mississippi Nitrogen, Inc., Yazoo City AOP # 9, Nitrous Oxide Abatement Project.

Account Holder (as it appears in the Reserve software): Terra Mississippi Nitrogen, Inc

Is the Account Holder authorized to sign the "Attestation of Title" form? ☒ Yes ☐ No

Facility Owner: Terra Mississippi Nitrogen, Inc

Technical Consultants: Tecnologías Ambientales Saure SA de CV (TAS)

Other Parties with a Material Interest: **N/A**

Date of Form Completion: May 28, 2010

Form Completed By (name, organization): Walter Hugler, TAS

Section 2: General Project Site Information

1. Name of nitric acid production facility and specify the plant (if there is more than one plant at the same facility): **Yazoo City AOP # 9 plant**
2. Project Site Address (including county and country): **4612 Hwy 49 East, Yazoo City, MS, United States**
3. Type of nitric acid plant (e.g. single pressure): **Single Pressure**
4. Year plant was commissioned: **1993**
5. If the plant is not yet commissioned, please estimate the commission start date: **N/A**
 - a. Have permits for construction been received? **N/A**



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Section 3: Project Description and Eligibility

6. Project Type: ☒ Secondary Catalyst or ☐ Tertiary Catalyst

7. Project Description (Please provide one to two paragraphs and submit a Project Diagram):
Nitrous oxide (N₂O) is an undesired by-product gas from the manufacture of nitric acid, if forms specifically during the catalytic oxidation of ammonia. Over a suitable catalyst, a maximum 98% (typically 92-96%) of the ammonia fed is converted to nitric oxide (NO). The remainder participates in undesirable side reactions that lead to the production of nitrous oxide, among other compounds. Waste N₂O from nitric acid production is typically released into the atmosphere, as it does not have any economic value or toxicity at typical emission levels. N₂O is an important greenhouse gas which has a high global warming potential (GWP) of 310.

The project activity involves the installation of an additional catalyst to abate N₂O inside the ammonia oxidation reactor after its formation; such catalyst is termed "secondary" to differentiate from the Platinum based ammonia oxidation catalyst regarded as "primary". The project boundary encompasses the complete AOP # 9 nitric acid production plant, from the inlet of the ammonia burner to the waste gas stack. Additional N₂O monitoring and recording equipment are installed to measure the amount (mass) of N₂O emitted by the nitric acid facility during the distinct project implementation phases. First phase (or baseline scenario) encompass the release of N₂O emissions to the atmosphere at the current rate (kg N₂O/tonne HNO₃) measured during a representative time period. To ensure that the data obtained during such period (baseline) are representative of the actual GHG emissions from the source plant, a set of process parameters known to affect N₂O generation are monitored and compared to limits determined from historical data. Only data generated while inside the permitted limits is considered for the baseline emission factor determination. Baseline emissions will be dynamically adjusted from activity levels on an ex-post basis through monitoring the amount of nitric acid production. Second phase (or project) N₂O emissions will be monitored directly in real time. Offset reductions are calculated as the difference between baseline and project emissions appropriately



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adjusted to the given acid production rates during each period. The project activity will reduce N₂O emissions and will neither increase nor decrease direct emissions of other air pollutants. The project does not impact the local communities or access of services in the area. The project activity will not cause job losses at Terra's plant.

8. What version of the Nitric Acid Production Project Protocol is the project based upon? **1.0**
9. Project Start Date (Date project became or is expected to become operational MM/DD/YYYY): **04/16/2009**
10. Project Reporting Start Date (First date for which reductions will be reported on the Reserve; format: MM/DD/YYYY): **04/16/2009**
11. Has the project ever been submitted for listing with the Reserve as a different Nitric Acid N₂O Project Type (i.e., secondary catalyst or tertiary catalyst)? **No**
12. Have any vintage reduction tonnes from the project ever been registered with or claimed by another registry or program, or sold to another third party prior to registering with the Reserve? **No, the plant hasn't acquired any vintage reduction tonnes.**

If the answer is yes, you must complete and return a "Project Transfer" form.

13. Description and citation of all local and state air and water quality, explosive gas, or other regulations pertinent to the project: **There are currently no regulations requiring abatement of Nitrous Oxide (N₂O) emissions in the USA for the type of facility in question (Nitric acid plants). Terra has begun to monitor GHG emissions in accordance with the EPA's Mandatory Greenhouse Gas Reporting Rule. Emissions of NO_x are regulated in the U.S. on both the Federal level and the state level. The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to set national ambient air quality standards for emissions of criteria pollutants, which include NO_x emissions. In addition, the USEPA has issued several New Source Performance Standards (NSPS), which set source specific standards for the control of criteria pollutants. Facilities in the U.S. are required to meet both the ambient air quality standards and the source specific standards. Additionally, a**



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facility may be required to meet state-specific NO_x emission regulations. The USEPA specifically regulates NO_x emissions from nitric acid plants under Title 40 Code of Federal Regulations (CFR) 60, New Source Performance Standards (NSPS), Subpart G. NSPS Subpart G applies to nitric acid plants that commenced construction or modification after August 17, 1971. This standard limits discharges of NO_x, expressed as NO₂, to no more than 3.0 lbs NO_x per ton of nitric acid produced. The nitric acid plant AOP # 9 at Yazoo City is currently in compliance with applicable Federal and state air quality regulations. The EH&S Corporate Manager is responsible for monitoring changes on the local laws and regulations that may affect the current project activity.

14. Is this project being implemented and maintained as the result of any law, statute, regulation, court order, or other preexisting legally binding mandate?

☐ Yes ☒ No

If yes, please explain. **N/A**

15. Is NO_x being (or has NO_x ever been) abated at the plant? ☒ Yes ☐ No

If yes: **NO_x is abated at the AOP#9 nitric acid plant by means of an SCR control device to ensure that NO_x emissions remain below the NSPS allowable level.**

- a. Is NSCR currently being used or ever been used since December 2, 2007?

☐ Yes ☒ No

- b. If there is no NSCR, what is the existing NO_x abatement technology (and its date of commissioning) and describe any previous NO_x abatement technology used: SCR technology; commissioned on the date of plant commissioning, 1/21/93.

16. Was the plant relocated to its current location at any time since December 2, 2007? ☐ YES
☒ NO

If yes: What date was this plant operational after the relocation (MM/DD/YYYY): **N/A**



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17. Was the plant upgraded (i.e. modified in any way to increase production capacity) at any time after December 2, 2007?

☐ YES ☒ NO

If yes: What date was this plant operational after the upgrade (MM/DD/YYYY): **N/A**

18. Are there plans to upgrade the plant during the project crediting period? (Please describe.)
No.

19. Has the plant been idle at any time since December 2, 2007? ☐ YES ☒ NO

If yes: What were the start and end dates for the idle period(s) (MM/DD/YYYY): **N/A**

Section 4: Pre-project Information and monitoring

20. Is a continuous emission monitoring system (CEMS) for monitoring N₂O installed for the project? ☒ YES ☐ NO

21. The date CEMS started or is expected to start recording project data (MM/DD/YYYY) is
11/13/2008

22. How long will the project baseline sampling period be (minimum of 10 weeks after the start of a campaign): **12/3/2008 and finished on 04/14/2009**

23. Has a detailed monitoring plan been developed for this project? If not, what date will a monitoring plan be in place? **Yes**

29. Additional information: **N/A**