



Verification Report for

EOS Climate, Inc.
San Francisco, CA USA
EOS-JA-09-01, Fifth Reporting Period

Climate Action Reserve

U.S. Ozone Depleting Substances
Project Protocol, Version 1.0

16 November 2010

Report Prepared for

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Summary

EOS Climate engaged NSF International Strategic Registrations (NSF-ISR) to verify its destruction of ozone depleting substances from a project defined in accordance with the requirements of the Climate Action Reserve U.S. Ozone Depleting Substances Project Protocol, Version 1.0. In this fifth reporting period, EOS Climate destroyed a container of R-12 refrigerant sourced from stockpiles held by a refrigerant reclaiming facility located in Long Island City, NY. The refrigerants were destroyed at the Clean Harbors Environmental Services's hazardous waste incinerator in El Dorado, AR. The destruction facility is a permitted U.S. EPA hazardous waste combustor (HWC) described by the NAICS code 562211.

The project reporting period consisted of one destruction event that began on 2010-09-24 and was completed on 2010-09-30. The event destroyed 33,200 pounds of R-12 refrigerant that was entirely sourced within the United States of America. The project reduced future emissions into the atmosphere of 138,575 metric tons of CO₂-e.

1. Introduction

1.1 Objective

The objective of this verification audit was to determine, with reasonable assurance, that EOS Climate had quantified, monitored, and fairly reported to the Climate Action Reserve its emission reductions from the destruction of U.S.-sourced R-12 refrigerant and to confirm the project's ongoing 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 ongoing eligibility and the calculation of project emissions associated with substitute emissions from replacement refrigerants over a ten-year period and transportation and destruction-related emissions incurred by the project.

1.3 Criteria

NSF-ISR verified the reported project emission reductions against criteria in the Climate Action Reserve U.S. Ozone Depleting Project Protocol, Version 1.0 (February 3, 2010), including the Errata and Clarifications issued by the Climate Action Reserve on May 7, 2010. The project also was verified against applicable requirements of the Climate Action Reserve's Program Manual (March 16, 2010). The verification methodology conformed to requirements in Climate Action Reserve Project Verification Manual (June 17, 2009), and ISO 14064:2006 Part 3, *Greenhouse gases – Specification with guidance for the validation and verification of greenhouse gas assertions*.

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1.4 Materiality

In accordance with the Climate Action Reserve Project Verification Manual, emission reduction reports were considered fairly stated if they varied by no more than 5% from a complete statement of the project's emission reductions. Thresholds of materiality defined by the Project Verification Manual allowed verifiers of emission reduction reports to consider as immaterial discrepancies of 5% 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, NSF-ISR Lead Verifier, and Michael DeBusschere, Team Verifier. The verification was internally reviewed by Simone Robson, NSF-ISR Lead Verifier. Conflict of Interest inquiries were completed for NSF-ISR 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 included were provided by EOS Climate, by Airgas Refrigerants, Inc., and by Clean Harbors Environmental Service's El Dorado, AR, destruction facility.

2.3 Planning

NSF-ISR'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 project management personnel at EOS Climate, a verification plan and a sampling plan were developed for this engagement.

2.4 Verification Activities

As this is the fifth reporting period in project EOS-JA-09-01, and NSF-ISR has previously visited the Clean Harbors destruction facility in El Dorado, AR, NSF-ISR determined that no site visit to the destruction facility was necessary for this reporting period. In place of a site visit to the Airgas Refrigerants, Inc., facility in Long Island City, NY, interviews were conducted with the president of Airgas Refrigerants, Inc., and documents were reviewed. Verification activities included:

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- Confirmation of the project start date, eligibility, ownership of ODS, and quantification of project emission reductions.
- Verification of the point of origin, ownership and custody of the ODS at Airgas Refrigerants, Inc.'s reclamation facility in Long Island City, NY, and of the inventory methodology implemented there.
- Verification of the controls on the custody and traceability of the ODS from shipment from the Airgas Refrigerant facility in New York to its reception and destruction at Clean Harbors.
- Compliance with Department of Transportation requirements associated with the shipment of hazardous material.
- Review, on a sampling basis, of compliance to relevant environmental regulatory requirements at the Clean Harbors destruction facility. The primary focus of inquiry with personnel at the destruction facility was compliance with Resource Conservation and Recovery Act (RCRA) regulations for Hazardous Waste Combustors and compliance with Clean Air Act requirements.
- Review of one Certificate of Destruction issued by the Clean Harbors destruction facility in El Dorado, AR.
- Review of recent scale certification records.
- Verification that Clean Harbors' monitoring program and data management system addressed and recorded Protocol and Title V Operating Permit required monitoring parameters continuously during the period of ODS destruction.
- Verification that operating conditions during the entire destruction event at the Clean Harbors facility complied with performance standards established in the facility's Title V Operating Permit.

We relied on work conducted by NSF-ISR during earlier reporting periods of the same EOS project for evidence to demonstrate the adequacy of the following:

- The control environment, information management systems and monitoring plans of EOS Climate, Hudson Technologies, and Clean Harbors Environmental Services; and
- The records management system implemented at EOS Climate for acquisition and retention of all project protocol required information.

3. Verification Findings

3.1 Project Description

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This verification report covers the fifth reporting period of EOS Climate's ozone depleting substances project. In this reporting period EOS Climate acquired R-12 refrigerant from stockpiles maintained by Airgas Refrigerants, Inc., which was shipped in one ISO container from Long Island City, NY, to the Clean Harbors Environmental Services destruction facility in El Dorado, AR. At El Dorado the refrigerant was incinerated at high temperatures to achieve the required minimum destruction and removal efficiency of 99.99 percent.

3.2 Eligibility and Title

Project Definition. EOS Climate planned its ODS destruction project to include multiple destruction events of eligible ODS at a single destruction facility located in the United States spanning a period of time not to exceed 12 months. The start date of the project, defined by the project protocol as the date on which destruction activities commence, was 2 March 2010 for the first reporting period. EOS Climate's Project 604 "EOS-JA-09-01" was submitted for listing on 19 February 2010, which was prior to the project start date. The fifth reporting period of this project included one destruction event in which eligible ODS (R-12, also known as CFC-12, with small amounts of other ODS) were destroyed at a single qualifying destruction facility. Destruction of the ODS occurred over a span of seven calendar days from September 24, 2010 through September 30, 2010. One Certificate of Destruction was issued by Clean Harbors Environmental Services (Certificate ID: AH6280-101 9-30-10).

Project Developer and Ownership. EOS Climate, Inc., of San Francisco, CA, is the project developer. For this reporting period EOS Climate attested to their ownership of the emission reductions through a signed Attestation of Title which NSF-ISR reviewed. The Attestation of Title appeared free from defect. EOS Climate obtained title to the ODS destroyed in this reporting period from Hudson Technologies, who in turn obtained title from Airgas Refrigerants, Inc. NSF-ISR reviewed a purchase requisition for crossed R-12 issued by Hudson Technologies on August 5, 2010, which listed Airgas Refrigerants as the vendor. With respect to the transfer of title from Hudson Technologies to EOS Climate, NSF-ISR reviewed contractual language between EOS Climate and Hudson Technologies providing that title to ODS sent for destruction transferred to EOS Climate upon physical transfer to EOS Climate or to an EOS Climate agent. From this evidence NSF-ISR concludes that EOS Climate is the legal owner of the ODS destroyed during this reporting period.

Qualifying Destruction Facility. The ODS in this fifth reporting period was destroyed at a RCRA-permitted HWC, Clean Harbors Environmental Services, in El Dorado, AR. RCRA-permitted HWCs are considered to meet the project protocol's requirements by default.

Single Application of Certificates of Destruction. The Attestation of Title obligated EOS Climate to report emission reductions from the fifth reporting period that is the subject of this verification report to the Climate Action Reserve and to no other registry, and not to sell or transfer the project reductions other than by permitted transfers under the terms of its agreement with the Climate Action Reserve. During the first reporting period NSF-ISR interviewed the president and chief financial officer of EOS Climate and believes on the basis of their statements that EOS Climate will not seek to report their ODS emission reductions for this reporting period to any other registry.

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3.3 Additionality

Performance Standard Test. EOS Climate met the Performance Standard Test because it destroyed ODS that did not originate with U.S. federal government installations or stockpiles, and it utilized for destruction a RCRA-permitted HWC, Clean Harbors Environmental Services of El Dorado, AR. NSF-ISR obtained positive representations from the president of Airgas Refrigerants, Inc., that the ODS destroyed in this project was privately managed by Airgas Refrigerants, Inc. NSF-ISR verified from records that the ODS was destroyed at the Clean Harbors permitted facility in El Dorado, AR.

Legal Requirement Test. NSF-ISR reviewed the Attestation of Voluntary Implementation submitted by EOS Climate for this fifth reporting period. In addition, NSF-ISR reviewed internal records generated by EOS Climate as part of its project monitoring to determine, on a periodic basis, whether applicable international, federal, state or local regulations had recently been modified to require ODS destruction. EOS Climate found no such modified regulations on websites maintained by the Montreal Protocol, the US Environmental Protection Agency, the California Air Resources Board, the New York Department of Environmental Conservation, or the Illinois Environmental Protection Agency. From this evidence NSF-ISR concluded that no changes had occurred in applicable law that would require ODS destruction.

Regulatory Compliance. NSF-ISR reviewed the Attestation of Regulatory Compliance completed by EOS Climate. In addition, NSF-ISR obtained, via written correspondence, current information from personnel with knowledge of the regulatory compliance status of the Clean Harbors destruction facility. This information supported the conclusion that the Clean Harbors HWC facility remained in material compliance with applicable environmental and safety laws and regulations during the destruction period. NSF-ISR also examined operating parameters and reviewed performance during the destruction event against the permit performance requirements. NSF-ISR reviewed documentation related to the transportation of ODS from Airgas Refrigerants, Inc., to Clean Harbors, and found no deficiencies to the requirements of the U.S. Department of Transportation. With respect to the hazardous waste combustion facility operated by Clean Harbors, NSF-ISR re-verified that its Title V, RCRA and NPDES permits were current, that monitoring required by the Title V permit and Section 6.7 of the Protocol was conducted for the entire period of the destruction event and that performance remained within prescribed limits, and that there were no outstanding NOV's from regulatory agencies for environmental or safety deficiencies. In response to our inquiry about regulatory changes since the last destruction event, Clean Harbors reported receiving a five-year renewal of its NPDES discharge permit. The effective date of this renewed permit was October 1, 2010. In previous reporting periods in this project NSF-ISR verified that the facility has performed the required Combustion Performance Test (CPT) demonstrating a DRE in excess of 99.99% with a material less combustible than the destructed ODS.

3.5 Project Boundaries and Emission Sources

Sources, Sinks and Reservoirs. NSF-ISR has verified that for this project reporting period, the relevant sources, sinks and reservoirs (SSRs) were SSR 2, SSR-3, SSR 4, SSR 5, SSR 6, and SSR 7, as these sources, sinks and reservoirs are defined in the US ODS Project Protocol.

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3.6 Performance Against Project Protocol/Methodology

Monitoring and Operations Plan. In accordance with protocol requirements, EOS Climate had established a monitoring and operations plan entitled “EOS Climate ODS Destruction Monitoring and Operations Plan for Project EOS-JA-09-01.” This document, which was reviewed at version 8/30/10, Revision 15, addressed monitoring, operations and reporting and described how relevant parameters required by the protocol in Table 6.2 were to be collected and reported.

Reserve Project Data Base. NSF-ISR verified that EOS Climate had uploaded relevant documents to the Reserve project data base prior to verification. For the fifth reporting period, Clean Harbors Environmental Services issued one certificate of destruction dated 10-01-2010. The certificate of destruction included the information required by section 6.1 of the US ODS project protocol.

Point of Origin Documentation. NSF-ISR verified, through interviews and records, that the refrigerant destroyed in the fifth reporting period had originated from stockpiles maintained by Airgas Refrigerants, Inc., in Long Island City, NY. The point of origin is defined in the US ODS Project Protocol as the “location of the stockpile” for refrigerant ODS “stockpiled prior to the adoption date of this protocol and destroyed within twelve months of the adoption date of this protocol.” To establish the location of the stockpiled ODS, NSF-ISR reviewed a certification letter issued on September 17, 2010, by the president of Airgas Refrigerants, Inc., stating that the company owned, prior to February 1, 2010, all of the ODS delivered to EOS Climate, and describing the containers (185 numbered DOT cylinders) in Long Island City, NY, from which 32,727 pounds of the refrigerant were transferred into an ISO container with a capacity of approximately 38,000 pounds. NSF-ISR reviewed an internal accounting inventory report dated January 25, 2010, which detailed, by cylinder number, refrigerant, and weight, the total quantity of refrigerant in inventory as of that date. A sample of approximately 8% (15 of 185) of the line items were checked against the inventory record to confirm that (1) the transferred cylinders had existed in inventory as of January 25, 2010, and (2) that their weights were accurately recorded. NSF-ISR has concluded from this information, and from its interviews with the president of Airgas Refrigerants, Inc., that the refrigerant shipped for destruction was stockpiled by Airgas Refrigerants, Inc., prior to the adoption of the protocol and that it was destroyed within twelve months of the adoption of the protocol. For these reasons NSF-ISR concludes that the refrigerant destroyed was eligible and that documentation of its point of origin was adequate.

Custody and Ownership. The refrigerant in this project originated from the inventory of Airgas Refrigerants, Inc., and was shipped directly to Clean Harbors in El Dorado, AR, for destruction. The chain of title was from Airgas Refrigerants, Inc., to Hudson Technologies, and then to EOS Climate. NSF-ISR previously (March 2010) verified that EOS Climate obtained title to the refrigerant upon physical transfer from Hudson Technologies to EOS Climate or an agent of EOS Climate. After receipt by the Clean Harbors Environmental Services’ destruction facility in El Dorado, AR, ownership of the refrigerant transferred to Clean Harbors for the purposes of destruction. Title to the emission reductions that resulted from destruction remained with EOS Climate. NSF-ISR verified the status of ODS ownership and the ownership of ODS destruction

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credits by reviewing the Refrigerant Lease Agreement between Hudson Technologies and EOS Climate and an agreement between EOS Climate and Clean Harbors. NSF-ISR has concluded from these documents that EOS Climate is the owner of the greenhouse gas emission reduction credits associated with this ODS destruction project.

Concentrated ODS Composition and Quantity Analysis Requirements. Eligible ODS obtained by EOS Climate from Hudson Technologies arrived at the Clean Harbors facility in El Dorado, AR, in one bulk ISO container. Upon reception at Clean Harbors the ISO container was weighed, and weigh tickets were retained to establish pre- and post-destruction weight. A single, 120,000 lb. Fairbanks scale was used at Clean Harbors for the weighings. On July 26, 2010, Clean Harbors submitted a “Placed in Service Report” to the Arkansas Bureau of Standards for a new Model 2500 F1 Fairbanks Indicating Element (serial number 101800100055) and a new Model FP 6010 Load-Receiving Element (serial number 2632Q). On the same date Fairbanks Scales issued an “Official Annual Scale Test Report” on behalf of the Arkansas Bureau of Standards for these new elements, showing zero deviation from test weights of 4,000, 8,000, 12,000 16,000 and 20,000 pounds. These records demonstrate that within 60 days of the beginning of the destruction event, the weigh scales had been tested for accuracy and found to be without deviation from national standards. Time limits for weighings pre- and post-destruction according to the protocol were respected, with the full container weighed at 10:45 a.m. on the date the destruction event began, and the empty container weighed at 9:40 a.m. on October 1, 2010, the day after the destruction event ended. A single sample was drawn from the container by DOT trained Clean Harbors laboratory technicians and shipped off-site to an independent laboratory for analysis by gas chromatography. The laboratory performing the ODS testing was AHRI-700-2006 certified. All sampling requirements of the protocol were found by NSF-ISR to have been met and appropriate records retained. The analysis of the samples drawn from the shipping container demonstrated that the refrigerant was R-12 at a purity level of 95.94%.

Destruction Facility Requirements. The Clean Harbors destruction facility in El Dorado, AR, is a RCRA-permitted HWC. According to the protocol, RCRA-permitted HWCs are considered to meet the TEAP requirements by default, and no further testing for TEAP compliance is required. NSF-ISR verified both the regulatory compliance of the destruction facility and its conformity with the requirements of the Reserve’s ODS protocol. NSF-ISR had reviewed Clean Harbors’ destruction equipment monitoring and control system, its current Title V and RCRA permits in three prior site visits associated with the EOS Climate project earlier in 2010 (April, May, and June). At those site visits NSF-ISR compared performance parameters recorded during the reporting period destruction events with established permit limits and confirmed that required monitoring equipment was used. NSF-ISR also interviewed operating personnel on use of the monitoring data base and controls and reviewed printouts from the data monitoring system generated at NSF’s request during the verification for the specific reporting period destruction for all parameters required by the Protocol and Title V permit. For the fifth reporting period NSF-ISR obtained written confirmations from Clean Harbors that confirmed to our satisfaction that the facility continued to meet the protocol’s requirements as a “qualifying destruction facility.” NSF-ISR also reviewed Continuous Emissions Monitoring System data for the days that the destruction event took place and found no excursions below the minimum operating temperature and no missing data in the records provided.

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Monitoring Parameters. NSF-ISR verified that EOS Climate had carried out the monitoring required by the ODS protocol. The requirements were summarized in EOS Climate's "EOS Climate ODS Destruction Monitoring and Operations Plan for Project EOS-JA-09-01," as described above in an earlier paragraph.

3.7 Project Management System

Management System. NSF-ISR had previously verified the EOS Climate management system and relied in part upon that evidence obtained at company headquarters in San Francisco for this fifth reporting period. Further evidence was obtained through NSF's document review conducted for this reporting period.

Project Documentation. NSF-ISR verified that the required documents for the project's fifth reporting period had been completed and submitted to the Reserve. These included the Project Submittal form, the signed Attestation of Title form, the signed Attestation of Regulatory Compliance form, and the signed Attestation of Voluntary Implementation form.

3.8 Calculation of GHG Emission Reductions

NSF-ISR separately calculated project emission reductions from information on the independent laboratory analysis reports and the certificates of destruction, and found EOS Climate's claimed emission reductions varied from ours by approximately 0.0097 percent (14 metric tons).

3.9 Corrective Action Requests

NSF-ISR issued no corrective action requests during the fifth reporting period.

3.10 Approved Variances or Deviations

There were no applications by EOS Climate for variances from any protocol requirements for the fifth reporting period of this project.

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4. Verification Results

4.1 Verification Team Recommendation

Based on the verification activities described above, the verification team has concluded that the EOS Climate ODS project, in its fifth reporting period, has achieved the following emission reductions:

Reductions/Removals During This Reporting Period	Metric tons CO ₂ -e
Project baseline	149,875
- Project emissions	11,300
- Project adjustments (explain)	N/A
= Net project emission reductions/removals	138,575

4.2 Verification Audit Summary

Project Developer	EOS Climate, Inc. 71 Stevenson St., Suite 400 San Francisco, CA 94105 USA
Project Location	Clean Harbors Environmental Services 309 American Circle El Dorado, AR 71730
Project Type	Destruction of Ozone Depleting Substances
Project Period	24-30 September 2010
Protocol/Methodology	Climate Action Reserve, US Ozone Depleting Substances Project Protocol, v. 1
Emissions/Removals Verified	Vintage 2010: 138,575 metric tons CO ₂ -e
Verification Conclusion	Based upon the verification activities described above, NSF-ISR has concluded that EOS Climate's reported 2010 vintage emission reductions of 138,575 metric tons CO ₂ -e reported to the Climate Action Reserve for the period 24-30 September 2010, are, in all material respects, fairly stated.
Lead Verifier	 John C. Shideler, 8 November 2010
Internal Reviewer	 Simon Robson, 16 Nov 10
This verification statement is valid when signed and dated by an NSF-ISR internal reviewer.	