ACR 839: Tradewater – Thailand 2

Supplemental Project Documentation

Project Type: Destruction of Ozone Depleting Substances (ODS) from International Sources.

Registry: American Carbon Registry (ACR)

Project Description

In Thailand, ODS material was stockpiled by the Government, through the Customs Department, over many years, on and before in 2007. These stockpiles of virgin CFC-12 require an end-of-life solution, one of which is destruction. However, there is currently no law, rule or regulation requiring the destruction of ODS when it is in Customs' custody, and no financial or logistical infrastructure to ensure the material is destroyed safely and consistent with the requirements of the Montreal Protocol. As a result, the ODS material in Thailand is released into the atmosphere slowly because it simply remains in stockpiles with no future use.

This project achieves emission reductions through the destruction of ODS refrigerant, instead of holding it in containers at risk of eventual leakage or release. This Project measures the amount of assumed emissions if the ODS were vented under business-as-usual scenario against the emissions prevented by the destruction of the same material. Plainly, destruction yields significantly lower net emissions than the business-as-usual scenario.

Additionality and Permanence

The material for this project was seized by Customs Department on or before 2007, and therefore it cannot be used in the commercial sphere. The material is secured in a stockpile because there is no mandate for its destruction in Thailand, nor does the government possess the necessary financing to destroy the material. Without this project, the material would have eventually vented to the atmosphere.

ODS projects results in permanent destruction of greenhouse gases. The key components that establish the quantifiable impact of these projects include:

1. documentation that establishes that the ODS materials were collected and moved through a traceable chain of custody to a qualified destruction facility,
2. a Certificate of Destruction for the ODS material contained in the project, and
3. calculations of the climate impact based on factors and requirements of the offset protocol.

Chain of Custody and Ownership

Chain of custody and ownership documentation is collected and maintained beginning at the point of origin through destruction. The included flow diagram outlines the parties involved throughout the custody and material movement process. Material from the point of origin is aggregated into an ISO tank, a sample is taken and analyzed, and the material is moved to final destruction at a qualified destruction facility (Waste Management Siam, Samut Prakarn, Thailand).

Certificate of Destruction

The Certificate of Destruction is provided by the qualified destruction facility (Waste Management Siam) certifying the dates, mass and species of materials contained in the ISO tank and destroyed.

GHG Emissions Reduction Assertions

Project data and greenhouse gas emissions reductions are quantified by comparing actual project emissions to calculated baseline emissions in the absence of the Project (the destruction of materials contained in the ISO tank and destroyed at WMS). Calculation methods, factors, and constants are applied per the provisions and equations in this Methodology.

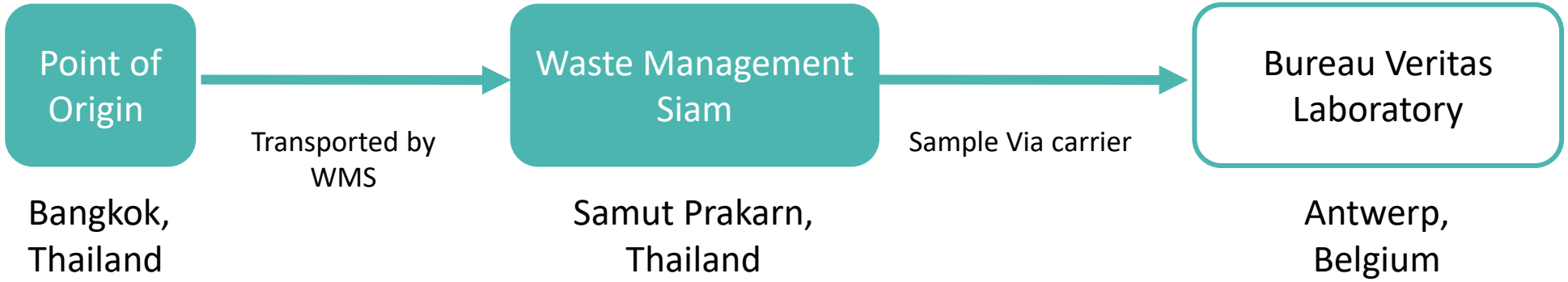
Sustainable Development Goals (SDG)

- SDG 9 Industry, Innovation, and infrastructure: As ODS refrigerant are either destroyed or utilized, innovation is required to replace the refrigerants with less harmful, yet equally as affective, alternative to meet the needs for cooling, refrigeration, and climate-controlled transport throughout the world.

- SDG 12 – Responsible Consumption and Production: The Project supports the collection and destruction of one of the most powerful greenhouse gases in the world; paving the way to the development and use of safer and more environmentally friendly alternatives.

- SDG 13 – Climate Action: The phase-out to date of most ODS has not only led to the regeneration of the ozone layer but also to significant reductions in greenhouse gas emissions (GHG), as most ODS are also powerful GHGs. Tradewater has the objective to prevent the release of ODS gases into the atmosphere. By identifying, collecting, managing, and destroying refrigerant gases in an appropriate manner, Tradewater aims to prevent ozone depletion, negative environmental impacts, and climate change.

Enclosure 1: Chain of Custody and Ownership Documentation



Certificate of Destruction

Project Information

Destruction Facility	WMS
Project Proponent	Tradewater
Address	1550 W Carroll Ave. STE 213 Chicago, IL 60607

Certificate ID BP 02

ISO tank ID number ISO # 2

Feed Tank Serial Number BNFU622107

The following quantity of Ozone Depleting Substances was destroyed:

		Starting Batch Weight	32080 kg
Destruction Start Date and Time	Feb 7, 2023 (14:30)	*Ending Batch Weight*	11790 kg
Destruction End Date and Time	Mar 26, 2023 (1:30)	*Total Weight Destroyed*	20290 kg

The sample was analyzed by *Bureau Veritas* to quantify the amount of each compound present. The sample contains:

Compound	Percent Composition (%)
R-12	97.85%
R-11	2.15%

WMS Representative Mr. Arpakon Prompet Title Environmental Supervisor Date 5 April 2023

Enclosure 3: GHG Emissions Reduction Assertions

Reference Values Obtained from ODS Protocol for CFC-12, CFC-11, CFC-113, CFC-114, CFC-115

		CFC-12	CFC-11	CFC-13	CFC-113	CFC-114	CFC-115	
CFC-12 10-Year Cumulative Emissions Rate (%/10 Years)	ER	95%	89%	61%	89%	78%	61%	Sec. 5.1.1 (Table 5.2)
Refrigerant Substitute Emissions Factor (tCO2e/tODS)	SE	686	223	7144	220	659	1139	Sec 5.2.1 (Table 5.4)
Global Warming Potential (tCO2e/tODS)	GWP	10900	4750	14400	6130	10000	7370	Sec. 5.1 (Table 5.1)
Default Emission Factor for Transportation and Destruction of ODS (tCO2e/tODS)	EF	7.5						Sec. 5.2.3

	Refrigerant Type	Measured Values		Gross Quantity of Refrigerant Destroyed (kg)	Moisture Reduction	High Boiling Residue Reduction	Total Eligible Refrigerant Destroyed (kg)	Quantity of Refrigerant Detroyed (metric tonnes)	GHG Emissions from Substitute Refrigerants	Quantity of ODS Transported to Destruction Facility	Transportation and Destruction Default Emissions Factor (tCO2e)	Total Project Emissions (tCO2e)	Total Project Baseline Emissions (tCO2e)	Total GHG Emissions Reductions (tCO2e)
		Mass of ODS in COD in kg	Concentration of ODS in Tranche											
		m	c	Q_g	mr	hbr	Q	Q_{ref}	Sub_{ref}	Q_t	Def	PE	BE_{ref}	ER
				$Q_g = m \times c$			$Q = Q_g - (Q_g \times mr) - (Q_g \times hbr)$	$Qref = Q \times .45359/1000$	$Sub_{ref} = Qref \times SE$		$Def = Q_t \times EF$	$PE = Sub_{ref} + Def$	$Be_{ref} = Q_{ref} \times ER \times GWP$	$ER = BE_{ref} - PE$
BNFU622107 4 (ISO 02)	CFC-12	20290.0	97.85%	19853.77	0.000018	0.00100	19833.55	19.83	13605.82	20.29000	152.18	13855	205376	193364
BNFU622107 4 (ISO 02)	CFC-11		2.15%	436.24			435.79	0.44	97.18				1842	
BNFU622107 4 (ISO 02)	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
BNFU622107 4 (ISO 02)	CFC-113		0.00%	0.00			0.00	0.00	0.00				0	
BNFU622107 4 (ISO 02)	CFC-114		0.00%	0.00			0.00	0.00	0.00				0	
BNFU622107 4 (ISO 02)	CFC-115		0.00%	0.00			0.00	0.00	0.00				0	