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Project 0115: Response to queries received as part of 'Request for Review' – Thirteenth Monitoring Period

1. The DOE/PP are requested to justify how the emission reductions are claimed for an extra quantity (9.139 MT) of HFC-23 which was not destroyed in this monitoring period.

The calculations for arriving at the quantity of HFC 23 incineration eligible for GHG emission reduction for the Thirteenth Monitoring period have been re-checked. These have been found to have been done in accordance with the Guidance provided in the EB 39 Report Annex 8 (copy enclosed) which specifically applies to projects that use Monitoring Periods shorter than one year.

On the basis of the formula provided in the aforementioned Guidance, the quantity of incineration during the 4th year which is eligible for emission reduction till the end of the Thirteenth Monitoring Period is arrived at as follows:

Table 1:Calculation of the quantity of HFC-23

Year	Period	Maximum amount of HFC-23 that is eligible for crediting in the year	Quantity of HFC-23 destruction credited in the year	Quantity of HFC-23 sold, used or vented to the atmosphere in the year	Quantity of HFC-23 eligible for storage and destruction in the subsequent year
		A	B	C	D=MAX(A-B-C;0)
1	July04-Jun05	217.180	0.000	0.000	217.180
2	July05-Jun06	526.898	506.104	1.109	19.685
3	July06-Jun07	325.618	317.678	0.000	7.940

Monitoring Period	Period	HFC23 Opening Stock, MT (1)	HFC23 generated, MT (2)	HFC23 sold/ own consumption, MT (3)	HFC23 generated in excess of annual cap (2.942%), MT (4)	HFC23 generation considered for emission reduction calculations based on w cap, MT (5)=(2)-(3)-(4)	HFC23 supplied to incinerator MT (6)	HFC23 Total Closing Stock, MT (7)=(1)+(2)-(3)-(6)	Incineration in excess of Stock eligible for GHG emission reduction, MT (9)	HFC 23 incineration eligible for GHG emission reduction , MT (10)=(6)-(9)

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Eleventh	1-July-07 to 30-Sep-07	13.609	76.260	0.000	4.688	71.572	76.540	13.329	0.000	76.540
Twelfth	1-Oct-07 to 31-Dec-07	13.329	100.267	0.000	7.479	92.788	98.257	15.339	12.318	85.939
Thirteenth	1-Jan-08 to 31-Mar-08	15.339	80.478	0.000	5.919	74.559	79.478	16.339	-9.139	88.617

Table 2 as per Guidance provided in EB39 Report Annex 8 on Accounting Eligible HFC23: Estimation of credits for Monitoring Period

Monitoring Period	Period	Max annual HCFC-22 production that is eligible for crediting as per registered CDM-PDD $QHCFC22_{HIST}$	Quantity of HCFC22 produced upto monitoring period 'n' of year 'y' $\sum Q_{HCFC22,n,y}$	Historical waste generation rate (w) as determined and fixed in the registered CDM-PDD w	Quantity of HFC-23 generated in the monitoring period n (monitoring periods from the start of the year upto the monitoring period I for which issuance of CERs is requested) of year y $\sum Q_{HFC23,g,n,y}$	Quantity of HFC-23 stored by the end of year y-1 and eligible for destruction in year y $Q_{HFC23,co,y}$	Quantity of HFC-23 destruction credited upto the monitoring period m(Monitoring periods of year y that preceded the moniitoring period i) of year y $\sum Q_{HFC23,cr,m,y}$	Quantity of HFC-23 destroyed in the monitoring period n(Monitoring periods from the start of the year upto the monitoring period i) of year y $\sum Q_{HFC23,d,n,y}$	MIN(QHCFC22HIST; ∑QHCFC22,n,y)	∑QHFC23,g,n,y/∑QHCFC22,n,y	MIN(w; ∑QHFC23,g,n,y/∑QHCFC22,n,y)	MIN(QHCFC22HIST; ∑QHCFC22,n,y) X MIN(w; ∑QHFC23,g,n,y/∑QHCFC22,n,y)	MIN(QHCFC22HIST; ∑QHCFC22,n,y) X MIN(w; ∑QHFC23,g,n,y/∑QHCFC22,n,y)+QHFC23,co,y	MIN(MIN(QHCFC22HIST; ∑QHCFC22,n,y) X MIN(w; ∑QHFC23,g,n,y/∑QHCFC22,n,y)+QHFC23,co,y; ∑QHFC23,d,n,y)	QHFC,cr,i,y = MIN(MIN(QHCFC22HIST; ∑QHCFC22,n,y) X MIN(w; ∑QHFC23,g,n,y/∑QHCFC22,n,y)+QHFC23,co,y; ∑QHFC23,d,n,y)-∑QHFC23,cr,m,y
	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9= MIN(Col 2;Col3)	Col10 =Col5 /Col3	Col 11=MIN (Col4;ColK	Col12= Col9 X Col11)	Col 13=Col 6+Col12	Col14 =Min(Col8; Col13)	Col15= Col14- Col 7
Eleventh	Jul07-Sep07	11145	2432.753	2.942%	76.260	7.940	0.000	76.540	2432.753	3.135 %	2.942%	71.572	79.512	76.540	76.540
Twelfth	Oct07-Dec07	11145	5252.841	2.942%	176.527	7.940	76.540	174.797	5252.841	3.361 %	2.942%	154.539	162.479	162.479	85.939
Thirteenth	Jan08-Mar08	11145	8264.975	2.942%	257.005	7.940	162.479	254.275	8264.975	3.109 %	2.942%	243.156	251.096	251.096	88.617

As is evident from the above data,

- a total eligible quantity of 79.512 MT (=Opening stock of 7.94 MT and eligible generation of 71.572 MT during this period) was available during

the Eleventh Monitoring Period for incineration. Out of this, the actual quantity incinerated during the Eleventh Monitoring Period was 76.54 MT. A total stock of 13.329 MT was carried forward to the Twelfth Monitoring Period, out of which 2.972 MT (= Available eligible quantity of 79.512 MT – Actual incinerated quantity of 76.54 MT) was eligible for GHG emission reduction.

- During the Twelfth Monitoring Period, a total quantity of 113.596 MT (= Opening stock of 13.329 MT + Total generation of 100.267 MT) was available. Out of this the eligible quantity available for GHG emission reduction was 85.939 MT (Opening stock of 2.972 MT + eligible generation of 82.967 MT considering the year to date 'w' factor cap). A total quantity of 98.257 MT was incinerated during the Twelfth Monitoring Period, i.e. 12.318 MT (=Total incinerated quantity of 98.257 MT – Eligible quantity of 85.939 MT eligible for GHG emission reduction) in excess of the eligible stock. Further, a total HFC 23 stock of 15.339 MT was carried forward to the Twelfth Monitoring Period. This entire quantity was not eligible for GHG emission reduction.
- During the Thirteenth Monitoring Period, a total quantity of 95.817 MT (=Opening stock of 15.339 MT + Total generation of 80.478 MT) was available. Out of this the quantity available for GHG emission reduction, considering the caps, was 88.617 MT. A quantity of 79.478 MT was incinerated during the Thirteenth Monitoring Period, which is 9.139 MT less than the eligible quantity in the current period which could have been incinerated from the eligible stock. Now, the formulae provided in the EB 39 Guidance on the subject, allow for excess incineration in a particular Monitoring period to be adjusted against the shortfall in the year y. Care has been taken to accordingly reduce the eligible quantity from the stock being carried forward into the Fourteenth Monitoring period. The entire stock of 16.339 MT now being carried forward to the Fourteenth Monitoring Period is not eligible for GHG emission reduction. However, there is still an excess incineration of 3.179 MT(=12.318 MT – 9.139 MT) which can be considered as eligible if the actual incineration in any of the periods falls short of the total eligible quantity available for incineration.

2. The monitoring report (p. 3) stated that the incinerator was not operated due to the lack of sufficient HFC23 for incineration, planned and unplanned stoppages and non-availability of fuel. 2-1) The monitoring report only mentioned the period when the incineration plant was not operated in 2007 rather than in 2008. Further clarification is required.

Due to oversight, the sentence regarding the period when the Incineration Plant was not operated during Oct' 07, Nov' 07 and Dec' 07 (i.e. Twelfth Monitoring Period) has carried through into the Monitoring Report for the Thirteenth Monitoring Period (Jan to March' 08). This may please be condoned as a typographical error. This error in the text does not impact the emission reduction calculations in any way.

This correction in text has been made in the revised version of the Monitoring report now submitted by SRF.

2-2) The methodology and monitoring plan require the measurement of the quantity of HFC 23 in gaseous effluent when the thermal oxidizer stops. The DOE is required to clarify how this requirement has been met.

HFC 23 produced during HCFC 22 production first goes into a buffer tank. HFC 23 is fed to the Thermal Oxidation System from the Buffer Tank. The buffer tank has sufficient storage capacity of 60MT while the daily generation of HFC 23 is around 1.0 to 1.2 MT when the HCFC 22 facility runs to its capacity. (Please refer

Annexure 7 of the PDD titled 'Diagram showing Source of HFC 23 emission'). During the time when HCFC 22 plant is running but the Thermal Oxidation Plant is not working, the plant operator continues to store HFC 23 in the buffer tank. To ensure that there is no leakage from the buffer tank or the incinerator when Thermal Oxidation Plant is not working (stoppages and shutdowns), vent analysis of Thermal Oxidation system is done as per laid down Standard Operating Procedure (S.O.P.).The analysis reports and Gas Chromatographs are available for the Thirteenth Monitoring Period. These have been verified during the audit.

2-3) The quantity of HFC23 in gaseous effluent stated in the monitoring report (p. 19 and p. 12) is inconsistent.

As explained in our response to Point no. 2-2) above, when the thermal oxidizer stops, as per the Standard Operating Procedure, analysis of the effluent gas is done to detect leakages of HFC 23, if any.

Actual vent analysis done during theThirteenth monitoring period shows that no HFC 23 was released. This nil value of ND_HFC23y has been captured in Appendix 4 on page 19 of the Thirteenth Monitoring Report

As stated in section D.2.1.2. of the approved Project Design Document Version 2, the quantity of HFC 23 not destroyed (ND_HFC23y) is typically small. In SRF project, the fraction not destroyed is 0.01% as per guaranteed combustion efficiency of 99.99%. Hence, although no leaks were detected, 0.01% * Q_HFC23_y * 11,700 = 103.6024 MT of Carbon Dioxide may not have been destroyed during the Thirteenth Monitoring Period. This has been considered in the calculation of E_DP_y

3.The monitoring plan requires continuous measurement of the quantity of power consumed for the destruction process while the quantity of power consumption in the monitoring report is calculated based on meter readings from two meter and estimation of consumption of common utilities. Further clarification is required.

As per the registered PDD, DG based power is to be used in thermal oxidation plant (project activity).

As per the registered PDD, DG based power is to be used in the Thermal oxidation plant (project activity).

With effect from the Eighth Monitoring Period, a coal based captive power plant which was installed at the SRF integrated chemical complex, has been feeding power to the common utilities on the site like cooling water, reverse osmosis water and air (besides DG sets) which are shared by operations of Refrigerants Plant, Hydrofluoric Acid Plant, Chloromethanes Plant, Fluoro Specialty Plant, Filling Station along with Thermal Oxidation System since the Eighth Monitoring Period.

As reported in our response to the Review Request for this Project's Tenth Monitoring Period which has been accepted by EB (Issuance made), 80% of electricity consumption in SRF's HFC 23 destruction facility (Thermal Oxidation system) is metered and is solely fed by power from the dedicated DG set. Apart from this, the Thermal Oxidation system uses common utilities at the site which draw power from the Common Power Distribution System. As also reported in our response to the review request for the Tenth Monitoring Period, the consumption of common utilities has been estimated @ 20% of the overall electricity consumption by the Thermal Oxidation System. Further, in order to account for Leakages, on a very conservative basis, SRF has taken a total connected load to utility of 200 KW and multiplied that by the total running hours during the period.

In Jan' 08, we had approached the EB with a Deviation request in this matter. This was duly granted by the EB.

Just to illustrate the conservatism built into the Leakage calculations, for the Thirteenth Monitoring Period:

- Leakage considered on account of power consumption is 118.35 MT of CO2
- Actual leakage on account of Power consumption (by using emission factor of diesel for 80% and the default emission factor for Captive Power Plant for 20%)– 40.63 MT of CO2