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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Thirty-sixth Meeting
Montreal, 20-22 March 2002

PROJECT PROPOSALS: INDIA

This document consists of the comments and recommendations of the Fund Secretariat on the following projects:

Production

• CFC production sector gradual phaseout: 2002 work programme	World Bank

Refrigeration

• Additional funding for change of ownership and costs of equipment for Godrej-GE Appliances Limited	World Bank

PROJECT EVALUATION SHEET
INDIA

SECTOR: Production ODS use in sector (199): N/A

Sub-sector cost-effectiveness thresholds: N/A

Project Titles:

(a) CFC production sector gradual phaseout: 2002 work programme

Project Data	**CFC closure**
Enterprise consumption (ODP tonnes)	
Project impact (ODP tonnes)	1,883.00
Project duration (months)	12
Initial amount requested (US $)	6,000,000
Final project cost (US $):	
Incremental capital cost (a)	
Contingency cost (b)	
Incremental operating cost (c)	
Total project cost (a+b+c)	
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US $)	6,000,000
Cost effectiveness (US $/kg.)	
Counterpart funding confirmed?	
National coordinating agency	Ministry of Environment and Forests
Implementing agency	World Bank

Secretariat's Recommendations	
Amount recommended (US $)	
Project impact (ODP tonnes)	
Cost effectiveness (US $/kg)	
Implementing agency support cost (US $)	
Total cost to Multilateral Fund (US $)	

PROJECT DESCRIPTION

1. At its 29th Meeting in November 1999, the Executive Committee approved in principle a total of US $82 million to fund the phased reduction and cessation of the entire CFC production in India. Implementation would cover a period of 10 years with annual disbursement established against ODS reduction targets. The World Bank, the implementing agency chosen to implement the sector programme was required to submit an annual work plan to the first meeting of each year during the period of implementation.

2. Accordingly, the World Bank submitted for approval to the 36th Meeting the 2002 annual programme (see Annex I) for the implementation of the India CFC production sector gradual phase-out programme. Together with the 2002 annual work programme, the World Bank also submitted the verification report on the implementation of the 2001 annual work programme (see Annex II) because the Agreement approved at the 29th Meeting provides that "Payments are conditional upon completion of the agreed production decreases being independently verified and maintained".

The 2002 Work Programme

3. The 2002 annual work programme starts with a review of the implementation of the 2001 work programme. The review reports on achieving the 2001 CFC reduction target: the allowable CFC production in the country for 2001 was set at 18,824 MT in the Agreement (a reduction of 1,882 MT from the production level of 20,706 MT in 2000) and the actual production for the year is 18,693 MT, below the target. Of the US $11 million disbursed from the Fund to the 2001 work programme, US $10.73 million was paid to the 4 enterprises in tranches according to progress in completing the reduction target set for each of them and US $0.27 million was reserved for technical assistance activities. The implementation of production reductions is being managed by a production license system, which is supported by the Production Quota Order issued by the Government in November 1999.

4. The second part of the submission describes the target and activities of the 2002 work programme. The CFC production limit set in the Agreement for 2002 is 16,941 MT, which requires a further production reduction of 1,752 MT from the level of 18,693 MT in 2001. The target is to be achieved through continuing with the quota system. There will also be efforts to develop draft export/import guidelines, prepare an action plan jointly by industry and government to control illegal trade, and carry out registration/re-registration of ODS producers and dealers and users. In addition, the work programme lists the technical assistance activities to be carried out in 2002, which include training, operating a management information system, and public awareness activities. The funding being requested for the 2002 work programme is US $6 million of which US $5.85 million is planned to be paid to the 4 enterprises to further reduce their production and US $0.15 million is reserved for the technical assistance programme. In addition the World Bank is requesting the associated support cost for the 2002 work programme.

The 2001 Production Verification Report

5. The verification was done in January 2002 by a chartered chemist from the United Kingdom and a chartered accountant from India, the same team which did the verifications for the 1999 and 2000 productions. The report includes a summary which contains a description of the production process employed by the 4 enterprises, interaction with the national audit team, a brief description of the audit methodology, and the findings. Then the report provides for each plant a brief account of the production layout, products, and sources of its feedstock, production data, sampling of the finished products analysed for determining the identity, issues identified, and compliance with quota. Finally the report uses the approved format for verification of ODS production phase out and provides data on number of operating days, raw material consumption and CFC production tonnage.

6. Among its findings, the team noted for the second year that the Indian domestic market for CFCs is shrinking at a faster rate than their production phase-out and as a result there has been greater emphasis by the producers on export business. The report concludes that the production tonnage reported by each company is correct and below the respective quota.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

The 2002 annual programme

7. The submission provides clear CFC production target which is consistent with the target set in the Agreement, and policy instruments to assist its achievement. There is effort from the government to develop an action plan to control the growing illegal trade the country faces. There is a growing technical assistance programme in 2002 however there is no financing reporting on the programme and the verification does not cover this part of the programme. There is a need to know the oversight that is being exercised by the World Bank, specifically the frequency of the financial reporting and the institution which carries out the audit. The total allocation for the technical assistance programme is US $2 million from the US$82 million approved in principle.

The 2001 production verification report

Consistency of the guidelines for the verification of ODS production phase out

8. It is recalled that Decision 33/47 requested the World Bank to include in the 2001 verification report a discussion of the adequacy of the methodology used in light of the specific steps included in the approved guidelines; and provide in the 2001 verification report separate data on production, CTC and AHF consumption ratio and quantity for CFC-11 and CFC-12."

9. There is an effort to describe the methodology used in the audit, however it is so brief that it does not provide information of the specific system each of the 4 plants follows in record-

keeping, the adequacy of such systems in each case, the kind of validation method used in each case, the issues encountered and the way they are resolved.

10. There is no description of the way to validate the CFC production from the consumption of feedstock. This is found especially inadequate in the data on the stock of HF in Navin, and CTC and HF in SRF, because in each case the calculated consumption from stock movement is higher than the feedstock consumption calculated from CFC production. There could be other uses or sales by the plants of such chemicals however there is no data provided either on such uses or sales or the methodology used to validate and balance the feedstock use. In such cases the data on stock change can not be used to validate the CFC production as intended. A sample of the relevant data from these two plants is shown as follows:

Navin

Feedstock	Month	Consumption calculated from CFC production(MT)	Consumption calculated from stock movement(MT)	Difference(MT)
HF	Jan.	140.7	382	242
	Feb.	98.4	428	330

SRF

Feedstock	Month	Consumption calculated from CFC production(MT)	Consumption calculated from stock movement(MT)	Difference(MT)
CTC	Jan.	527	735	208
	Feb.	339	696	357
HF	Jan.	119.5	286	167
	Feb.	84.7	374	289.3

Review of the administrative fee for the World Bank

11. The Agreement provides "The World Bank has agreed to be the Implementing Agency for this project for the first three years at a fee of 8% per annum of project costs disbursed during that time period." 2002 will be the fourth year of the programme and a review of the administrative fee for the World Bank should take place to determine a) the rate of the fee and b) the duration that the fee to be determined should cover.

RECOMMENDATION

12. The Secretariat is seeking clarification from the World Bank on the data discrepency of the feedstock consumption, and the methodology used to validate the feedstock consumption and CFC production. Recommendations will be forwarded to the Executive Committee once the information is received.

INDIA

Additional funding for change of ownership for Godrej-GE Appliance Limited (GGEAL)

PROJECT DESCRIPTION

13. The project for GGEAL was approved in two phases. Phase I - Conversion of the foam part to the cyclopentane technology was approved at the 20th Executive Committee Meeting in October 1996 at the cost of US $2,691,570 to phase out 568 ODP tonnes. Phase I of the project has been implemented and the Project Completion Report has been submitted to the Secretariat.

14. The second phase of the project was approved at the 30th Meeting in March 2000 at the cost of US $2,050,000 to convert the refrigerant part to the isobutane technology phasing out 71.7 ODP tonnes. The level of eligible grant was calculated taking into account the local ownership, which was 60% at that time. Since then, the ownership has been changed and currently the company is 100% locally owned. The name of the company has been changed from GGEAL to GAL.

15. The World Bank has submitted the request to allocate an additional amount US $1,366,667 to GAL, which represents the increase in Article 5 country ownership by 40%.

16. The cost of conversion under Phase II will amount to US $3,416,667 and the total cost of conversion of GGEAL will be US $6,108,237 with overall cost-effectiveness of US $9.55, which is calculated on the basis of Decision 19/9 related to projects implemented in stages.

SECRETARIAT COMMENTS

17. Decision 19/38 specifies the circumstances under which the funding approved for implementation of a project should be changed because of ownership change. This decision, however, is limited to the situation when the Article 5 ownership is reduced. The policy issue of change of ownership in circumstances when the share of the Article 5 entity is augmented is discussed in the Overview Paper (UNEP/Ozl.Pro/ExCom/36/17).

18. The date of signature and the content of the grant agreement itself, and the precise status of project implementation, including acquisition of capital equipment are essential to determination of the applicability of provisions of Decision 19/38 or a potentially new decision to the case in hand. The Secretariat has requested additional information from the World Bank regarding the grant agreement with GGEAL. The requested information has not been provided so far. The Sub-Committee on Project Review will be advised accordingly.

SECRETARIAT RECOMMENDATION

19. The project is referred for individual consideration.

Annex I

INDIA

CFC Production Sector Gradual Phaseout Project (ODS III)

2002 Annual Work Program

February 2002

New Delhi Office
South Asia Environment and Social Unit
World Bank

INDIA

CFC PRODUCTION SECTOR
GRADUAL PHASEOUT PROJECT (ODS III)

CY2002 ANNUAL PROGRAM

Table of Contents

INDIA

CFC PRODUCTION SECTOR
GRADUAL PHASEOUT PROJECT (ODS III)

CY2002 ANNUAL PROGRAM

A. INTRODUCTION

Through the implementation of the CY2001 Annual Program of the *CFC Production Sector Gradual Phaseout Projec*t, India has met its 2001 CFC production quota level of 18,824 metric tons(MT).

In accordance with Decision 29/65 of the Executive Committee of the Multilateral Fund, the World Bank, as the implementing agency, is submitting an Annual Program for the period "1 January - 31 December 2002", for consideration at the March 2002 meeting of the Executive Committee. This Annual Program has been prepared in cooperation with the Ministry of Environment and Forests (MoEF), Government of India, United Nations Environment Programme (UNEP) and the Project Management Unit (PMU).

This document verifies the successful implementation of the CY2001 Annual Program by India and details the planned program and activities for 2002, and is being submitted for approval and release of the fourth tranche of funds, amounting to US$ 6.00 million, for the implementation of the CY2002 Annual Program.

	Agreed Schedule		Actual		
Year	CFC Production not exceeding (MT)	Phaseout Amount (MT)	Verified CFC Production (MT)	Phaseout Amount (MT)*	Annual Funding Level (US$ million)
1999	**22,588**	-	**22,411**	-	12.0
2000	**20,706**	1,882	**20,407**	2,004	11.0
2001	**18,824**	1,882	**18,693**	1,714	11.0
2002	16,941	1,883			6.0
2003	15,058	1,883			6.0
2004	13,176	1,882			6.0
2005	11,294	1,882			6.0
2006	7,342	3,952			6.0
2007	3,389	3,953			6.0
2008	2,259	1,130			6.0
2009	1,130	1,129			6.0
2010	0	1,130			6.0
Total Funding					**82.0**

* Difference between the previous year and the actual year.

B. CY2001 ANNUAL PROGRAM ACHIEVEMENTS

B.1 ODS Phase-out and Disbursement

CFC production in CY2001 amounted to 18,693MT, reflecting a reduction of 8.4% (1,714MT) from the previous year. Disbursements to CFC producers amounted to US$9.66 million, reflecting 90% of the CY2001 tranche of US$11 million, allocated for enterprise compensation. The first disbursement of US$ 379,398, (of which US$ 270,000 came from the 2001 AP), was made to UNEP for the TA component.

Year	Production Phase-out		Grant Tranches (US$ m)	
	Target (MT)	Achieved	Allocation (US$ million)	Status of Disbursements
2001	18,824	The independent Audit Teams appointed by MoEF and WB separately verified CFC production in CY2001. Total production of CFCs was ascertained by both teams as 18,693MT.	11.0	▪ US$9.66 million (in two installments of 60% and 30%) disbursed to the four CFC producers. ▪ *US$1.07 million (remaining 10%) to be disbursed when the 2001 production has been confirmed by the independent audit to being within the limits given by the agreement* ▪ US$0.27 million of the 2001 AP was disbursed to UNEP DTIE

B.2 Enterprise-Level CFC Production Phaseout targets (MT)

At the enterprise level, the performance with regard to meeting the quota allocations for CY2001, is summarized in the following table.

Name of company	2001 (Metric Tons)	
	Quota	Actual verified production
SRF Limited	5,536	5,518
Gujarat Fluorochemicals	6,722	6,615
Navin Fluorine (Mafatlal)	4,960	4,959
Chemplast Sanmar Limited	1,606	1,601
TOTAL	**18,824**	**18,693**

** No quota trading was done between the enterprises in 2001*

The following table reflects the quota achievements by the 4 beneficiary enterprises between 1999 and 2001:

Name of company	1999 (Metric Tons)			2000 (Metric Tons)			2001 (Metric Tons)	
	Quota (Q)	Quota adjusted for trades (QA)	Achieved (A)	Quota (Q)	Quota adjusted for trades (QA)	Achieved (A)	Quota (Q)	Achieved (A)
SRF Limited	6,644	6,271	6,267	6,090	6,146	6,053	5,536	5,518
Gujarat Fluorochemical	8,067	7,482	7,415	7,395	7,482	7,352	6,722	6,615
Navin Fluorine (Mafatlal)	5,951	7,335	7,244	5,455	5,249	5,179	4,960	4,959
Chemplast Sanmar Limited	1,926	1,500	1,485	1,766	1,829	1,823	1,606	1,601
TOTAL	22,588	22,588	22,411 (99%)	20,706	20,706	20,407 (98.5%)	**18,824**	**18,693** (99%)

B.3 Policy Measures

As detailed in CY2001 Annual Program, number of policy measures were adopted and implemented during the course of the year as summarized below.

Legislation	Related Activity	Date
Production Quota Regulation	Production Quota licenses issued for 2001 Receipt of quarterly reports on CFC production by beneficiary enterprises Receipt of annual trading of quotas from enterprises	Jan 2001 Information on quarterly basis is received from enterprises No annual quota trading reported.
ODS Rules (Regulations)	Re-registration of CFC producers Review of import –export licenses Registration of CFC stockists and dealers	Applicable December 2001 Done by July 2001
	Extension of registration dates for ODS consuming industries	Notified as on Dec 2001

B.4 Technical Assistance Activities

To ensure the timely establishment of the PMU's business operations and procedures and to initiate technical assistance activities, the PMU was staffed by professional staff contracted from a management consulting firm since February 2001. As of December 2001, recruitment of staff members has been completed. Recruitment of a regular PMU Coordinator is under active consideration by MoEF.

Activities undertaken by the PMU in 2001 are detailed in table below:

Activity	Key Actions	Date
Training	▪ Stakeholder workshop conducted successfully and issues resolved through subsequent discussions with industry	March 2001
	▪ Training of PMU officials	Nov 2001
	▪ Assistance in formulation of training strategy for enforcement officers (UNEP)	April 2001 onwards
MIS Development	▪ Consultant recruited to develop MIS	June 2001
	▪ Modules developed and MIS ready for implementation	Dec 2001
	▪ Data inputting started	Dec 2001
Public Awareness	▪ Public Awareness and Technical Assistance Strategy finalized	Aug 2001
	▪ State level awareness workshops in 18 states conducted	March 2001 onwards
	▪ Formalities regarding identification/recruitment of Public Awareness Agency underway	Nov-Dec
Other Activities	▪ Assistance in formulation of Service sector strategy (GOI/GTZ)	Feb – May 2001
	▪ Cooperation with UNEP in organizing training of international trainers and customs officials	Nov 2001
Establishment of PMU and related activities	▪ Internal project document between UNEP and MoEF to initiate activities	Feb 2001
	▪ Project document between UNEP and MoEF signed	July 2001
	▪ First tranche of funds to PMU disbursed from UNEP	
	▪ Appointment of Audit coordinator	Sept 2001
	▪ Appointment of MIS coordinator and support staff	
	▪ Procurement, installation and registration of PMU equipment	Sept 2001 Dec 2001
	▪ Registration of PMU as a separate legal entity	Dec. 2001
	▪ Formulation of PMU Procedures Manual	June 2001
	▪ Technical study on Market based instruments initiated	In process

B.5 Monitoring and Reporting Activities

The reporting mechanism is detailed below:

Report	Submitted by	Target Date	Comments
Progress report	UNEP	July 2001 Jan 2002	Detailed reports received and reviewed during supervisions in Aug 2001 and Jan 2002;
Financial Audit	UNEP	June 2002	-
Disbursement Report	IDBI	July 2001 Jan 2002	Satisfactory report received July 2001
Financial Audit	IDBI	Sept 2001	Satisfactory report received Oct 2001
Performance Audit	Auditor/ MoEF	Jan 2002	Preliminary note received
Technical Audit	Auditor/ MoEF	July 2001 Jan 2002	The audit team conducted audits and submitted their reports on time
Technical Audit	Auditor/ WB	Jan 2002	Report received and audit team verified that total CFC production was within the specified quota for 2001.
Supervision report	WB	Jan 2001 Aug 2001 Jan 2002	Project implementation rated as satisfactory. Overall implementation and performance targets and objectives as agreed in CY2001 Annual Program were satisfactorily met.

C. CY2002 ANNUAL PROGRAM: OBJECTIVES AND ACTIVITIES

C.1 ODS Phase-out Objectives and Disbursement Allocation

The objective of the CY2002 Annual Program is to ensure that CFC production does not exceed **16,941MT**. The Bank, on behalf of India, is requesting the release of the fourth installment of **US$6.00 million,** to achieve this objective. These funds will be disbursed to the four CFC producers for reducing production in accordance with the annual production quotas established for CY2002. No additional funds are being requested for CY2002 for the TA component from the Multilateral Fund, as there are sufficient funds available to cover planned activities in CY2002.

C.2 Enterprise-Level CFC production phase-out targets (MT)

In accordance with the Production Quota Order, the four CFC producers have submitted applications for the CY2002 quota. Given that CFC production is well within the CY2001 quotas, quotas will be issued to each enterprise by January 31, 2002, as follows:

Name of company	**2002 Quota (MT)** (before trades)
SRF Limited	4982
Gujarat Fluorochemicals	6050
Navin Fluorine (Mafatlal)	4464
Chemplast Sanmar Limited	1445
Total	**16,941**

C.3 Policy Measures

Activity	**Key Actions**	**Target Dates**
Production Quota licence	Applications for a CY2002 Production Quota license received from all four CFC producers will be examined by MoEF for issuance of licenses.	No later than January 31, 2002.
Trade policy guidelines	Prepare draft export-import policy guidelines for discussion with industry	March 2002
Monitoring of illegal trade	1.Review of actions taken by industry and GOI with regard to steps taken to control illegal trade 2. Prepare plan of action based on the discussions and inputs	Feb 2002 March 2002
Registration of producers	Applications submitted for re-registration of each CFC producer, as required by the Ozone Rules, will be examined by MoEF and processed for renewal of registration.	Between Oct 2001 and April 2002.
Implementation of other provisions of ODS Rules.	1. Applications for registrations from sellers, stockists, dealers and buyers of CFC will be examined and submitted to Ozone Cell, MOEF. 2. Applications for import and export of CFCs will be examined by PMU. Based on PMU's recommendation, the Ozone Cell will submit recommendations for issuance of bulk licenses for export by CFC producers and licenses for import to Directorate General of Foreign Trade (DGFT). DGFT will track use of bulk licenses through quarterly reports from producers.	July 2001 - June 2002 Throughout the year for import and export license, as and when received

C.4 Technical Assistance Activities

Proposed technical assistance activities to be undertaken during 2002 are summarized in the following table. These activities have been decided based on the priorities of the Government of India with regard to national ODS phaseout:

Activity	**Key Actions**	**Target Dates**	**Funds (US$ '000)**
Awareness of ODS phaseout	▪ Monitor and review implementation of national level public awareness activities being undertaken by Communications Agency ▪ Organize and implement public awareness workshops in remaining 10 states ▪ Develop regional action plans based on feedback at state level workshops ▪ Organize national follow-up workshop with state focal points on progress of implementation of regulations and other ODS phaseout activities ▪ Develop a concept note on establishment of national networking system at zonal level ▪ Develop and disseminate technical information on CFC and ODS phaseout	2002 April 2002 June 2002 July 2002 Feb 2002	171
MIS Implementation	▪ Database maintenance and reporting ▪ Develop and implement online quarterly data reporting by CFC producing enterprises ▪ Development and implementation of Internet based data retrieval and reporting system ▪ Implementation of information system for facilitating chiller sector phaseout strategy *(to be linked with WB chiller study database)* ▪ MIS module replication for CFC production phaseout projects in other A5 countries	2002 July 2002 June 2002 June 2002 August 2002	20
Training/ Workshops	▪ Training of PMU staff members on CY2002 Annual Program and MIS implementation. ▪ Workshop for CFC producers on implementation issues faced in CY2001 ▪ Training of enforcement officers (at trainer level) ▪ Capacity building of state level nodal officers on Montreal Protocol implementation activities. ▪ Interactive sessions with small and medium scale enterprises institutes (SISIs) and their beneficiaries on ODS phaseout. ▪ Workshop on cleaner production practices for CFC producers ▪ Preliminary discussions with CFC producers on Environment management Plan (EMP) and closure procedures	Mar 2002 Mar 2002 June - Oct 2002 May – Nov 2002 May – Nov 2002 April 2002 Oct 2002	23
Operations of PMU	▪ Implement ongoing PMU operations ▪ Half-yearly technical audits of CFC producing enterprises	2002 June 2002 & Jan 2003	175

Activity	Key Actions	Target Dates	Funds (US$ '000)
Studies	2-3 studies to be chosen and initiated in 2002: ▪ Study on overall economic and social impact of production sector phaseout ▪ Market study on preparedness of refrigeration food processing industry ▪ Study on implementation effectiveness of ODS phaseout projects ▪ Evaluation of effectiveness of public awareness strategy	To be determined	80
Other activities	▪ Ongoing monitoring of implementation of CFC production phaseout project. ▪ Preparation of draft CFC import-export policy	2002 Mar 2002	-
Total			**469***

* Of which US$ 0.15 is available from the 2002 annual program

C.5 Monitoring And Reporting Activities

The monitoring and reporting schedule for CY2002 will be undertaken in accordance with the reporting mechanism specified in Section B.5 above.

ANNEX I

ANNUAL PRODUCTION PHASEOUT TARGETS AND ANNUAL GRANT TRANCHES

CY	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production ceiling (ODP MT)	22,588	20,706	18,824	16,941	15,058	13,176	11,294	7,342	3,389	2,259	1,130	0
Grant Tranche (US$ million)	12.0	11.0	11.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	0
Of which: TA	0.29	0.27	0.27	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.12	0

ANNEX II

MoEF Letter Confirming ODS Production Levels

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Dr.S.Sathapathy
Joint Director (OC)

भारत सरकार
पर्यावरण एवं वन मन्त्रालय
ओज़ोन सैल
Government of India
Ministry of Environment and Forest
Ozone Cell

F.No.35/5/2001-OC
17 January, 2002

Dear Mr.Rahill,

An independent audit team visited the CFC producing enterprises, M/s.SRF Ltd., M/s Gujarat Fluorochemicals Ltd., M/s. Navin fluorine Industries and M/s. Chemplast Sanmar Ltd. and verified the CFC production level in C.Y.2001. As per the audit report, it is confirmed that all the four CFC producing enterprises have met their production target and as a whole the production target at country level has been achieved.

The CFC Production Sector Gradual phase-out Project: CY 2002 Annual Programme is also enclosed for submission to the 36th Executive Committee meeting, in March 2002.

With regards,

Yours sincerely

(Dr.S.Sathapathy)

Mr.Bill H Rahill
Sr.Environmental Specialist
World Bank New Delhi Office, Room 337,
Phone: 461-7241 Extn.337
Fax: 4619393

Annex II

INDIA

CFC Production Phase-out Project

Report on 2001 Production Verification Mission
7 – 17 January 2002

Audit Team :-

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Verification Mission 7 – 17 January 2002

Executive Summary

The audit team of Mr M M Chitale, Chartered Accountant, and Mr B D Joyner, Chartered Chemist, visited the four CFC-producing enterprises during the period 8-14 January 2002 to perform a technical and financial audit of the third stage of the India CFC – Phaseout Project. The complete schedule for phase-out by 2010 is appended as Annex A.

The team was able to verify the CFC production figures provided by the enterprises by means of the audit methodology detailed later in this report. Having assessed the comprehensive data given to us, and carried out spot-checks on a random basis, we are satisfied that the production figures provided by the enterprises are correct according to the information and explanations made available to us by the enterprises.

Summary of CFC Production 1/1/2001 to 31/12/2001

(All figures rounded to nearest tonne)

CFCs	CSL 11,12	GFL 11,12	NFI 11,12,113,113a	SRF 11,12	INDIA Total
Quota	1606	6722	4960	5536	18824
Open.Stock	24	57	234	337	652
Gross Prod	1605	6700	5032	5602**	18939
Losses	4	85	71	84**	244
Net Prod.	1601	6614	4958	5518	18691
Acq. Stock	Nil	34	53	54	141
Sales	1577	6664	5052	5749	19042
Close Stk.	48	41	193	161	443
% of Quota	99.69	98.41	99.98	99.67	99.30

** Gross Production and Losses are calculated assuming 1.5% on the Net Production measurement

The net aggregated total of CFC production for the calendar year 2001 was 18,693 tonnes , satisfying the country quota requirement by a margin of 131 tonnes.

M M Chitale ***B D Joyner***

mmc / bdj / 01 / 2002

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AUDIT REPORT

Introduction

The manufacture and use of chlorofluorocarbons (CFCs) – in refrigeration / air conditioning, in insulation foams, as specialized solvents, as aerosol propellants, etc. – is controlled under the provisions of the Montreal Protocol, the international treaty designed for the protection of the earth's ozone layer. In Article 5 countries, production is scheduled to be totally phased out by 2010. India is a signatory to the Protocol, and CFC production is under the control of the Ozone Cell of the Ministry of Environment and Forests (MoEF).

The four CFC producers in India, through their trade organization REGMA, have an agreement with MoEF under which each enterprise is allocated an annual CFC production quota. " Production " is defined as net saleable production, this definition having been agreed between MoEF, REGMA and The World Bank in January 2001. Compliance with production quota targets is monitored on behalf of MoEF on a six-monthly basis by an audit team from the National Chemical Laboratory, Pune, and annually on behalf of The World Bank by an external audit team. This is the annual report of the World Bank team for 2001.

Production Process

All four producers operate the same type of chemical reaction process, in which carbon tetrachloride (CTC) is reacted with anhydrous hydrogen fluoride (AHF) using an antimony chlorofluoride catalyst. This results in a mixture of CFC 11 and CFC 12 (CFCs are commonly referred to by a numbering system for simplicity). The crude reaction product mixture is purified by chemical treatment and separated into the two components by distillation. There are minor differences in plant engineering and layout but this brief process description is applicable to all four production sites.

HCFC 22 is produced by a similar process, in which chloroform (CFM) is used instead of CTC, and all plants in India are designed to be able to produce HCFC 22 in addition to CFCs 11 and 12. Changing production from CFCs 11/12 to HCFC 22, or reverting from 22 to 11/12, is generally referred to as "swing" operation. Controls on CFC production have resulted in market price increases to the extent that HCFC 22, which is normally more expensive than CFC 12, is now less valuable, and a key feature of the audit process is to ensure that the production periods and quantities of CFC production are transparent and verifiable.

Liaison with NCL

Following the enterprise visits a correlation discussion was held between the NCL and World Bank teams, with representatives of UNEP and the PMU present. The outcome of both audits were found to be in agreement.
It was also agreed that Customs seizures of CFCs should be notified to MoEF , and material disposed of only to producers within India, never to traders.
A mechanism needs to be defined for this.

0111/6

Audit Methodology

The following data are examined :-

- Raw materials purchases and receipt records;
- Production and stock records, transfers to packaging/dispatch;
- Packaging and despatch records;
- Sales records , domestic and export;
- Production plant daily log books;
- Process and Quality Control analytical records;
- Monthly records prepared for Customs & Excise.

From the operational pattern of the plant, dates are selected at random during both CFC and HCFC production periods. The production log books and laboratory analytical records are cross-correlated for these sample days. Samples are requested to be taken from selected storage tanks and packaged product cylinders, and the analysis of these samples witnessed in the laboratory. The analytical results (chromatograph traces) are added to the enterprise data presentations contained in the Annexes to the full report report held in the World Bank, New Delhi Office.

Market Factors

All enterprises commented that the more valuable domestic market for CFCs is shrinking faster than the scheduled phasedown in production as a result of Government initiatives to reduce consumption, forcing them to look increasingly to export markets where they face strong competition, in particular from material produced in China. In addition, there is a world-wide surplus of HCFC 22 such that market prices barely cover production costs and utilizing spare production capacity to produce additional HCFC 22 is unattractive.

It seems very likely that the first step in production rationalization will occur within the next couple of years.

Environmental Issues

Apart from leakage or spillage of chemicals, the main potential for environmental contamination arises from the occasional need to dispose of highly corrosive antimony halide catalyst when it has reached the end of useful working life. With local variations in details, the general procedure is to slurry the catalyst in an alkaline solution for neutralization, then add sufficient lime to complete neutralization and form a semi-solid material. This is allowed to dry out in a settling pond, then bagged or bulked up and taken to dumping sites licensed by the local State Pollution Control Boards. This is a fully acceptable procedure.

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Technical and Financial Audit Report

Enterprise	Chemplast Sanmar Limited
Office Address	8 Cathedral Road , Chennai 600 086 Tel. No. (044) 827 – 3333 Fax. No. (044)
Plant Address	Plant No. 1, Mettur Dam R.S 636 402, Tamil Nadu
Contact Person	Mr V Ramachandran Executive Vice President Tel. No. 91-4298-30382 Fax. No. 91-4298-30394 E-mail VRCN@SANMARGROUP.COM
CSL Personnel	R Somayaji — Asst. General Manager K Kumar — Senior Sales Manager S Vasudevan — Senior Chemist
Audit Team	M M Chitale B D Joyner
Date	9 January 2002

Plant Details

CFC and AHF production was established in 1988 on an existing CSL site at Mettur Dam (there are now four CSL sites altogether at Mettur Dam). CTC and CFM come from a neighbouring site although material is also imported for import/export duty reasons. AHF is purchased domestically.

The plant has duplicate reaction systems, one reserved for CFCs and the other for HCFC 22. These are connected to a single purification / distillation system, and a swing from CFC to HCFC is achieved by stopping feeds of raw materials to one reaction system, purging the purification / distillation train of previous product , then starting feeds of raw materials to the other reaction system.

0111/8

Production Details

Production Quota for 2001		MT	1606
Production Quota Traded		MT	Nil
Plant Operation Days		CFCs 11/12	241
		HCFC 22	79
		Not operating	45
Production of CFCs		MT	1601
Percentage of Quota Used			99.69 %

		1999	2000	2001	Industry Norm.
Ratio CFC 11 : CFC 12		23:77	27:73	25:75	40 to 80 % CFC 12
Use of CTC in CFC 11/12	T/T	1.40	1.36	1.41	1.31
Use of AHF in CFC 11/12	T/T	0.33	0.32	0.34	0.31

Calculated use in CFC		11	12
CTC	T/T	1.26	1.46
AHF	T/T	0.18	0.39

Samples Analysis

During their audit on 6 Jan. 2002 the NCL team had requested the analysis of samples from two storage tanks and one cylinder, all of HCFC 22. Copies of the results were given to us. We chose to have one storage tank of CFC 11 and one cylinder of CFC 12 analysed in order that the complete set of chromatograms would demonstrate the usefulness of gas chromatographic analysis for identifying CFCs 11 and 12, and HCFC 22.

Future Strategy

Facing quota limits of 1445 MT in 2002, and 1284 MT in 2003, with the probability that the HCFC 22 market will not improve, Chemplast intend to review their situation mid-2003 and decide whether or not it is worth continuing.

Compliance

With production of 1601 tonnes against their quota of 1606 tonnes, Chemplast Sanmar were in compliance with their quota limit.

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Technical and Financial Audit Report

Enterprise	Gujerat Fluorochemicals Limited
Office Address	ABS Towers, 2nd Floor, Old Padra Road, Vadodara 390 007, Gujerat Tel. No. (91) 265 330-057 Fax. No. (91) 265 310-312
Plant Address	16/3, 26 & 27, Village Ranjitnagar, Taluka Ghogamba, District Panchmahals, Gujarat
Contact Person	Deepak Asher Vice President, Corporate Finance Tel. No. (91) 265 351-207 Fax. No. (91) 265 310-312 E-mail deepakasher@satyam.net.in
GFL Personnel	Deepak Asher Vice President, Corporate Finance D K Sachdeva Vice President, Operations Joseph Titus Chief General Manager R J Gujjar Senior Manager , Accounts
Audit Team	M M Chitale B D Joyner
Date	10 January 2002

Plant Details

Production of AHF, CFCs 11 / 12 and HCFC 22 was established in 1989 on a " greenfield " site as part of a State initiative to bring industry to rural areas. All of the AHF produced is for on-site consumption. CTC and CFM are purchased from domestic producers, and by import for duty reasons. The CFC / HCFC plant has a single reactor feeding into a single purification / distillation system. The reactor is connected to two catalyst holding tanks, one for CFC catalyst and one for HCFC catalyst. The procedure for changing from CFC to HCFC production is to stop feeds of CTC and AHF to the reactor, discharge the CFC catalyst to its holding tank, purge the purification/ distillation system of previous products, transfer the HCFC catalyst from its holding tank into the reactor and start feeds of CFM and AHF.

Nameplate Capacity	TPA	19000
Verified Capacity (1998)	TPA	18975

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Production Details

Production Quota for 2001	MT	6722
Production Quota Traded	MT	Nil
Plant Operation Days	CFCs 11/12	149
	HCFC 22	177
	Not operating	39
Production of CFCs	MT	6615
Percentage of Quota Used		98.41 %

		1999	2000	2001	Industry Norm
Ratio of CFC 11:CFC 12		23:77	27:73	13:87*	40–80% CFC12
Use of CTC in CFCs 11/12	T/T	1.30	1.27	1.30	1.32
Use of AHF in CFCs 11/12	T/T	0.32	0.32	0.35	0.33

* Such a high proportion of CFC 12 is achieved by recycling CFC 11.

Calculated use in CFC		11	12
CTC	T/T	1.18	1.34
AHF	T/T	0.17	0.38

Environmental

During the first part of the year a CTC storage tank at Kandla port was found to be leaking. When all the contents were removed to permit inspection / repair a shortage of 42 tonnes was found. This matter was verified by independent surveyors and a copy of their report had been given to the NCL team in July. They had recommended that any future such event should be reported to the MoEF and to the local PCB.
This recommendation is endorsed.

Processing Illegal Imports

During the year GFL took possession of a total of 269 export-type cylinders of refrigerant that had been seized by Customs as an illegal import. 37 of these cylinders were found to contain water instead of refrigerant. The remaining 232 cylinders (13.6 kg) were discharged into the purification / distillation system for reprocessing, yielding 3 tonnes of CFC 12 which is shown as a purchase.

Samples - A single cylinder of HCFC 22 was chosen to complement the five samples analysed for the NCL team.

Compliance

With production of 6615 tonnes , GFL were comfortably within their quota limit of 6722 tonnes.

Technical and Financial Audit Report

Enterprise	Navin Fluorine Industries Chemicals Division of Mafatlal Industries Limited
Office Address	Mafatlal Chambers – A. 2nd Floor N.M. Joshi Marg, Lower Parel (E), Mumbai-400 013 Tel.No. (22) 527 – 4003
Plant Address	Bhestan – 395023, Surat, Gujarat Tel. No. 690325 – 329 Fax. No. 0261 – 690288
Contact Person	P Roychowdhury General Manager – Accounts Tel. No. (22) 527 – 4003 Fax. No. (22) 524 – 0421 E-mail p. roychowdhury@mafnav.com
Navin Personnel	P Roychowdhury General Manager – Accounts V K Mathur Sen. General Manager – Works Ketan Sablok Dep. Manager – Accounts S Srinivas Plants Manager
Audit Team	M M Chitale B D Joyner
Date	11 January 2002

Plant Details

Navin have two completely separate production units, both capable of swing operation between CFCs11/12 and HCFC 22 production, although for the past two years they have been able to dedicate one unit for each of CFCs and HCFC. The first unit dates from 1967, the second from 1995, and they are referred to as Line 1 and Line 2 respectively.

Also, a single refrigeration unit provides cooling for both sets of distillation equipment so the best economy of power usage is achieved by operating both lines at the same time. Apart from minor variations, this was achieved for most of the year, but high stocks of HCFC 22,combined with low demand for the product, has meant that this unit has not operated since mid-November.

AHF is produced on site for CFC / HCFC production and for sale. CTC and CFM are purchased from both domestic and import sources.

There is also a small (660 tpa) CFC 113 plant. This had not been operated for some time when the Validation Mission took place in December 1998 , so this capacity was not verified. Records seem to show that the maximum quantity that has ever been produced in a single year is 214 tonnes, so this can be regarded as the Verified Capacity.

The pattern of operation on this unit is to produce a quantity of crude (impure and unsaleable) CFC 113 , then to purify it to useable quality in batches as needed. Because of its impure state the crude CFC 113 can be regarded as material " in process " and only the purified material counted as Production for audit purposes. On a technical and quality basis this is a reasonable procedure provided that accurate and transparent records are maintained.
This requirement has been emphasised to Navin.

However, a much simpler system would be to count Production of crude CFC 113 as part of the CFC Production Quota, since then subsequent production of CFC 113a, or CFC 114a, need not be counted. The only requirement would be for Navin to provide documentary evidence of sale of CFC 113a as a chemical intermediate, or of in-house use as a chemical intermediate. In both cases, such use would count as a credit against the Quota.
This suggestion is to be recommended to NFI by NCL, the Ozone Cell and the PMU.

Nameplate capacity CFCs 11 / 12		TPA	19800
Verified capacity (1998)		TPA	13448
Nameplate capacity CFC 113		TPA	660
" Verified " capacity		TPA	214

Production Details

Production Quota for 2001		MT	4960
Production Quota Traded		MT	Nil
Plant Operation days	Line 1	CFCs 11/12	198
		Not operating	167
	Line 2	HCFC 22	193
		Not operating	168
	113 unit	CFC 113	10
Production of CFCs 11 / 12		MT	4944
Production of CFC 113		MT	15
Percentage of Quota used			99.98 %

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		1999	2000	2001	Industry Norm
Ratio CFC 11:CFC 12		29:71	28:72	24:76	40–80% CFC 12
Use of CTC in CFC 11/12	T/T	1.29	1.31	1.30	1.31
Use of AHF in CFC 11/12	T/T	0.31	0.31	0.32	0.31

Calculated use in CFC		11	12
CTC	T/T	1.18	1.34
AHF	T/T	0.17	0.37

Production of CFC 113a for Chemical Intermediate Use

An activity unique to NFI out of the four producers is that they have a process for converting CFC 113 into CFC 113a , a version that is much more useful for onward chemical conversion into other materials (chemical intermediate use). Both CFC 113 and CFC 113a are listed as ODP substances, but the Montreal Protocol permits continuing production of CFCs for chemical intermediate use, since in the conversion process the CFCs are "destroyed" and no longer have an ODP.
On this basis, that quantity of CFC 113 which is converted via CFC 113a into some other non-ODP material is not counted as part of a quota.

Because of uncertainty of how to regard CFC 113a in 2000, the holding of CFC 113a was not counted as part of the CFCs stock at the end of 2000, but is now shown as part of the opening stock at the start of 2001.

NFI described an experimental programme in which CFC 113a is fluorinated to CFC 114a , which is then used as a feedstock for production of HFC 134a. This is showing promise , and a quantity of 5.5 tonnes of CFC 113a has been consumed so far. Chemically , this is certainly a possible route to make HFC 134a but it is essential in future that laboratory records are made available to verify the consumption. On the basis of the discussion the consumption of the quantity of 5.5 tonnes was accepted.

It was emphasised to NFI that rigorous evidence of use as a chemical intermediate would be needed to justify the appropriate quantity of CFC as outside the quota. At the end of any accounting period stocks of CFC 113 and CFC 113a should be counted as part of quota until subsequent conversion to a chemical intermediate resulted in a credit against quota.

Environmental

During the first part of the year a quantity of 22.88 tonnes of CTC was lost in an accident to a road tanker, and is verifiable in the records. The NCL team had noted in July that this incident had not been reported to a local or State PCB, and felt that this action should have been taken.
This comment is endorsed.

0111/14

Samples Analysis

During their audit on 9 Jan. the NCL team had selected an export cylinder of HCFC 22 for identification analysis, a copy of which was given us. We selected samples from a storage tank of CFC 12 and a cylinder of HCFC 22. All results showed compliance with the stated identities.

Compliance

Accepting the doubt about the 5.5 tonnes of CFC 113a consumed, Navin are marginally inside their quota , having production of 4958 tonnes against a quota of 4960 tonnes.

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Technical and Financial Audit Report

Enterprise	SRF Limited (Fluorochemicals Division)	
Office Address	A-16, Aruna Asaf Ali Marg, Qutab Industrial Area New Delhi 110 067 Tel. No. (91) 11 685 7141	
Plant Address	Village Jhiwana, Tehsil Tizara, Alwar District, Rajasthan 301 019 Tel. No. 01493 – 20288 Fax. No. 01493 – 21125	
Contact Person	Rajdeep Anand	Sen. Vice President
SRF Personnel	V K Trehan	Dep. General Manager – Works
	R Kaul	Chief Manager-International Trade
	K Chalam	Sen. Manager (CMS & Filling Plant)
	S K Sharma	Manager – Technical Accounts
	L Sharma	Chief Manager (Ref. Gases & HF)
Audit Team	M M Chitale B D Joyner	
Date	14 January 2002	

Plant Details

Established in 1989, the site produces both AHF and chloromethanes, both for use on site and for sale. CTC and CFM are also imported for duty reasons. The refrigerant gases plant has twin reactors, one for CFCs and the other for HCFC 22, both feeding into a single purification / distillation system. Thus only CFCs or HCFC 22 can be produced at any one time. Changeover is achieved by shutting down one reactor, purging the rectification system and starting up the other reactor.

SRF do not currently measure Gross Production, but work back from the filling / packaging weights to arrive at a total of product produced. They have experimented with mass Flow Meters in line to their product storage tanks but found them very unreliable because of cavitation problems , a common problem with liquefied gases. Discussion revealed that they have a number of small daily product make tanks, mounted on load cells, and it was suggested that they look into the feasibility of totaling up the daily production quantities to arrive at a figure for Gross Production.

0111/16

Measurements of actual losses during cylinder filling show losses ranging from 0.8 to 0.9 % , so it was agreed that an overall loss figure of 1.5 % should be used.

Nameplate Capacity	TPA	25000
Verified Capacity (1998)	TPA	26771

Production Details

Production Quota for 2001	MT	5536
Production Quota Traded	MT	Nil
Plant Operation days	CFCs 11/12	97
	HCFC 22	137
	Not operating	131
Production of CFCs	MT	5518
Percentage of Quota Used		99.67

		1999	2000	2001	Industry Norm
Ratio CFC 11:CFC 12		29:71	35:65	38:62	40-60% CFC 12
Use of CTC in CFC 11/12	T/T	1.29	1.27	1.26	1.30
Use of AHF in CFC 11/12	T/T	0.31	0.29	0.29	0.29

Calculated use in CFC		11	12
CTC	T/T	1.18	1.34
AHF	T/T	0.16	0.37

Processing Illegal Imports

During the year SRF accepted a total of 1100 x 13.6 kg export-type cylinders (light gauge, non-refillable) of CFC 12 seized by Customs as an illegal import. In purchasing this material, SRF were required to give two assurances :-

a) that the material would be re-exported
b) that the cylinders, which are not allowed for domestic use, would be destroyed

We were shown correspondence between SRF and the Controller of Explosives verifying destruction of the cylinders. The reclaimed material (14.96 tonnes) in a separate storage tank and it is shown in the records as a purchase. It is hard to understand why the material has not already been re-exported given that over 70 % of SRF's production of CFC 12 is exported.

0111/17

Samples Analysis

Export-type cylinders of CFC 12 and HCFC 22 selected for analysis, the NCL team having chosen an HCFC 22 cylinder but no copy of the analysis was available. The respective materials were correctly identified and the chromatograms added to the data pack provided by SRF.

Compliance

With a total production of 5518 tonnes, SRF are comfortably below their Quota Target of 5536 tonnes.

0111/18

ANNEX A

INDIA

CFC Production Phase-out Schedule

YEAR	Reduction from Baseline %	Quota Target M T	Actual Production M T	Quota %
1999	Freeze	22589	22411	99.21
2000	8.33	20706	20407	98.56
2001	16.66	18824	18693	99.30
2002	25.00	16941		
2003	33.33	15058		
2004	41.66	13176		
2005	50.00	11294		
2006	67.50	7382		
2007	85.00	3389		
2008	90.00	2259		
2009	95.00	1130		
2010	100.00	0		

Note : The total production capacity verified in 1998 was 61253 MT

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Annex I

Questionnaire for
ODS Production Phase Out Verification (Including Gradual Closure)

A. Plant identification

Name of Enterprise	:	CHEMPLAST SANMAR LIMITED
Plant Ref. Number*	:	
Sector Plan #*	:	
SRI # *	:	
Address of the Plant	:	PLANT NO.1, METTUR DAM R.S. 636 402, TAMILNADU, INDIA
Contact person(s) and Functional Title	:	MR V RAMACHANDRAN EXE VICE PRESIDENT
Telephone Number	:	91-4298-30382 TO 85
Fax Number	:	91-4298-30394
E-mail Address	:	VRCN@SANMARGROUP.COM

B. Verification BRIAN. D. JOYNER, MUKUND. M. CHITALE

Team Composition	:	
Leader	:	
Name	:	Brian D. Joyner.
Functional Title	:	Chartered chemist.
Member(s)	:	
Name	:	Mukund M. Chitale.
Functional Title	:	Chartered accountant
Date of Plant Visit	:	9.1.2002
Duration of Visit	:	9AM to 5Pm

*As applicable, e.g. SRI# for China's CFC plants.

M. R. SOMAYAJI
ASST. GENERAL MANAGER
CHEMPLAST SANMAR LTD PLANT-I.
METTUR DAM - 636 402.
SALEM (Dt) INDIA.

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C. PLANT HISTORY

Date of construction						
ODS Products	No.of Lines	Capacity in Baseline Year*	Production **			
			Baseline Year*	Year 1 1999	Year 2 2000	Year 3 2001
CFC-11				1484.974	1823.072	1600.976
CFC-12						
CFC-13						
CFC-113						
CFC-114/115						
Raw materials *** Production						
HF						
CTC						

* The year from which data is used for approving the ODS production phase out project.
** Till the year prior to verification.
*** This applies to plants where production of either HF or CTC or both is integrated.

D. PLANT ACTIVITY IN THE YEAR VERIFIED

I. Plant for complete closure	:	Not applicable
No of CFC 11/12 lines closed	:	
Date of CFC production ceased	:	
Date of dismantling completed	:	
Verification of destruction of key components by	:	[Name of certifying body]
Reactor tank(s) dismantled and destroyed	:	Yes/No
Control and monitoring equipment dismantled and destroyed	:	Yes/No
Pipes dismantled and destroyed	:	Yes/No
Utilities dismantled and destroyed	:	Yes/No

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Evidence of destruction (photos or videos) :

Chance of resuming production : Yes/No

Assessment by the verification team to be included in the verification report

II. PLANT FOR GRADUAL CLOSURE

Annual CFC-11/12 quotas, production, sales and stocks since the baseline year* (Please use one table for each CFC product)

in MT

CFC Products (CFC-11)	Baseline Year*	Year 1 1999**	Year 2 2000**	Year 3 2001**
Quota				
Opening Stock at beginning of year		83.672	9.253	1.672
Production		334.609	484.522	405.394
Purchases***				Nil
Stocks returned				Nil
Sales##		408.892	475.480	364.235
Closing Stock at end of year*		9.253	1.672	42.831

* The year from which data is used to approve the ODS production phase out project.

** Till the year of the verification

*** Any external purchses including seized CFCs from customs, are to be included in this.

For the years 1999 and 2000, Sales figures do not include Mettrosol and Samples.

Annual HF/CFC and CTC/CFC ratios in MT

Ratio	Baseline year	Year 1 1999*	Year 2 2000*	Year 3 2001*	Year 4 2002	Year 5 2003
CFC-11						
HF/CFC-11 ratio		0.189	0.186	0.176		
CTC/CFC-11		1.251	1.221	1.263		
CFC-12						
HF/CFC-12		0.381	0.379	0.395		
CTC/CFC-12		1.454	1.417	1.464		

* Till the year of the verification.

Operational days per year

Type of production	Baseline Year	Year 1 1999	Year 2 2000	Year 3 2001*	Year 4	Year 5	Year 6
CFC 11		171	231	241			
CFC 12		171	231	241			

* Till the year of the verification

Monthly CFC-11 Production and Raw Material consumption*

Month	CFC-11	No.of operating days	CFC-11 Production MT	CTC/ CFC-11 Ratio MT	CTC Opening Stock MT	CTC procured or added to stock MT	CTC Closing Stock MT
Jan-01		31	59.069	1.274	290.958	231.670	222.097
Feb-01		28	66.425	1.246	222.097	270.970	186.788
Mar-01		26	58.955	1.214	186.788	193.960	170.702
Apr-01		17	35.026	1.253	70.702	150.270	140.883
May-01		28	47.462	1.236	40.883	270.720	140.701
Jun-01		14	26.524	1.280	40.701	120.470	131.400
Jul-01		21	30.289	1.255	31.400	180.020	132.167
Aug-01		22	33.397	1.242	32.167	191.980	139.506
Sep-01		6	0.000	0.000	39.506	55.440	72.824
Oct-01		27	36.774	1.420	72.824	218.230	102.700
Nov-01		21	11.473	1.231	102.700	146.580	159.489
Dec-01		0	0.000	0.000	59.489	0.000	159.489

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CFC Production and HF consumption

Month	CFC-11	No.of operating days	CFC-11 Production MT	HF/ CFC-11 Ratio MT	HF Opening Stock MT	HF procured or added to stock MT	HF Closing Stock MT
Jan-01		31	59.069	0.171	30.201	75.000	35.770
Feb-01		28	66.425	0.175	35.770	75.600	38.360
Mar-01		26	58.955	0.168	38.360	75.600	27.050
Apr-01		17	35.026	0.169	27.050	79.200	32.630
May-01		28	47.462	0.174	32.630	68.400	34.440
Jun-01		14	26.524	0.173	34.440	57.600	33.769
Jul-01		21	30.289	0.189	33.769	97.200	61.865
Aug-01		22	33.397	0.171	61.865	3.600	6.508
Sep-01		6	0.000	0.000	6.508	75.600	47.044
Oct-01		27	36.774	0.218	47.044	43.200	43.898
Nov-01		21	11.473	0.166	43.898	61.200	41.266
Dec-01		0	0.000	0.000	41.266	46.800	57.624

Similar tables should be provided for CFC-12 and CFC-113

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Evidence of destruction (photos or videos) :

Chance of resuming production : Yes/No

Assessment by the verification team to be included in the verification report

II. PLANT FOR GRADUAL CLOSURE

Annual CFC-11/12 quotas, production, sales and stocks since the baseline year* (Please use one table for each CFC product)

in MT

CFC Products (CFC-12)	Baseline Year*	Year 1 1999**	Year 2 2000**	Year 3 2001**
Quota				
Opening Stock at beginning of year		96.996	3.584	21.903
Production		1150.365	1338.547	1195.582
Purchases***				Nil
Stocks returned				Nil
Sales ##		1243.468	1291.883	1212.665
Closing Stock at end of year*		3.584	21.903	4.820

* The year from which data is used to approve the ODS production phase out project.

** Till the year of the verification

*** Any external purchses including seized CFCs from customs, are to be included in this.

For the years 1999 and 2000, Sales figures do not include Mettrosol and Samples.

Annual HF/CFC and CTC/CFC ratios in MT

Ratio	Baseline year	Year 1 1999*	Year 2 2000*	Year 3 2001*	Year 4 2002	Year 5 2003
CFC-11						
HF/CFC-11 ratio		0.169	0.166	0.176		
CTC/CFC-11		1.251	1.221	1.253		
CFC-12						
HFC/CFC-12		0.381	0.379	0.385		
CTC/CFC-12		1.454	1.417	1.464		

* Till the year of the verification.

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Operational days per year

Type of production	Baseline Year	Year 1 1999	Year 2 2000	Year 3 2001*	Year 4	Year 5	Year 6
CFC 11		171	231	241			
CFC 12		171	231	241			

* Till the year of the verification

Monthly CFC-12 Production and Raw Material consumption*

Month	CFC-12	No.of operating days	CFC-12 Production MT	CTC/ CFC-12 Ratio MT	CTC Opening Stock MT	CTC procured or added to stock MT	CTC Closing Stock MT
Jan-01		31	152.272	1.479	290.958	231.670	222.097
Feb-01		28	154.476	1.447	222.097	270.970	186.788
Mar-01		26	169.324	1.409	186.788	193.960	70.702
Apr-01		17	93.658	1.454	70.702	150.270	40.883
May-01		28	148.045	1.434	40.883	270.720	40.701
Jun-01		14	64.496	1.486	40.701	120.470	31.400
Jul-01		21	96.914	1.457	31.400	180.020	32.167
Aug-01		22	99.302	1.442	32.167	191.980	39.506
Sep-01		6	6.114	3.618	39.506	55.440	72.824
Oct-01		27	89.867	1.515	72.824	218.230	102.700
Nov-01		21	121.114	1.450	102.700	146.580	59.489
Dec-01		0	0.000	0.000	59.489	0.000	59.489

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CFC Production and HF consumption

Month	CFC-12	No.of operating days	CFC-12 Production MT	HF/ CFC-12 Ratio MT	HF Opening Stock MT	HF procured or added to stock MT	HF Closing Stock MT
Jan-01		31	152.272	0.389	30.201	75.000	35.770
Feb-01		28	154.476	0.397	35.770	75.600	38.360
Mar-01		26	169.324	0.380	38.360	75.600	27.050
Apr-01		17	93.658	0.383	27.050	79.200	32.630
May-01		28	148.045	0.394	32.630	68.400	34.440
Jun-01		14	64.496	0.392	34.440	57.600	33.769
Jul-01		21	96.914	0.393	33.769	97.200	61.865
Aug-01		22	99.302	0.388	61.865	3.600	6.508
Sep-01		8	6.114	0.834	6.508	75.600	47.044
Oct-01		27	89.867	0.426	47.044	43.200	43.898
Nov-01		21	121.114	0.388	43.898	61.200	41.266
Dec-01		0	0.000	0.000	41.266	46.800	57.624

Annexure I

Questionnaire for ODS Production Phase Out Verification (including Gradual Closure)

A Plant Identification

Name of enterprise	Gujarat Fluorochemicals Limited
Plant Ref Number	
Sector Plan	
SRI	
Address of the plant	16/3, 26 & 27, Village Ranjitnagar, Taluka Ghoghamba, District Panchmahals, Gujarat, India 389380
Contact person(s)	Deepak Asher
and functional title	Vice President (Corporate Finance)
Telephone Number	+ 91 (265) 351-207 / 330-057
Fax Number	+ 91 (265) 310-312
Email address	deepakasher@salyam.net.in

B Verification

Team composition	
Leader	
Name	Mr Brian Joyner
Functional Title	
Member(s)	
Name	Mr Mukund Chitale
Functional Title	
Date of visit	10th January, 2002.
Duration of visit	One day

C Plant History

Date of construction 01st October, 1989 (commencement of commercial production)

ODS products	No of lines	Capacity in baseline year	Production			
			Baseline year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
CFC11 CFC12	one	19000	6067	1608 5607	1559 5793	847 5768

Raw Material Production	No of lines	Capacity in baseline year	Production			
			Baseline year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
HF	one	4600		4360	5457	5204

D Plant activity in the year verified

I Plant for complete closure

Not applicable

II Plant for gradual closure

Annual CFC11/12 quotas, production, sales & stocks since baseline year (please use one table for each CFC product)

CFC products (CFC11)	Baseline Year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
Quota	8067	7482	7482	6722
Opening stock		250	4	22
Production		1808	1559	847
Purchases		0	0	0
Stock returned		4	20	3
Sales		-2058	-1562	-866
Closing stock		4	22	6

CFC products (CFC12)	Baseline Year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
Quota		as given alongside		
Opening stock		508	65	35
Production		5607	5793	5768
Purchases		0	0	3
Stock returned		3	17	28
Sales		-6053	-5840	-5798
Closing stock		65	35	36

Annual HF/CFC and CTC/CFC ratios

Ratio (CFC11)	Baseline Year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
HF / CFC11		0.164	0.165	0.165
CTC / CFC11		1.175	1.174	1.179

Ratio (CFC12)	Baseline Year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
HF / CFC12		0.372	0.375	0.375
CTC / CFC12		1.335	1.334	1.340

HF and CTC consumption is segregated between CFC11 and CFC12 based on industry accepted norms.

Operational days per year

Type of Production	Baseline Year	Year 1 (1999)	Year 2 (2000)	Year 3 (2001)
CFC11 / CFC12		166	153	149
HCFC22		177	184	177
Changeover/shut down		22	29	39
Total		365	366	365

Monthly CFC11/12 production and raw material consumption

CFC production and CTC consumption

Month	No. of operating days	CFC11 production	CFC12 production	CTC/ CFC11 ratio	CTC/ CFC12 ratio	CTC opening stock	CTC procured/ added	CTC consumed	CTC closing stock
Jan	30	295	1027	1.208	1.373	1794	189	-1765	218
Feb	0	2	-1	0.000	0.000	218	0	0	218
Mar	29	180	1047	1.168	1.327	218	1621	-1601	438
Apr	7	0	321	1.162	1.329	438	1050	-424	1064
May	26	112	1135	1.172	1.331	1064	1401	-1642	823
Jun	4	37	146	1.217	1.382	823	991	-246	1568
July	29	58	829	1.171	1.331	1568	0	-1171	397
August	7	86	250	1.195	1.358	397	1090	-443	1044
September	15	2	652	1.142	1.297	1044	1046	-848	1242
October	8	75	234	1.170	1.330	1242	0	-398	844
November	3	0	128	1.171	1.331	844	0	-171	673
December	0	0	0	0.000	0.000	673	1050	-16	1707

CFC production and AHF consumption

Month	No. of operating days	CFC11 production	CFC12 production	HF/ CFC11 ratio	HF / CFC12 ratio	HF opening stock	HF procured/ added	HF consumed	HF closing stock
Jan				0.164	0.374	79	432	-433	78
Feb				0.000	0.000	78	453	-473	58
Mar				0.166	0.378	58	476	-426	108
Apr				0.166	0.378	108	347	-352	103
May				0.166	0.377	103	438	-447	94
Jun		as above		0.167	0.380	94	365	-430	29
July				0.162	0.370	29	521	-454	96
August				0.168	0.382	96	466	-455	107
September				0.163	0.370	107	419	-442	84
October				0.166	0.378	84	303	-360	27
November				0.167	0.379	27	538	-479	86
December				0.000	0.000	86	446	-441	91

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Annexure - I

Questionnaire for
ODS Production Phase Out Verification (Including Gradual Closure)

A. Plant Identification

Name of Enterprise	:	NAVIN FLUORINE INDUSTRIES Chemicals Division Of Mafatlal Industries Limited
Plant Ref. Number *	:	
Sector Plan # *	:	
SRI # *	:	
Address of the Plant	:	Bhestan - 395023 , Surat , India
Contact person(s) and Functional Title	:	Mr Partha Roychowdhury General Manager - Accounts
Telephone Number	:	+91(22) 5274003
Fax Number	:	+91(22) 5240421
E-mail Address		p._roychowdhury@mafnav.com
B. Vertication	:	
Team Composition	:	
Leader	:	
Name	:	
Functional Title	:	
Members(s)	:	
Name	:	
Functional Title	:	
Name	:	
Functional Title	:	
Date of Plant Visit	:	11 th January , 2002
Duration of Visit	:	9:00 a m - 5.00 p m

* As applicable eg. SRI # for China's CFC plants.

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C. Plant History

Date of construction :

ODS Products	No. of Lines	Capacity in Baseline Year *	Production ** Baseline Year *	Year 1 1999	Year 2 2000	Year 3 2001
CFC-11				2077.066	1432.230	1175.340
CFC-12				5124.272	3741.500	3768.730
CFC - 11 / 12 (Combined)	2	13488.000	5952.000	7201.338	5173.730	4944.070
CFC-13						
CFC-113	1	660.000			5.485	14.841
CFC-113a						9.301
CFC-114/115						
Raw Materials Production ***						
HF (for CFC)				2235.800	1611.900	1591.100
CTC						

Note : CFC - 11 / 12 Capacity in baseline year is Verified Capacity .
CFC - 113 Capacity in baseline year is Nominal Capacity .
Line 2 is operating only HCFC 22 .

* The year from which data is used for approving the ODS production phase out project.
** Till the year prior to the verification
*** This applies to plants where production of either HF or CTC or both is integrated.

D. Plant Activity in the Year Verified

1. Plans for complete Closure : (Not Applicable)

No. of CFC-11/12 lines closed :

Date of CFC production ceased :

Date of dismantling completed :

Verification of destruction of key components by [Name of certifying body] :

Reactor tank(s) dismantled and destroyed : Yes/No

Control and monitoring equipment dismantled and destroyed : Yes/No

Pipes dismantled and destroyed : Yes/No

Utilities dismantled and destroyed : Yes/No

Chance of resuming production : Yes/No

Assessment by the verification team to be included in the verification report :

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II. Plant for gradual closure

Annual CFC-11/12 , CFC-113 quotas, production, sales and stocks since the baseline year *
(Please use one table for each CFC product)

CFC Products (CFC-11 , CFC-12 , CFC-113 , CFC-113a)	Baseline Year *	Year 1 # 1999	Year 2 # 2000	Year 3 ** 2001
Quota	5952.000	7335.000	5249.000	4960.000
Opening Stock at beginning of year		763.966	280.468	233.514
Net Saleable Production		7201.338	5179.215	4959.212
Purchases ***				
Sales		7684.836	5852.190	5000.145
Closing stock at end of year		280.468	207.493	192.581

Note : Quota in Year 1 , Year 2 & Year 3 is after trading of quota with other producers .

* The year from which date is used to approve the ODS production phase out project .
** Till the year of the verification .
*** Any external purchases including seized CFCs from customs, are to be included in this .
# Opening and Closing Stocks do not include CFC-113a stocks .

Annual HF / CFC and CTC / CFC ratios

Ratio	Baseline Year	Year 1 1999	Year 2 2000	Year 3 2001	Year 4	Year 5	Year
CFC-11		2077.066	1432.230	1175.340			
HF / CFC-11		0.163	0.163	0.166			
CTC / CFC-11		1.174	1.181	1.184			
CFC-12		5124.272	3741.500	3768.730			
HF / CFC-12		0.370	0.365	0.367			
CTC / CFC-12		1.346	1.349	1.342			

* Till the year of the verification

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Annual HF / CFC and PCE / CFC ratios

Ratio	Baseline Year	Year 1 1999	Year 2 2000	Year 3 2001	Year 4	Year 5	Year 6 *
CFC-113 - Crude (In Process)				17.587			
HF / CFC-113				0.426			
PCE / CFC-113				1.110			
CFC-113							
HF / CFC-113				NA			
PCE / CFC-113				NA			
CFC-113a							
HF / CFC-113a				NA			
PCE / CFC-113a				NA			

* Till the year of the verification

Operational days per year

Type of Production	Baseline Year	Year 1 1999	Year 2 2000	Year 3 2001	Year 4	Year 5	Year 6 *
CFC-11 / 12		275.34	190.46	197.76			
CFC-113			6.80	10.00			
CFC-113 a				2.00			

* Till the year of the verification

Monthly CFC-11/12 production and raw material consumption *

CFC - 11 Production and CTC consumption

Month	CFC-11	No. of Operating days	CFC-11 Production	Filling / Handling Loss	Net Saleable Production	CTC / CFC-11 Ratio	CTC Opening Stock	CTC Procured or added	CTC Closing Stock	CTC Consump. in CFC - 11
January		21.003	164.000	1.900	162.100	1.166	790.278	328.790	400.068	189.000
February		12.958	77.000	3.140	73.860	1.201	403.068	1046.262	1036.130	88.670
March		20.250	119.000	2.200	116.800	1.173	1036.130	132.140	446.170	137.020
April		15.000	76.000	2.000	74.000	1.173	446.170	1403.400	1383.060	86.810
May		29.000	162.700	3.960	158.740	1.179	1383.060	120.260	487.420	187.170
June		20.000	108.500	3.800	104.700	1.193	487.420	1226.215	1089.735	124.930
July		26.050	92.500	3.000	89.500	1.190	1089.735	124.580	484.515	106.510
August		11.600	73.500	2.550	70.950	1.192	484.515	1067.635	1162.380	84.550
September		15.480	122.000	3.230	118.770	1.183	1162.590	1204.643	1806.693	140.320
October		8.210	45.000	2.280	42.720	1.215	1805.693	97.040	1599.133	51.900
November		17.792	161.000	4.180	156.820	1.184	1599.133	1160.277	2107.910	185.690
December		6.500	8.000	1.620	6.380	1.444	2107.910	29.460	2062.970	9.210
Total		197.764	1208.300	33.960	1175.340	1.186		7853.182		1391.980

CFC - 11 Production and HF consumption

Month	CFC-11	No. of operating days	CFC-11 Production	Filling / Handling Loss	Net Saleable Production	HF / CFC-11 Ratio	HF Opening Stock	HF Produced / or added	HF Closing Stock	HF Consump. in CFC - 11
January		21.003	164.000	1.900	162.100	0.164	143.907	332.000	93.957	26.540
February		12.958	77.000	3.140	73.860	0.168	93.957	454.000	119.344	12.430
March		20.250	119.000	2.200	116.800	0.166	119.344	504.000	88.752	19.400
April		15.000	76.000	2.000	74.000	0.166	88.752	800.000	129.306	12.280
May		29.000	162.700	3.960	158.740	0.164	129.306	758.000	77.574	26.000
June		20.000	108.500	3.800	104.700	0.166	77.574	716.000	70.682	17.430
July		26.050	92.500	3.000	89.500	0.174	70.682	708.000	93.111	15.540
August		11.600	73.500	2.550	70.950	0.166	93.111	714.000	121.093	11.760
September		15.480	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19.610
October		8.210	45.000	2.280	42.720	0.168	96.999	715.000	98.946	7.170
November		17.792	161.000	4.180	156.820	0.164	98.946	657.000	73.624	25.780
December		6.500	8.000	1.620	6.380	0.205	73.624	482.000	30.140	1.310
Total		197.764	1208.300	33.960	1175.340	0.166		7698.000		195.330

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CFC - 12 Production and CTC consumption

Month	No. of Operating days	CFC-12 Production	Filling / Head Loss / Other losses	Net Saleable Production	CTC / CFC-12 Ratio	CTC Opening Stock	CTC Procured or added	CTC Closing Stock	CTC Consu in CFC
January	As CFC 12 is	310.000	1.620	308.380	1.337	790.278	229.790	403.068	412
February	produced in the	233.000	3.500	229.500	1.549	403.068	1046.262	1036.130	309
March	same plant as	439.000	2.000	437.000	1.335	1036.130	132.140	446.170	581
April	CFC 11 thus we	284.000	3.540	280.460	1.343	446.170	1403.400	1383.060	376
May	will have	620.700	5.280	615.420	1.347	1383.060	120.260	487.420	825
June	common	373.000	3.000	370.000	1.340	487.420	1226.215	1089.735	495
July	operating days.	467.900	6.100	461.800	1.345	1089.735	126.580	484.515	621
August	Refer CFC 11	227.000	2.540	224.460	1.340	484.515	1067.035	1162.250	300
September		304.000	2.060	301.940	1.337	1162.250	1206.643	1805.693	403
October		185.500	2.400	183.100	1.347	1805.693	97.040	1599.133	246
November		354.000	2.280	351.720	1.339	1599.133	1169.277	2107.910	471
December		7.000	2.050	4.950	1.877	2107.910	29.460	2062.970	5
Total		3805.100	36.370	3768.730	1.342		7853.102		5059

CFC - 12 Production and CTC consumption

Month	No. of operating days	CFC-12 Production	Filling / Head Loss / Other losses	Net Saleable Production	HF/ CFC-12 Ratio	HF Opening Stock	HF Produced/ or added	HF Closing Stock	HF Consu in CFC
January	As CFC 12 is	310.000	1.620	308.380	0.371	143.907	332.000	93.957	114
February	produced in the	233.000	3.500	229.500	0.375	93.957	454.000	119.244	85
March	same plant as	439.000	2.000	437.000	0.374	119.244	504.000	88.752	163
April	CFC 11 thus we	284.000	3.540	280.460	0.370	88.752	900.000	129.396	103
May	will have	620.700	5.280	615.420	0.369	129.396	738.000	77.574	227
June	common	373.000	3.000	370.000	0.369	77.574	716.000	70.683	136
July	operating days.	467.900	6.100	461.800	0.369	70.683	708.000	93.111	179
August	Refer CFC 11	227.000	2.540	224.460	0.369	93.111	714.000	121.092	82
September		304.000	2.060	301.940	0.369	121.092	720.000	96.599	111
October		185.500	2.400	183.100	0.368	96.599	713.000	58.946	67
November		354.000	2.280	351.720	0.368	58.946	657.000	73.624	129
December		7.000	2.050	4.950	0.523	73.624	482.000	40.140	2
Total		3805.100	36.370	3768.730	0.367		7638.000		1395

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CFC - 113 Crude (In Process) Production and PCE consumption

Month	CFC-113 Crude In Process	Production	PCE/ CFC-113 Ratio	PCE Opening Stock	PCE Procured or added	PCE Closing Stock	PCE Consump. in CFC-113
January				21.946		21.946	
February				21.946		21.946	
March				21.946		21.946	
April		17.587	1.110	21.946		2.416	19.530
May				2.416		2.416	
June				2.416		2.416	
July				2.416		2.416	
August				2.416		2.416	
September				2.416		2.416	
October				2.416		2.416	
November				2.416		2.416	
December				2.416		2.416	
Total		17.587			0.000		19.530

CFC - 113 Crude (In Process) Production and HF consumption

Month	CFC-113 Crude In Process	Production	HF/ CFC-113 Ratio	HF/ Opening Stock	HF/ Procured or added	HF/ Closing Stock	HF/ Consump. in CFC-113
January				143.907	332.000	93.957	
February				93.957	454.000	119.244	
March				119.244	504.000	88.752	
April		17.587	0.426	88.752	900.000	129.396	7.491
May				129.396	738.000	77.574	
June				77.574	716.000	70.682	
July				70.682	708.000	93.111	
August				93.111	714.000	121.092	
September				121.092	720.000	96.599	
October				96.599	715.000	58.946	
November				58.946	657.000	73.624	
December				73.624	482.000	40.140	
Total		17.587			7638.000		7.491

0111/22

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CFC - 113 Pure Production and PCE consumption

Month	CFC-113 Pure	No. of Operating days	CFC-113 Production	PCE/ CFC-113 Ratio	PCE Opening Stock	PCE Procured or added	PCE Closing Stock
January		0.10	0.090				
February		0.50	0.525				
March		5.00	5.446				
April		0.05	0.035	Not Applicable			
May		2.00	5.420				
June		0.25	0.385	Does not Consume PCE			
July		0.10	0.070				
August		0.50	0.665				
September		0.00	0.000				
October		0.50	0.525				
November		0.00	0.000				
December		1.00	1.680				
Total		10.000	14.841	0.000	0.000	0.000	0.000

CFC - 113 Pure Production and HF consumption

Month	CFC-113 Pure	No. of Operating days	CFC-113 Production	HF/ CFC-113 Ratio	HF/ Opening Stock	HF/ Procured or added	HF/ Closing Stock
January		0.100	0.090				
February		0.500	0.525				
March		5.000	5.446				
April		0.050	0.035	Not Applicable			
May		2.000	5.420				
June		0.250	0.385	Does not Consume HF			
July		0.100	0.070				
August		0.500	0.665				
September		0.000	0.000				
October		0.500	0.525				
November		0.000	0.000				
December		1.000	1.680				
Total		10.000	14.841	0.000	0.000	0.000	0.000

NAVIN FLUORINE INDUSTRIES
(CHEMICAL DIVISION OF MAFATLAL INDUSTRIES LTD.)
FACTORY : BHESTAN, SURAT - 395 023.
GUJARAT, INDIA.
TEL. : 680325-327, 681033-035, 680250, 690595.
FAX : 0261-690288. TELEX: 0188-210 NFI IN
GRAM : "NAVINCHEM" SURAT.

CFC - 113a Production and PCE consumption

Month	CFC-113a	No. of Operating days	CFC-113 Production	Filling / Hand Loss / Other Issues	Net Saleable Production	PCE/ CFC-113 Ratio	PCE Opening Stock	PCE Procured or added	PCE Closing Stock
January					0.000				
February					0.000				
March		2.00	1.171	0.870	0.301				
April					0.000				
May					0.000				
June					0.000				
July					0.000				
August					0.000				
September					0.000				
October					0.000				
November					0.000				
December					0.000				
Total		2.000	1.171	0.870	0.301	0.000	0.000	0.000	0.00

Not Applicable

Does not Consume PCE

CFC - 113a Production and HF consumption

Month	CFC-113 Pure	No. of Operating days	CFC-113 Production	Filling / Hand Loss / Other Issues	Net Saleable Production	HF/ CFC-113 Ratio	HF Opening Stock	HF Procured or added	HF Closing Stock
January					0.000				
February					0.000				
March		2.000	1.171	0.870	0.301				
April					0.000				
May					0.000				
June					0.000				
July					0.000				
August					0.000				
September					0.000				
October					0.000				
November					0.000				
December					0.000				
Total		2.000	1.171	0.870	0.301	0.000	0.000	0.000	0.00

Not Applicable

Does not Consume HF

Pre P.38
19-11-2002

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Questionnaire for
ODS Production Phase Out verification (including gradual closure)

A. Plant identification		
Name of Enterprise	:	SRF Limited
Plant Ref. No.	:	
Sector Plan No.	:	
SRI No.	:	
Address of the plant	:	Village Jhivana, Tehsil Tizara, Distt. Alwar Rajasthan, India
Contact person(s) and Funotional Title	:	Rajdeep Anand, Sr. Vice President
Telephone No.	:	91-11-685 7141/6857231
Fax No.	:	91-11-685 7139/685 4260
e-mail No.	:	rajdeepanand@ srf-limited.com
B. Verification		
Team composition	:	Mr. Brian Joyner
Leader		
Name	:	Mr. Brian Joyner
Functional title	:	
Member(s)		
Name	:	Mr. Mukund Chitale
Functional title	:	
Date of plant visit	:	January 14,2002
Duration of plant visit	:	10:00 AM - 5:00 PM

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C. Plant History

Date of construction :

ODS Products	No. of lines	Capacity in Baseline year*	Production**			
			Baseline year*	Year 1 1999	Year 2 2000	Year 3 2001
CFC-11	One line common to CFC and HCFC.	25000 TPA		6267.752	6053.045	5518.113
CFC-12						
CFC-13	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
CFC-113	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
CFC-114/115	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Raw materials production***						
HF	One				4636	4469
CTC	One				7039	4635

Quota figures given are after trading

* The year from which data is used for approving the ODS production phase out project

** Till the year prior to the verification

*** This applies to plants where production of either HF or CTC or both is integrated

D. Plant activity in the verified

I. Plant for complete closure	:	Not applicable
No. of CFC-11/12 lines closed	:	
Date of CFC production ceased	:	
Date of dismantling completed	:	
Verification of destruction of key components by	:	(Name of certifying body)
Reactor tanks(s) dismantled or destroyed	:	Yes/No
Control and monitoring equipment dismantled and destroyed	:	Yes/No
Pipes dismantled and destroyed	:	Yes/No
Utilities dismantled and destroyed	:	Yes/No

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Evidence of destruction (Photos or videos) :

Chance of resuming production : Yes/No

Assessment by the verification team to be included in the verification report :

II. Plant for gradual closure

Annual CFC-11/12 Quotas, production, sales and stocks since the baseline year*
(Please use one table for each CFc product)

CFC-11	Baseline year*	Year 1 1999	Year 2** 2000	Year 3 2001
Quota#	6643	6271	6146	5536
Opening stock at beginning of year			218	126
Production			2157	2086
Sales			2256	2197
Purchases			0	0
Sales return			6.766	5.81
Closing stock at the end of the year			126	21

CFC-12	Baseline year*	Year 1 1999	Year 2** 2000	Year 3 2001
Quota#				
Opening stock at beginning of year			299	211
Production			3896	3432
Sales			3985	3551
Sales return			0.657	33
Purchases			0	14.96
Closing stock at the end of the year			211	140

Quota figure is combined for CFC-11 and CFC-12
For 1999, combined figure for CFCs is provided
* The year from which date is used to approve the ODS production phase out project
** Till the year of verification

Annual HF/CFC and CTC/CFC ratios

CFC-11	Baseline year*	Year 1 1999	Year 2** 2000	Year 3 2001
HF/CFC-11 ratio		0.161	0.161	0.163
CTC/CFC-11 ratio		1.18	1.173	1.181
CFC-12				
HF/CFC-12 ratio		0.366	0.382	0.367
CTC/CFC-12 ratio		1.336	1.332	1.341

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Operational days per year

Type of production	Baseline year	Year 1 1999	Year 2 2000	Year 3 2001			
CFC-11		115	104	97			
CFC-12		115	104	97			

Monthly CFC-11 production and raw material consumption* (CY 2001)

Month	CFC-11	No. of operating days	CFC-11 production	CTC/CFC-11 ratio	CTC opg stock	CTC* procured or added to stock	CTC clg stock
January		7.16	149.159	1.151	826.813	839.066	930.276
February		4.84	59.725	1.163	930.276	874.879	1108.29
March		8.39	99.46	1.157	1108.29	743.914	933.516
April		4.75	118.87	1.204	933.516	938.99	1116.933
May		11.39	236.75	1.184	1116.933	922.22	814.704
June		11.82	360.52	1.193	814.704	1066.46	613.142
July		11.51	282.058	1.179	613.142	1047.589	535.922
August		8.63	98.581	1.208	535.922	1109.982	770.614
September		9.48	178.744	1.176	770.614	1182.393	1038.019
October		12.27	316.616	1.172	1038.019	561.882	650.625
November		5.31	142.967	1.179	650.625	812.297	972.678
December		1.92	42.209	1.335	972.678	639.793	1151.916

* Includes CTC production and procurement

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CFC production and HF consumption

Month	CFC-11	No. of operating days	CFC-11 production	HF/CFC-11 ratio	HF opg stock	HF procured or added to stock	HF clg stock
January		7.16	149.159	0.159	48.98	246.026	8.26
February		4.84	59.726	0.164	8.26	373.404	7.32
March		8.39	99.46	0.163	7.32	495.962	19.86
April		4.75	118.87	0.165	19.86	503.382	29.11
May		11.39	236.75	0.163	29.11	490.697	41.48
June		11.82	360.52	0.164	41.48	536.571	60.68
July		11.51	282.058	0.161	60.68	447.341	47.6
August		8.63	98.561	0.165	47.6	264.491	18.38
September		9.48	178.744	0.16	18.38	343.393	47.89
October		12.27	316.616	0.162	47.89	350.091	39.44
November		5.31	142.967	0.163	39.44	353.913	39.967
December		1.92	42.209	0.197	39.967	63.242	20.92

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CFC production and HF consumption

Month	CFC-12	No. of operating days	CFC-12 production	CTC/CFC-12 ratio	CTC opg stock	CTC procured or added to stock*	CTC clg stock
January		7.16	274.393	1.306	826.813	839.066	930.276
February		4.84	209.821	1.321	930.276	874.879	1108.29
March		8.39	399.352	1.313	1108.29	743.914	933.516
April		4.75	197.99	1.367	933.516	938.99	1116.933
May		11.39	499.593	1.344	1116.933	922.22	814.704
June		11.82	420.233	1.355	814.704	1066.46	613.142
July		11.51	364.879	1.339	613.142	1047.589	535.922
August		8.63	342.274	1.37	535.922	1109.982	770.614
September		9.48	340.465	1.335	770.614	1182.393	1038.019
October		12.27	261.571	1.331	1038.019	561.882	650.625
November		5.31	97.888	1.338	650.625	812.297	972.678
December		1.92	24.014	1.516	972.678	639.793	1151.916

* Includes CTC production and procurement.

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CFC production and HF consumption

Month	CFC-12	No. of operating days	CFC-12 production	HF/CFC-12 ratio	HF opg stock	HF procured or added to stock	HF clg stock
January		7.16	274.383	0.359	48.98	246.026	8.26
February		4.84	209.821	0.369	8.26	373.404	7.32
March		8.39	399.352	0.367	7.32	495.962	19.86
April		4.75	197.99	0.371	19.86	503.392	29.11
May		11.39	499.593	0.369	29.11	490.697	41.48
June		11.82	420.233	0.369	41.48	536.571	60.68
July		11.51	364.879	0.363	60.68	447.341	47.6
August		8.63	342.274	0.372	47.6	264.491	18.38
September		9.48	340.465	0.362	18.38	343.393	47.89
October		12.27	261.571	0.366	47.89	350.091	39.44
November		5.31	97.888	0.369	39.44	353.913	39.967
December		1.92	24.014	0.444	39.967	63.242	20.92