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Executive Committee of the
Multilateral Fund for the
Implementation of the Montreal Protocol

Eleventh Meeting
Bangkok, 10-12 November 1993

REQUESTS FOR BILATERAL CONTRIBUTIONS

This document consists of:

- Requests from Canada, Singapore, South Africa and United States
- Comments from the Fund Secretariat

OVERVIEW

1. Pursuant to Article 10 of the Protocol as amended and Decision II/8 of the Second Meeting of the Parties, the Executive Committee is charged with assessing bilateral requests.

2. Requests were received from the Governments of Canada, the Republic of Singapore, the Republic of South Africa, and the United States of America for the following activities:

From Canada (Total Request: US \$759,000)

. Activities in Sichuan Province, China	US \$172,500
. Training workshop in the State of Sao Paulo, Brazil	US \$172,500
. Technical Assistance in the Halon Sector in Venezuela	US \$414,000

From the Republic of Singapore

. Regional Methyl Chloroform Elimination Programme for the ASEAN countries	US \$120,000
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From the Republic of South Africa

. Industry Workshop on the Practical Implementation of the Montreal Protocol for English speaking countries in Africa	US \$ 30,000
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From the United States of America (Total Request: US \$1,017,000)

. Reduction of CFC-11 in Appliance Insulation Foam (Ecuador)	US \$ 50,000
. Assistance in Implementation of Country Programme (Ecuador)	US \$ 11,000
. Halon 1211 Recovery/Recharge Training Workshops (China)	US \$271,000
. Halon Management Resource Manual (China)	US \$ 32,000
. FESCAST Conference (China)	US \$ 96,000
. Solvents Conference (Malaysia)	US \$ 24,000
. Technical Support to Complete Projects Using the World Bank US \$4 million Line of Grant (Mexico)	US \$136,000
. Chillers (Mexico)	US \$259,000
. Solvents (Mexico)	US \$138,000

3. All of the projects are recommended for full funding as requested except the request from the Republic of Singapore whose 1993 pledge only qualifies it for a 1993 offset of US \$31,976. The Republic of Singapore is requested to resubmit the other components of its request for future consideration.

4. Implementing agencies should take into account these activities and co-ordinate their work programmes where appropriate.

5. This document contains the comments and recommendations of the Fund Secretariat for each request, each request for bilateral contribution offset, and the United States' progress report on bilateral activities which includes a description of its offset requests.

REQUEST FOR BILATERAL CONTRIBUTIONS CANADA

COMMENTS FROM THE FUND SECRETARIAT

6. A request was received from the Government of Canada (see Annex I) to credit US \$759,000 (Cdn. \$1.1 million) in bilateral assistance against Canada's 1993 contribution to the Multilateral Fund for the following three projects:

- . Activities in Sichuan Province, China (US \$172,500)
- . Training workshop in the State of Sao Paulo, Brazil (US \$172,500)
- . Technical Assistance in the Halon Sector in Venezuela (US \$414,000)

General Comments

7. Canada's activities in China, Brazil, and Venezuela provide ongoing support for the transfer of proven technologies, training, and technical assistance. These activities are consistent with the overall programme of the Fund.

8. The Committee was informed about Canada's intent to proceed with these projects at previous Committee meetings. The projects in China and Brazil have been completed. The Government of Venezuela has agreed in principle to the project.

9. The technical assistance project in Venezuela is a comprehensive programme which includes an assessment, halon management programme development, recycling equipment, halon sector study tour, and a workshop.

Recommendation

10. This request complies with the bilateral contribution guidelines (UNEP/OzL.Pro/ExCom/5/16, paragraph 55) and the criteria for assessing costs as bilateral contributions (UNEP/OzL.Pro/ExCom/7/30, paragraph 82). The requested amount does not exceed 20 per cent of Canada's contribution to the Fund for the year 1993.

11. It is, therefore, recommended that the Canadian Government's request should be approved and the Treasurer should credit the requested amount, US \$759,000, accordingly.

**REQUEST FOR BILATERAL CONTRIBUTIONS
REPUBLIC OF SINGAPORE**

COMMENTS FROM THE FUND SECRETARIAT

12. A request was received from the Government of the Republic of Singapore (see Annex II) to credit 20 per cent of Singapore's contribution for a three-phase project entitled, "Regional Methyl Chloroform Elimination Programme" which would be conducted between 1993 and 1995.

13. The total cost of the project is US \$120,000 for the three-year time period. Since Singapore's 1993 contribution is US \$159,883, the maximum eligible 1993 offset would equal US \$31,976.

General Comments

14. Singapore has adopted ODS alternative technologies and made their application economically viable. The intent of the proposed project is to share this experience with other Article 5 countries in the region.

15. The first project component involves conducting feasibility studies on five to eight non-ODS products for use in electronic metal cleaning. The second component entails an evaluation of the effectiveness of the products and their operational and economic limitations. The final component is a regional workshop to disseminate the findings of the studies including the attendance for participants.

16. Research and development for the adaptation of technologies to regional circumstances is an eligible expense which with clarifications may apply to this project; however, the eligibility of the first and second components cannot be determined without additional information. The third component is an eligible expenditure.

17. The project document does not include a cost breakdown for the three components.

18. The guidelines for "Bilateral and Regional Co-operation" (UNEP/OzL.Pro/ExCom/5/16, Annex IV) require that agreement for the bilateral activity is reached with the beneficiary countries. Project documentation indicates that agreement has been reached with only one of the beneficiary countries.

19. The project document does not specify if workshop participants will be employees of transnational corporations. Therefore, the Secretariat cannot comment on the extent to which the proposed activities relate to enterprises owned by transnational corporations.

Recommendation

20. It is recommended that 20 per cent of Singapore's contribution to the Fund for the year 1993, US \$31,976, be approved for the project provided that:

- a. All participating beneficiary countries agree to the assistance;
- b. Funds are not used to finance the training of employees of enterprises owned or partially owned by transnational corporations;
- c. Funds are used towards the dissemination of information concerning the adaptation of technologies to local circumstances (the third component);
- d. Funding for additional project components are presented in subsequent requests in accordance with bilateral assistance guidelines.

**REQUEST FOR BILATERAL CONTRIBUTIONS
REPUBLIC OF SOUTH AFRICA**

COMMENTS FROM THE FUND SECRETARIAT

21. A request was received from the Government of the Republic of South Africa (see Annex III) to credit US \$30,000 in bilateral assistance against South Africa's 1994 contribution to the Multilateral Fund for an "Industry Workshop on the Practical Implementation of the Montreal Protocol for English speaking countries in Africa".

General Comments

22. South Africa is the only Party not operating under Article 5 in Africa. Through its economic ties with its neighbours, it is well positioned to provide technical assistance in ODS phase-out to the region.

23. This project would provide maintenance, repair and manufacturing industry technical managers with information on complying with the Protocol. Participants from several African countries are expected. The total workshop cost is US \$50,000. UNEP has agreed to contribute US \$25,000 towards the workshop.

Recommendation

24. This request complies with the bilateral contribution guidelines (UNEP/OzL.Pro/ExCom/5/16, paragraph 55) and the criteria for assessing costs as bilateral contributions (UNEP/OzL.Pro/ExCom/7/30, paragraph 82). The requested amount does not exceed 20 per cent of South Africa's contribution to the Fund for the year 1994.

25. It is, therefore, recommended that the South African Government's request should be approved and the Treasurer should credit the requested amount, US \$30,000, accordingly.

REQUEST FOR BILATERAL CONTRIBUTIONS UNITED STATES OF AMERICA

COMMENTS FROM THE FUND SECRETARIAT

26. The Government of the United States of America submitted a status report (see Annex IV) on activities underway through its bilateral assistance programme for Multilateral Fund-supported activities. Included in the status report is a request from the Government of the United States of America to credit US \$1,017,000 in bilateral assistance against the United States' 1993 contribution to the Multilateral Fund for the following nine projects:

- . Reduction of CFC-11 in Appliance Insulation Foam (Ecuador: US \$50,000)
- . Assistance in Implementation of Country Programme (Ecuador: US \$11,000)
- . Halon 1211 Recovery/Recharge Training Workshops (China: US \$271,000)
- . Halon Management Resource Manual (China: US \$32,000)
- . FESCAST Conference (China: US \$96,000)
- . Solvents Conference (Malaysia: US \$24,000)
- . Technical Support to Complete Projects Using the World Bank US \$4 million Line of Grant (Mexico: US \$136,000)
- . Chillers (Mexico: US \$259,000)
- . Solvents (Mexico: US \$138,000)

General Comments

Status Report

27. The status report is a comprehensive review of specific activities undertaken, outputs, lessons learned, and future activities associated with each project approved or submitted for approval to the Executive Committee. It clearly identifies actual progress and implementing agencies should be encouraged to provide a similar level of detail in their respective progress reports. Most projects are ongoing with remaining project balances for the identified future activities which are specified in the project document.

28. The status report demonstrates effective co-ordination and co-operation with the Fund's implementing agencies as well as beneficiary Article 5 countries. A strong effort has been made to adapt project-related documents and manuals for use in other projects which is consistent with the intent of the Committee's sectoral approach strategy. Once such documents are refined for general use, copies are sent to the appropriate implementing agency for future use.

29. The Halon 1211 Recovery/Training Workshop resulted in the installation of 20 recycling units and their operational initiation. This bilateral activity of the United States resulted in the completion of the first Fund-supported investment that directly resulted in the elimination of ozone depleting substances.

30. The United States has offered technical expertise for the identification of projects, preparation of project proposals, and actual project execution for investment projects approved for funding through the Fund's implementing agencies. In the case of the Mexico line of grant projects, this intervention has resulted in the analysis of several potential projects. This project preparation had two results:

- a. the preparation of projects eligible for funding, and,
- b. the demonstration of the economic viability of self-financed ODS elimination to companies whose conversion to ozone friendly technologies are profitable and thereby ineligible for funding.

In the latter case, the demonstration of profitability arising from the project preparation activity itself will also result in ODS phase-out.

Bilateral Request

31. Some of the nine projects for which funding offset is requested have been previously approved by the Committee. The previous funding level and the additional funds requested are clearly provided in the project text. In general, the additional funds are the result of a more active involvement including both project preparation and actual project execution.

32. All of the activities included in the request have already incurred expenditures. Activities include workshops, conferences, project preparation and execution, and equipment purchase. All project costs conform to the guidelines of the Committee. Project descriptions were of sufficient detail to determine that all costs are incremental costs.

Recommendation

33. This request complies with the bilateral contribution guidelines (UNEP/OzL.Pro/ExCom/5/16, paragraph 55) and the criteria for assessing costs as bilateral contributions (UNEP/OzL.Pro/ExCom/7/30, paragraph 82). The requested amount including the previous approvals of the United States this year does not exceed 20 per cent of the United States' contribution to the Fund for the year 1993.

34. It is, therefore, recommended that the United States Government's request should be approved and the Treasurer should credit the requested amount, \$1,107,000, accordingly.



Environment
Canada

Environnement
Canada

Conservation and
Protection

Conservation et
Protection

ANNEX I

Ottawa, Ontario
K1A 0H3

Your file Votre référence

Our file Notre référence

SEP 28 1993

Dr. Omar El-Arini
Chief Officer
Multilateral Fund for the
Montreal Protocol
1800 McGill College Ave.
27th Floor
Montreal, Quebec
H3A 3J6

Dear Dr. El-Arini:

This letter is to follow-up on the intervention I had made at the last Executive Committee meeting confirming that Canada has been actively developing bilateral arrangements with China and Brazil under the bilateral cooperation provisions of the Montreal Protocol. I am pleased to enclose information on Canada's ongoing technology transfer projects with China and Brazil in this area. These projects are being funded under the 20 percent of Canada's total contribution for this year to the Fund and is consistent with criteria specified by Decision 11/8 in the report of the Second meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. The use of these funds strictly relate to compliance with the provisions of the Protocol; provides additional resources; and meets agreed incremental costs.

The approach that was used in developing these workshops was for Canadian industry to provide the transfer of proven technology in the area of ozone depleting substances, and for Canadian professionals to provide training of Brazilian professionals who in turn will train Brazilian firms interested in the recovery, recycling and reclamation of ozone depleting substances (ODSs).

Canada

I should note that the importance of technology cooperation between business people was repeatedly identified at the recent UNCED conference in Rio. The President of the prestigious Business Council on Sustainable Development, made up of 50 or so of the world's best business leaders, places particular importance on business-to-business exchanges in his highly influential book "Changing Course"¹

Prior to the expenditures of these funds, we had received approval from the Governments of China and Brazil respectively to count these expenses of these joint arrangements as part of Canada's contribution to the Fund.

We are currently developing a bilateral arrangement with Venezuela whereby we would provide Canadian assistance in the fire protection sector, specifically in bank management strategies for Halon 1301. We have received agreement in principle from the government of Venezuela to proceed with this project and should be receiving formal shortly.

I would also like to take this opportunity, as noted in the training strategy that was developed earlier this year by UNEP, to advise you that Canada, in cooperation with UNEP, will be pursuing the possibility of organizing a technology roundtable next year in India.

Your earliest consideration of this matter would be appreciated.

Sincerely yours,



G. Victor Buxton
Executive Director - Operations
Environmental Protection

¹ Stephan Schmidheiny, Changing Course - A Global Business Perspective on Development and the Environment (The MIT Press, Cambridge, 1992)

Canadian Bilateral Contributions
Under the Multilateral Fund

Brazil	Cdn \$250,000
China	Cdn \$250,000
Venezuela	Cdn \$600,000*
Total	Cdn \$1,100,000

* this amount will be covered over 4 years

China

Ozone Depletion is one of the fields of cooperation identified within the framework of the recently concluded Memorandum of Understanding on Environmental Cooperation between the Canada and the People's Republic of China. Both governments agreed that:

- officials from China and Canada support bilateral arrangements under the Montreal Protocol Multilateral Fund.
- The initial focus of cooperation in this area would be with the province of Sichuan, while ensuring that all efforts are consistent with China's approved "country program" as put forward by NEPA and are coordinated with and approved by NEPA and other relevant ministries.
- The main elements of the Sichuan program include:
 1. Development of an inventory of affected industries of the province of Sichuan;
 2. Holding the Technology Transfer Workshop involving Canadian industry and government officials, targeted for early October, 1993.
 3. Canada's efforts in Sichuan are being undertaken in partnership with the United Nations Development Program (UNDP is the lead agency in China) and the World Bank.

Canada has received formal agreement of this bilateral arrangement with the People's Republic of China. It has been estimated that the cost of this program would be approximately Cdn \$250,000; this amount would cover the costs of the workshop, Canadian industry participation and travel, preparatory work in Canada, and other related costs.

Brazil

The governments of Canada and Brazil had agreed to hold a training workshop in early September, 1993 in the State of Sao Paulo to facilitate the transfer of ODS phase-out technology between Canadian and Brazilian industrial representatives. This workshop will focus on the refrigeration and air conditioning sector, and will feature Canadian technology and expertise. This workshop is viewed as the first step in a broader program of assistance: it is expected that this workshop will lead to the identification of additional areas of cooperation including training in recovery and recycling, capital investment projects for ODS conversions, technical assistance, institutional strengthening and the like.

Discussions are ongoing between officials from both governments regarding next steps in this area of technical cooperation. Several follow up activities were identified on a preliminary basis during the workshop. These include possible assistance in preparation of Brazil's Country Programme on ODS phase out, technical assistance in project preparation, government to government policy training, and several investment/demonstration project ideas.

The estimated cost of the first phase of this program estimated at Cdn \$250,000 will cover the costs of the workshop, Canadian industry participation and travel, preparatory work in Canada and Brazil.

Venezuela

Discussions have been ongoing between Canadian and Venezuelan officials regarding a program for technical cooperation in the area of ozone depleting substances. Venezuela has requested Canadian assistance in the fire protection sector, specifically in bank management strategies for Halon 1301, in identification of alternatives to 1301, and feasibility studies of producing dry chemical cylinders.

The project that was put forward and agreement in principle was reached by both countries. The overall program has been segmented into five sections:

- Assessment of 1301 needs and infrastructure in Venezuela.
- Development of a Halon Management Program
- Supply of Halon 1301 Recycling Equipment
- Fact Finding Trip to Canada
- Workshop in Venezuela to facilitate the implementation of the findings

A letter has been sent to the Venezuelan government outlining this proposal and seeking their approval on what was agreed in principle. It has been estimated that the cost of this program would be approximately Cdn \$600,000 over 4 years (the major amount will be spent in 1994).

MINISTRY OF THE ENVIRONMENT
INTERNATIONAL ENVIRONMENT & POLICY DEPARTMENT

IEPD 9.3

27 May 93

Tel: (65) 7319014

Fax: (65) 7384468

URGENT

Mr Omar E. El-Arini
Chief Officer
Multilateral Fund Secretariat For
The Implementation Of The Montreal Protocol
Montreal, Quebec, Canada H3A 3J6
(FAX: (514) 282-0068)

Dear Mr Omar El-Arini

MULTILATERAL FUND - OFFSETTING OF BILATERAL CONTRIBUTIONS

Thank you for your letter dated 24 May 93.

2 In view of your advice, we would now like to submit only Project Number 3 for the assessment and endorsement of the Fund Secretariat and the Executive Committee. The revised project proposal is attached.

3 The proposed project will be Singapore's new initiative to provide financial and technical assistance to developing countries in the areas of ODS substitutes and ODS alternative technologies. The proposed project will hence be "additional to existing aid programmes".

4 We had already obtained the acknowledgement and support of Malaysia, which is one of the expected participating countries, on the implementation of the earlier 3 proposed projects. (Please see Annex A). We will now proceed to seek the support from other participating countries in the region.

5 With regard to the project cost, we note that approval for the proposed activities will be contingent on the limitation based on Singapore's 20% bilateral contributions to the Multilateral Fund for 1993-95.

6 The targeted participants for proposed project will be research officers and industrial users from article 5 countries in the region. We will liaise with the national governments of these countries on their nominations and participation in the project.

Environment Building 40, Scotts Road, #11-00, Singapore 0922. REPUBLIC OF SINGAPORE
Telephone: 7327733 Cable Address: MINENVIRON Telex: ENV-RO-88438 Fax: 7384468

7 We hope that the above additional information addresses all the issues raised in your letter.

8 Thank you for your assistance. We look forward to your favourable reply soon.

With best regards

Yours sincerely



YAO CHUAN SAM
for HEAD
INTERNATIONAL ENVIRONMENT & POLICY DEPARTMENT
MINISTRY OF THE ENVIRONMENT

cc Director General of Environment
Department of Environment
Ministry of Science, Technology & Environment
Kuala Lumpur, Malaysia
(Fax: 603-293 1480)
Attn: Mr Ismail Ithnin

- Thank you for your letter dated 11 May 93. In view of the Fund Secretariat's comments, we would now like to put forward only Project Number 3. A revised project proposal is attached. Thank you for your support.



DEPARTMENT OF ENVIRONMENT,
MINISTRY OF SCIENCE, TECHNOLOGY
AND ENVIRONMENT,
12th & 13th FLOOR, WISMA SIME DARBY,
JALAN RAJA LAUT,
50662 KUALA LUMPUR

Telephone: 2938955
Telex: MOSTDC MA 28154
Telefax: 603-2931480
Cable: SEKTAR

Our Ref: AS 91/120/004/006

Your Ref: // May 1993

Date:

9.3

Mr. Khoo Seow Poh *b/v*
Ministry of the Environment
International Environment & Policy Department
Environment Building 40
Scotts Road 11-00
SINGAPORE 0922
REPUBLIC OF SINGAPORE

Dear Mr. Poh,

Montreal Protocol - Bilateral Contributions
Under Multilateral Fund

Referring to the above-mentioned subject, based on our
observation, we strongly supported your projects
proposal for bilateral contributions under Multilateral
Fund.

Regards.

Yours sincerely,


(ISMAIL ITHNIN)
for the Director General of Environment

SINGAPORE'S PROPOSED BILATERAL COOPERATIVE PROJECT
UNDER THE MULTILATERAL FUND, MONTREAL PROTOCOL

INTRODUCTION

Under the Montreal Protocol, Singapore is classified as a Non-Article 5 country. Since its ratification of the Protocol in Jan 1989, Singapore has implemented effective control measures and policies to phase-out the use of ozone depleting substances (ODS) in accordance to the schedule stipulated under the Protocol.

2 Over the years, Singapore has acquired significant expertise and experience in the phasing out of the ODS, especially in the context of a developing country. Singapore has successfully adopted ODS alternative technologies and made their applications economically viable.

3 Many developing countries in the region are in the process of implementing control measures and strategies to phase-out the use of ODS. There are areas in which Singapore can share her experience and expertise with these countries through implementation of bilateral cooperative projects.

4 Under the Montreal Protocol, a Non-Article 5 country can withhold up to 20% of its annual contributions to the Multilateral Fund for the provision of bilateral assistance to Article 5 countries. Singapore would hence like to implement suitable bilateral cooperative projects with the Article 5 countries and deduct the expenses from its annual contributions to the Multilateral Fund.

PROPOSED BILATERAL COOPERATIVE PROJECT

5 Singapore proposes that the implementation cost of the following bilateral cooperative project be considered as Singapore's bilateral contributions to the Multilateral Fund:

Project Title

Regional Methyl Chloroform Elimination Programme

Project Description

The purpose of the project is to reduce the use and accelerate the phase-out of methyl chloroform in the electronic and metal industries through switching to non-ODS alternative technologies.

The project will include the following:

- (a) Feasibility studies on the use of 5-8 potential non-ODS products in cleaning of various metal components of aluminum, copper, stainless steel, zinc or nickel;
- (b) Evaluation on the effectiveness, operational and economical limitations of using such products in countries in the region; and
- (c) Organisation of a regional workshop to disseminate the findings and recommendations of the studies to countries in the region.

Targeted Participants

The targeted participants for the regional workshop will be research officers and industrial users from Article 5 countries in the region. National governments of the participating countries will be invited to provide their nominations.

Estimated Project Cost

The total project cost will be US\$120,000. The figure includes the costs of conducting research, feasibility and evaluation studies, and the costs of conducting a regional workshop (which include air-fares, per diem and accommodation for 10-15 participants from the ASEAN countries, hiring of conference facilities, transportation for field visits, conference materials and stationery).

The project will be funded by the Singapore's 20% bilateral contributions to the Multilateral Fund for 1993, 1994 and 1995.

Proposed Project Duration

September 1993 to March 1995.

Implementation Plan

Upon obtaining the assessment and endorsement from the Fund Secretariat on the eligibility of the project, Singapore will proceed to liaise with the national governments of Article 5 countries in the region for the implementation of the project.

After completion of the project, a detailed account of the actual expenditure and other relevant documents will be forwarded to the Fund Secretariat for its endorsement.



Faks: 27 12 215392
Fax:
Telks: 27 12 3120000
Telex:
Telefoon:
Telephone:

Telegramsadres: "SAGWEP"
Telegraphic address:
Privaatsak X828
Private Bag
0001 Pretoria

37/3/3
Navrae • Enquiries: DR P J AUCAMP
Verwysing • Reference:

Mr Omar E El-Arini
Chief Officer, Interim Multilateral Fund Secretariat
1800 McGill Collage Ave
Montreal Trust Buildings
27th floor, Montreal
Quebec H3A 3J6
CANADA

Dear Mr El-Arini

BILATERAL FUNDING

South Africa is in the unique position that it is the only developed country in Southern Africa that has acceded to the Montreal Protocol. It has close economic ties with its neighbours and wishes to assist them to comply with the Protocol and to phase-out ODS's as soon as possible as well as enhancing regional cooperation. South Africa wishes to share its advanced knowledge and technology to help the rest of the region to phase out the ODS's in the most cost-effective way possible.

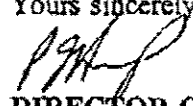
The best way to do this is to follow the example of the successful workshop that was held in Nairobi in November 1992. We want to organize an industry workshop on the practical implementation of the Protocol. The target group will be the maintenance, repair and manufacturing industry on the level of technical managers. The objective will be to inform participants on how to comply with the Protocol and to demonstrate the process.

We plan to have the conference in Swaziland in 1994 and to invite the English speaking countries in Africa to participate i.e. Botswana, Swaziland, Zimbabwe, Uganda, Mauritius, Nigeria and Ghana. The workshop and the programme was discussed and presented to Mr R M Shende of the IE/PAC of UNEP. They approved the programme and are prepared to pay \$25 000 towards the total estimated cost of \$55 000.

It will be appreciated if the executive committee will give South Africa permission to subtract the \$30 000 which will be paid by South Africa from our contribution to the Multilateral Fund as a bilateral contribution.

If you need additional information please contact me as soon as possible.

Yours sincerely


DIRECTOR-GENERAL

27/9/93.

DEPARTEMENT VAN NASIONALE
GESONDHEID EN
BEVOLKINGSONTWIKKELING

PRIVAATSAK 30528
PRIVATE BAG
PRETORIA
0001



DEPARTMENT OF NATIONAL
HEALTH AND POPULATION
DEVELOPMENT

NAVRAE:
ENQUIRIES:

Dr P J Aucamp

VERWYSING:
REFERENCE:

TEL (012) 3120000 /3120218

FAKS

FAX (012) 215392 (INTERNATIONAL: 27 12 215 392)

AAN/TO: Mr Andrew Reed

FAKSNR / FAXNO: 091 514 ²582 0068

AANDAG / ATTENTION:

BOODSKAP / MESSAGE:

WORKSHOP IN SWAZILAND

Please refer to our telephone discussion of 93/10/05.

1. The expected payment of US\$30 000 that the RSA would make towards Article 5 participants to the workshop, will be additional to any payments made due to bilateral agreements that may at present exist between the RSA and any of the participating countries.
2. It is the RSA's intention to obtain the agreement of participating countries that they accept the principle that this payment may be regarded as an "in kind" part payment of the RSA contribution to the Multilateral Fund.
3. As a description of the activities that are planned, a copy of the proposed programme is attached.
4. The RSA will request that the payment be credited to the RSA in the 1994 financial year as payments for 1993 have already been made.
5. The RSA undertakes not to claim any credit for expenses paid to participants from article 5 countries that are in the employment of transnational corporations.

Kind regards


DIRECTOR GENERAL

HOOFDIREKTORAAT: FORENSIESE EN NAVORSINGSDIENSTE
CHIEF DIRECTORATE: FORENSIC AND RESEARCH SERVICES

BLADSYE / PAGES: 3

DATUM: 1993/10/05

**DRAFT PROGRAMME FOR THE PROPOSED INDUSTRY WORKSHOP
ON THE PRACTICAL IMPLEMENTATION OF THE MONTREAL
PROTOCOL TO BE HELD IN SOUTHERN AFRICA UNDER THE
AUSPICES OF THE UNITED NATIONS ENVIRONMENTAL
PROGRAMME (UNEP), MAY 1994**

SUNDAY MAY 1994:

Participants arrive. Registration at Hotel and welcoming cocktail sponsored by

MONDAY MAY 1994:

07:00 - 08:00 Further registration at Hotel.
08:45 Busses depart for various technical tours.
16:00 Busses depart to destination in Swaziland.

TUESDAY MAY 1994:

08:00 - 09:00 Final registration for participants not participating in technical visits.
09:00 Opening and welcome :
Speakers (1) (Southern Africa)
Speakers (2) (UNEP)
09:30 Objectives of workshop
Speaker (UNEP)

THE OZONE LAYER UNDER THREAT

09:45 Keynote address: *Why do we have to have a Montreal Protocol?*
Dr P J Aucamp, co-chairman of the Scientific Evaluation Panel of the
Montreal Protocol.
10:45 Tea/Coffee break.

THE OZONE LAYER UNDER THREAT-CONTINUED:

RESPONSE BY GOVERNMENTS:
11:15 *The South African Situation:* The National Committee for the
Implementation of the Montreal Protocol - The functions of the various
working Groups: Mr M R Steyn (South Africa).
11:45 The Botswana Situation
12:05 The Kenya Situation
12:25 General Discussion
13:00 Lunch

TECHNOLOGICAL OPTIONS FOR REPLACING OZONE DEPLETING SUBSTANCES:

Covering replacements for ozone depleting substances (ODS's) such as CFC's, Halons, Methyl Bromide, 1,1,1 Trichloroethane etc.

14:30 Options open for replacement of CFC's by mines requiring
refrigeration.
15:00 Options open for replacement of Halons by the Fire Fighting Industry.
15:30 Options for replacement of R12 refrigerant by the Automotive Air
Conditioning Industry.

16:00 Tea/Coffee break

TECHNOLOGICAL OPTIONS FOR REPLACING ODS's-CONTINUED:

16:30 Options for replacing 1,1,1 trichloroethane as degreasing agent.
17:00 Options for replacing CFC refrigerants in the various refrigeration and air conditioning industries.
17:30 Closing remarks for the day: Highlights of the first day.
Someone from UNEP.
19:00 Cocktail hosted by.....

WEDNESDAY MAY 1994

TECHNOLOGICAL OPTIONS FOR REPLACING ODS's-CONTINUED:

08:30 Options for replacing Methyl Bromide as fumigant for soils, products and structures.
09:00 Options for replacing CFC's in foam blowing industries.

TAKING ACTION FROM AN INDUSTRY PERSPECTIVE

Including new technologies, recoveries, recycling, materials compatability, energy efficiency of alternatives, manufacturing and process controls, leak detection, alternative processes and retrofitting capabilities.

09:30 Case history of retrofitting mining refrigeration with HCFC's and with HFC's.
10:15 Case history of retrofitting mobile refrigeration units with replacement products.
11:45 Case history of replacing CFC-blown rigid foams in household equipment with foams using zone friendly foaming agents.
12:15 Case history of replacing 1,1,1 trichloroethane as degreasing agent.
12:45 Lunch
14:15 Case history of replacing halons with zero ozone depleting products in fire fighting equipment.
14:45 Case history of recovering and recycling of refrigerant in Automotive air conditioning.
15:35 Case history of recovery and recycling of refrigerants in mining refrigeration applications.
16:00 Tea/Coffee break
16:30 The establishment of a Halon Bank for Southern Africa.
17:00 Essential uses of CFC's - The manufacture of medical dose inhalers using CFC's.
17:30 Closing remarks of the day: highlights of the second day. Someone from UNEP.

Farewell dinner sponsored by



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

28 September 1993

Dr. Omar El-Arini
Chief Officer
Multilateral Fund for the Implementation
of the Montreal Protocol

Dear Dr. El-Arini,

Attached please find a report on the status of projects being undertaken by the United States as bilateral contributions to the Fund. The status report also includes a request for approval of new spending on projects and a related offset against our assessed contribution for this new spending. A table which outlines the new activities for which we are requesting that offset is attached to this transmittal letter. A detailed description of related activities can be found in the attached project documentation. In some cases, the new activities are extensions to projects which were approved by the Executive Committee at an earlier date. In such cases, the sum that we are now requesting approval of is underlined and clearly noted in the project status report.

In total, the United States is asking for an offset of \$1,017,000 for new project work undertaken since last October. All of the requests for approval involve additional resources which cover incremental costs; sums specified are actual amounts spent during the funding period noted. The funded cooperation strictly relates to compliance with the provisions of the Protocol. The total funding level requested for approval as an offset against our contribution for 1993 is well below the 20% threshold for bilateral activities which was established by the Parties. All of the Article 5 Parties that we are collaborating with in these new activities have given approval for us to count expenses that we have incurred in these projects as part of the U.S. contribution to the Fund.

We appreciate the opportunity to provide this written report on the status of our bilateral activities, and we look forward to review and approval of our new bilateral activities at the Eleventh Executive Committee meeting.

Sincerely,

A handwritten signature in dark ink, appearing to read "Paul S. Horwitz".

Paul S. Horwitz
International Advisor
Stratospheric Protection Division

Summary of New Spending

<u>Country</u>	<u>Project Description</u>	<u>Amount</u>	<u>Page</u>
Ecuador	Reduction of CFC-11 in appliance insulation foam	50,000	1
Ecuador	Assistance in implementation of country program	11,000	3
China	Halon 1211 recovery/recharge training workshops	271,000	5
China	Halon management resource manual	32,000	9
China	FESCAST Conference	96,000	30
Malaysia	Solvents conference	24,000	23
Mexico	Technical support to complete projects using the World Bank \$4.0 million line of grant	136,000	14
Mexico	Chillers	259,000	17
Mexico	Solvents	138,000	20
	Total	<u>1,017,000</u>	

Ongoing Project Status Report

Article 5 Country: Ecuador

Project Title: Reduction of CFC-11 in appliance insulation foam

Incremental Cost: \$70,000 (of this amount, \$20,000 is the remainder of the \$41,000 approved in 1992 and \$50,000 is new spending)

Timeframe: October 1992 - September 1993

Project Description:

Sector: Foams

Technology: Reduction of CFC-11 in polyurethane insulation for household refrigerators through use of water/carbon dioxide as a blowing agent

Specific Activities:

Assisted in completing World Bank project proposal, including:

- gathering and analyzing final data from manufacturers and responding to OORG reviewer comments.
- assisting World Bank with completion of economic analysis in the foam project proposal documents.

Assisted with completion of Executive Committee approved foams project, including:

- preparing a detailed evaluation of reduced and CFC-free technologies. Evaluation has been provided to UNEP for use in its clearinghouse.
- providing information from suppliers of injection machines and foam systems to the Ecuadorean environmental ministry (MICIP) and to refrigerator manufacturers to inform the procurement process.
- preparing information, suggested standards and regulations for protection of health, worker safety, and environment associated with use of polyurethane foam systems in refrigerator factories.
- planning and conducting meetings with three

refrigerator manufacturers in Ecuador (Durex, Ecasa, and Indurama), in cooperation with Ecuador's Ministry of Industry, to finalize technical specifications regarding equipment investments required to convert to reduced CFC-11.

- reviewing proposed grant agreements and outlining process for completing the investment project including sequence of specific activities by beneficiaries, MICIP, Central Bank, UNDP and World Bank.
- holding meetings with MICIP, Central Bank, and World Bank to discuss proposed grant agreements and process for funding projects in Ecuador through the Multilateral Fund.
- providing technical assistance to MICIP and refrigerator manufacturers to help complete the project to achieve ODS reductions as soon as possible.

Output:

The project will reduce consumption of CFC-11 by 50 percent until the technologies are available for complete elimination of CFC-11.

One manufacturer has successfully converted to low-CFC foam using high-pressure equipment in February 1993, reducing CFC-11 consumption by four tons annually. When the foam conversion project is complete at all three manufacturers by the middle of next year, it will eliminate 25 metric tons annually of CFC-11 being used in the production of polyurethane foam insulation.

Future Activities:

No further bilateral assistance is contemplated, and this is the final report on this activity.

New Project Status Report

Article 5 Country: Ecuador

Project Title: Assistance in implementation of country program

Incremental Cost: \$11,000

Timeframe: October 1992 - September 1993

Project Description:

Specific Activities:

Assisted with completion of Executive Committee-approved aerosol projects, including planning and organizing meeting with 14 aerosol firms and Rety de Colombia, Colombian supplier of aerosol-grade hydrocarbons, to discuss strategy to convert Ecuador's aerosol industry.

Provided planning assistance to OPU, including:

- preparing selected annotated bibliography, in Spanish, of essential documents for use by a newly-established ozone protection unit. Bibliography has been forwarded to UNEP for use in its clearinghouse.
- compiled data to compare unconstrained consumption forecasts to phaseout requirements in Ecuador for four groups of controlled substances.
- identified and furnished names of other Latin American individuals working on ozone layer protection.
- recommended initial training for ozone protection staff, and planned training activities with UNDP.
- assisted in planning a UNDP-sponsored workshop, including identifying and furnishing videos, developing a proposed agenda, and recommending speakers

Output:

The activities will strengthen the Government of Ecuador's ability to implement a program to eliminate the use of ozone-depleting substances in the country, including completion of the aerosols investment project.

Material produced will be of benefit to other Spanish-speaking ozone protection units.

Future Activities:

Assist the OPU in updating usage data in the country program.

Assist the OPU in refining a detailed multi-year phaseout strategy and help develop a plan of activities for the OPU to implement the strategy.

Assist in developing a data collection and reporting system for ODS imports and consumption, based on the system developed by Mexico.

New Project Status Report

Article 5 country: China

Project Title: Halon 1211 recovery/recharge training workshops

Incremental Cost: \$321,000, of which \$50,000 was reported in 1992 as part of the regional halon 1211 training workshops project. \$271,000 is new spending.

Timeframe: October 1992 to September 1993

Project Description:

Sector: Halons

Technology: Training on improved extinguisher maintenance and servicing procedures, halon recovery/recharge machine operation, and other conservation measures to reduce unnecessary emissions.

Specific Activities:

Planned, prepared materials, organized and conducted three halon 1211 recovery/recharge training workshops in cooperation with China's Ministry of Public Security, the United Nations Development Programme Global Halon Project and the U.S. Navy. The specific objectives of the training workshops are to improve maintenance and servicing of fire extinguishers to prevent emissions, to inform Chinese fire officials on issues related to ozone depletion, to demonstrate and train participants to operate the recovery/recharge machines to reduce emissions and conserve existing halon, and to deploy machines and begin their operation in China.

Developed and translated into Chinese the recovery/recharge equipment manual, participants' study materials, participants' training notebooks, and graphic materials.

One workshop was held in Beijing in April 1993 and attended by 42 regional and local fire protection administrators, fire fighters, and manufacturing and extinguisher maintenance technicians.

In September 1993, two additional workshops for 86

participants were held in Hangzhou and Guangzhou. These areas include a substantial concentration of halon production and use. In Zhejiang Province (where Hangzhou is located), there are 10 factories producing 4,000 tons annually of halon 1211, 21 factories producing 700,000 extinguishers, and 28 fire extinguisher service centers.

The Guangzhou workshop also begins a comprehensive assessment of halon use and a survey of halon phase-out activities in Guangdong Province. This assessment, which is being done with the UNDP Global Halon Project, is supported by MPS, the Guangdong Province fire fighting bureau, and local and provincial fire equipment factories. The assessment will collect data to develop an accurate profile of current halon use in the area as a basis for future assistance to China. The assessment also will develop an understanding of the status of each halon phaseout activity underway in the province (such as investment projects and fire code revision) and identify activities where bilateral assistance might be useful to speed reduction of halon emissions.

In conjunction with the workshops, delivered 23 halon 1211 recovery/recharge units with accompanying compressors, fittings, hose kits, and equipment use log to China. 20 of the units and accompanying compressors were procured by UNDP under the Global Halon Project with technical assistance and coordination from US EPA. The machines are now operating in halon factories, extinguisher factories, and extinguisher maintenance facilities in the Beijing area and in Zhejiang Province and Guangdong Province. Detailed information is being collected on the operation of the machines and actual ODS reduction amounts will be reported in the next update.

Output:

The workshops trained individuals to manage and operate the 23 recovery/recharge machines now operating in China. The recovery/recharge machines will reduce halon-1211 emissions by an estimated 41 ODP-weighted tons annually. Detailed operating data is being recorded which will be used to quantify actual emissions reductions and support planning for continued effective reduction of halon use in China.

The workshops also disseminated urgent information on ozone-layer destruction and focused attention on halon's impact on the ozone layer. China has

demonstrated active interest in promoting reduction of halon emissions, including commitments to convert halon production lines; however the funding process for these projects is not complete. The workshops build on this interest. By operating the machines, China is taking immediate, practical steps to reduce halon emissions.

With full implementation of halon 1211 recycling in China, emissions will be reduced by an estimated 600 metric tons annually.

The Guangdong Province assessment will inform planning and implementation of a program of activities to further assist in reducing halon emissions in China.

Lessons learned:

ODS reductions can be achieved most efficiently and effectively by meeting project partners and gathering sector information as the first step in planning the project. Such a contact establishes relationships that are critical to a successful activity, enables planning and logistics to be completed with less time and resources, and allows the workshop activity to be better focused to achieve measurable ODS emission reductions.

Future workshops should be preceded by an assessment of halon manufacturing, handling, and fire extinguisher maintenance practices in the workshop area. Using the assessment, a draft plan should be developed to reduce halon emissions including, as necessary, deployment of recovery/recharge machines for the workshop region. The principal goal of future workshops will be to reduce halon use, and as a component, establish operational networks of recovery/recharge equipment.

Future Activities:

Halon constitutes 28% of China's consumption of ODS and is a key sector for achievement of ODS reductions. EPA will work with China under the auspices of the UNDP Global Halon Project to assist with workshops in two additional regions as part of China's program to phase out halon use. As determined to be necessary, recovery/recharge machines will be deployed to reduce halon emissions during the phase-out period. With each workshop, the EPA/UNDP role will decrease, as China builds capacity to conduct the training.

The EPA has discussed with China the possibility of providing technical assistance to the Ministry of

Public Security to complete the Executive Committee-approved halon investment projects in China.

The Chinese Ministry of Public Security and the EPA are working to identify other opportunities for bilateral cooperation to phase out halon use in China.

New Project Status Report

Article 5 country: China

Project Title: Halon management resource manual

Incremental Cost: \$32,000

Timeframe: October 1992 to September 1993

Project Description:

Sector: Halons

Technology: Research, and development of a resource manual to assist in the organization and planning of developing country projects to reduce unnecessary halon emissions.

Specific Activities:

As a basis for bilateral halon technical assistance in China, researched global halon management practices and resources, technical information, and halon use in China; and prepared a halon management resource manual. The manual includes general information about halon use, halon alternatives, and global halon emission reduction activities. The manual also includes an analytic framework for gathering and organizing country-specific information, and a strategy for planning a comprehensive program of emission reduction activities.

Developed the manual to be available to a wide audience of experts and project officers managing international technology transfer work and training for ozone layer protection, including the implementing agencies.

Output:

The manual and related research have served as the basis for EPA's halon-related bilateral assistance in China, Ecuador, Panama, Uruguay, and Venezuela.

When completed in December 1993, the manual will be furnished to the implementing agencies. It will be a useful reference in country-specific evaluation and planning of cost-effective, timely halon management projects that achieve reduction of emissions and promote conservation measures for existing halon.

Ongoing Project Status Report

Article 5 countries: Ecuador, Panama, Uruguay, and Venezuela

Project Title: Regional halon 1211 training workshops followup

Incremental Cost: \$77,000 (of the \$80,000 approved in 1992, \$3,000 remains unspent)

Timeframe: October 1992 to September 1993

Project Description:

Sector: Halons

Technology: Planning and implementation of halon management programs to reduce halon emissions.

Specific Activities:

Halon-related assistance in Latin America, as in China, is being conducted with support and cooperation from the UNDP Global Halon Project.

Developed a strategy to accurately assess country-specific use of halon and to deploy halon recovery/recharge machines where useful to achieve measurable emissions reduction. The strategy includes preparation of a country use assessment and development of a phaseout program plan. This project envisions deployment of recovery/recharge machines if useful to achieve substantial emissions reductions in each country. To date, agreements to plan a phaseout program have been obtained from Ecuador, Panama, Venezuela and Uruguay.

Initial missions to begin halon phase-out activities have been completed in Ecuador, Panama, and Uruguay. At the request of the Panamanian government, the project is providing technical assistance to speed the replacement of halon fire extinguishers with alternative fire extinguishing agents. Data collection for the assessment is complete and a recovery/recharge machine which was provided with assistance from the UNDP Global Halon Project is operating in Venezuela. The Venezuela assessment will be used as the basis for planning and implementing comprehensive halon management activities in Venezuela. A second mission to Ecuador provided detailed technical assistance to

the government's ozone protection unit and Ecuadorean fire protection experts.

Developed and translated into Spanish the operations manual for the halon recovery/recharge machines for use in Latin American countries.

Note: The China halon 1211 recovery/recharge training workshop project is part of this general ongoing activity. However, that project is being reported separately because of its size.

Output:

Accurate assessment of country-specific use, development of a country-specific plan to reduce halon emissions, and deployment of recovery/recharge machines, if necessary, for each participating country. Operation of recovery/recharge machines and logging of machine use data will achieve measured ODS emission reductions and inform planning and implementation of rational, effective measures to achieve further reduction of halon use in the participating countries.

Future activities:

Conduct assessments, develop phaseout plans, and deploy machines and monitor use to reduce halon emissions.

Ongoing Project Status Report

Project Title: Regional halon-1211 training workshops

Incremental Cost: Of \$429,000 approved in 1992, \$174,000 was spent and reported on 1992 on the Beaufort, South Carolina workshop. \$50,000 was spent in 1993 and \$205,000 remains unspent.

Project Description:

Sector: Halons

Specific Activities: Activities for the current year are reported in the status report for the China halon 1211 workshops.

Future Activities:

The remaining unspent funds will be used to support the Global Halon Project including provision of recovery/recharge machines.

Ongoing Project Status Report

Article 5 country: Venezuela

Project Title: Mobile air conditioner (MAC) recycling

Incremental Cost: \$69,000 of the \$115,000 approved in 1992
(\$46,000 remains unspent)

Timeframe: October 1992 to September 1993

Project Description:

Sector: Refrigerants

Technology: Recycling refrigerants during servicing of MACs

Specific Activities:

Researched MACs emissions reduction regulations in other countries to identify strategies that might be useful in Venezuela. Developed a technical outline to help gather information about the MACs servicing industry and MACs maintenance practices in Venezuela. Researched potential Venezuelan contractors and hired a contractor who has completed a study based on the technical outline. Gathered information on MACs recovery and recycling equipment, and MACs recycling practices and programs.

Output:

The study will inform the development and implementation of a program to reduce emissions from the MACs sector in Venezuela.

Future activities:

FONDOIN (the Venezuela ozone-protection unit) and US EPA, with support from UNDP's Global MACs Project, will develop and implement a demonstration program to reduce MACs emissions in Venezuela, including training, deployment of recycling machines and other activities determined to be useful.

New Project Status Report

Article 5 Country: Mexico

Project Title: Technical support to complete projects using the World Bank \$4.0 million line of grant

Incremental Cost: \$136,000

Timeframe: October, 1992 - September, 1993

Project Description:

Sectors: All

Technology: Adopting alternative technologies to convert Mexican enterprises from ODS-using products/processes to ozone-safe products/processes.

Specific Activities:

Working with the World Bank, Nacional Financiera (NAFIN), and the Mexican National Institute of Ecology's Ozone Protection Unit to support completion of investment subprojects using the World Bank \$4.0 million line of grant. Help enterprises from all sectors apply for funding for conversion projects. EPA's investment project role for this project has been to:

- review documentation and discuss with participants the project completion process, prepare a schematic representation of the process to identify interdependencies and key activities
- develop a workplan for each project that describes and schedules each activity required to complete the subproject.
- provide technical assistance to move each project forward as rapidly as possible while monitoring progress, periodically revising workplans and helping solve problems as they arise
- assist with project design to assure technical soundness, rapid approval, and quick bidding

- develop an understanding of the Mexican beneficiary's needs and prepare technical documents and specifications that assure an acceptable project proposal and a successful project
- arrange expert review and comment on technical specifications

Output:

A funding application process for \$4.0 million line of grant has been developed and understood by all parties. This process is enabling sub-projects under the line of grant to move forward. Sub-project applications are prepared by INE or US EPA and submitted by INE to NAFIN, which reviews and submits them to the World Bank for approval and transfer of funds to NAFIN. After funds are received, the enterprise procures approved goods and services under NAFIN and INE supervision.

Two project proposals with technical annexes and bid packages have been submitted to INE for submission to NAFIN and the World Bank. These projects will eliminate 665 ODP-weighted tons in foam-blowing applications. Two additional project applications, which will achieve approximately 200 tons of annual ODS reduction, are 50% completed and will be submitted to INE in November 1993.

The understanding of investment projects we have developed in Mexico is being used in our related work in Ecuador and China.

Lessons learned:

After the Executive Committee approves an investment project, many tasks must be completed before ODS emission reductions are achieved. Actual project completion necessitates meeting the needs of the project beneficiary and the legal and procedural requirements of the national government, the implementing agency and the financial intermediary, if one is used. The Ozone Protection Unit and the financial intermediary may be unaccustomed to making environmental grants and require time to develop and obtain approval of new procedures.

The fund application, technical specifications, bid package, technical annex and related contracts, as well as the procedures to prepare and approve these

documents, are complex. Before the first sub-project can be completed, procedures must be developed, negotiated, and approved by all parties to the process. This work can be difficult and time-consuming, and requires leadership.

For these reasons, it is often useful for someone with suitable experience, resources, and technical expertise to supply the sustained effort and attention necessary to resolve problems and push initial projects forward to completion.

The Ozone Protection Unit, the project beneficiary, and the financial intermediary (NAFIN, in Mexico) may often find it difficult to assume this role. Ozone Protection Units (OPUs) frequently have not established working relationships with the financial intermediary and may not be familiar with the procedures of either the implementing agency or the financial intermediary. Furthermore, in the case of Mexico, the OPU is responsible for managing all aspects of Mexico's phaseout program. This includes research, communications with the public, coordination with other governmental units, the private sector, and the implementing agencies. The demands on the three staff of the OPU make it difficult for them to find the time to manage investment projects to completion and achieve ODS reduction. In addition, the project beneficiary may be unsure how to move the project ahead and lacks familiarity with the requirements of the other participants in the process. The Ozone Protection Unit, the financial intermediary, and the project beneficiary all may lack technical expertise to complete bidding documents and other essential materials. Each organization has many other competing demands on its limited time and resources, as well.

An advocate for the project can supply the necessary sustained focus, resources, and technical expertise. The advocate can also through its work expedite the project to achieve ODS emissions reduction as soon as possible and build capacity in the Ozone Protection Unit and financial intermediary to complete future projects.

Future Activities:

Secure additional investment projects for the World Bank \$4.0 million line of grant.

Ongoing Project Status Report

Article 5 Country: Mexico

Project Title: Chillers

Incremental Cost: \$259,000

Timeframe: October, 1992 - September, 1993

Project Description:

Sector: Refrigerants

Technology: Training related to refrigerant containment, conservation, refrigerant management planning and equipment selection, activities to increase purchase of ozone-safe chillers, refrigerant recovery/recycle equipment.

Specific Activities:

Developed instructional materials in Spanish, arranged demonstrations and hands-on training on recovery/recycle equipment.

Developed information on the building chiller market in Mexico for possible future projects to finance the incremental costs of purchases of new ozone-safe chillers in new buildings, or to replace chillers which have reached the end of their useful life.

Organized and conducted two workshops for over 80 technicians from Mexican chiller servicing companies and IMSS, the Mexican medical ministry which operates 65% of the building chillers in Mexico. Provided instructor, instructional materials, and participants' materials for four additional workshops, with 420 participants, organized and conducted by INE, Mexico's environmental agency.

Identified and contacted qualified enterprises and prepared projects to provide refrigerant recovery equipment to four chiller servicing companies. The equipment will be purchased using funds from the \$4.0 million line of grant. Two of these applications have been submitted by INE through NAFIN, the financial intermediary, to the World Bank.

Output:

Four completed funding applications have been submitted to INE. Of these, two have been approved by NAFIN and submitted to the World Bank. When the four projects are funded and completed, they will achieve 2 ODP-weighted tons of annual emissions reduction. Additional companies have been identified as beneficiaries of projects to be prepared in the future. IMSS has also submitted an application to purchase recovery/recycle machines for its facilities throughout Mexico. When completed, the IMSS project is expected to reduce ODS refrigerant emissions by 15 ODP-weighted tons annually.

The materials developed for these workshops have been sent to UNEP for use in other countries. Emissions of CFCs from chillers in Mexico due to improper servicing, venting, and leaks are estimated to be 22 tons annually. By improving chiller maintenance and servicing, EPA estimates that these workshops can reduce at least half of those emissions. Future emission reductions will be achieved through completion, with EPA assistance, of investment projects to provide recovery and recycle machines and other refrigerant conservation equipment.

EPA and the Mexican OPU are also using these workshops to establish a database of chiller technicians throughout Mexico. The database will permit quality control of technicians' work. The Mexican OPU intends to encourage the use of these technicians through a promotional effort.

Developed capacity within the Mexican National Institute of Ecology's (INE) Ozone Protection Unit to organize and execute workshops.

Lessons Learned:

Training and other phase-out activities are most effective when based on a detailed knowledge of the country and sector, and on a comprehensive program (including investment projects) to reduce ODS use in that country. In this way workshops can be focused on specific actions to be taken and training materials can be tailored to the unique circumstances of the country such as types of commonly used equipment, servicing practices and skill levels of technicians. Demonstrations by manufacturers at workshops bring credible field experience to the classroom. Using a

resident chiller expert as workshop instructor also increases credibility and establishes good relations with students.

Future Activities:

One more workshop with IMSS (run by Mexico's OPU) and independent chiller servicing companies are planned for 1993 using the program and materials developed for the first workshops.

Ongoing Project Status Report

Article 5 Country: Mexico

Project Title: Solvents

Incremental Cost: \$288,000. Of this amount, \$150,000 was included in the \$360,000 approved in 1992, and \$138,000 is new spending.

Timeframe: October 1992 - September, 1993

Project Description:

Sector: Solvents

Technology: Technical assistance to convert ODS solvent-using companies to alternative technologies.

Specific Activities:

Prepared sectoral analysis and developed and implemented a strategy to identify solvent-using companies in Mexico. Spoke at Mexican trade association meetings to explain importance of conversion to ozone-safe technologies. Met with solvent distributors, manufacturers, importers, and others. Canvassed Mexican firms to solicit applications to the World Bank \$4.0 million line of grant.

Contacted over 50 firms, of which 24 were determined to be Mexican-owned ODS solvent users. Observed the manufacturing processes of 12 of the solvent-using firms and prepared technical analyses to identify appropriate alternative technologies.

After alternatives were researched and ten projects were developed, it was determined that seven of the projects had incremental costs of zero.

Prepared investment projects for two of the eligible beneficiaries under the World Bank \$4.0 million line of grant. Drafted funding applications under the line of grant including technical specifications.

Supported workshops being conducted by ICOLP/Northern Telecom and the World Environment Center to promote Mexican industry conversion to ozone-safe solvents.

Output:

Technical assistance to ten Mexican-owned users of ODS solvents. Two completed applications to the World Bank \$4.0 million line of grant (a third application is partially complete and will be submitted later this year and the remaining seven projects have zero incremental cost and will be financed by the enterprises). When the ten projects are complete in early 1994, they will achieve annual reductions of 272 ODP-weighted tons of CFC-113 and TCA.

Database of ODS-solvent-using enterprises, including candidates for possible future technical assistance. Support for the World Environment Center and the Industry Cooperative for Ozone Layer Protection (ICOLP) workshop in Monterrey.

Lessons Learned:

Locating enterprises eligible for assistance is best accomplished by establishing relationships and trust with key organizations and personnel in the solvents sector such as solvents distributors and manufacturers. Success requires a carefully designed program of sustained, coordinated activities. At high-volume solvent users, the savings related to conversion typically exceed the investment cost of the project, so incremental cost is zero or negative. Consequently, only relatively small projects can receive financing from the Multilateral Fund and cost per kilogram of reduction tends to be high.

Substantial project development is required before incremental costs can be estimated. At this point, incremental costs are often determined to be zero, or negative, because of savings related to reduced ODS solvent use. Small amounts of additional bilateral assistance can help establish the economic justification for the project to facilitate decision-making by executives and suppliers of capital.

In the absence of assistance, it is likely that despite the presence of potential benefits most of these enterprises would not convert until CFC prices become very high. Many lack technical expertise and have little capital available for equipment purchases. However, if a compelling economic case is developed, an enterprise is likely to obtain funds and convert because economic self-interest has been demonstrated and environmental benefits will accrue.

In addition to metal-cleaning applications, substantial quantities of ODS solvents are used by textile manufacturers, adhesive manufacturers, and adhesive users. Future technical assistance efforts will be targeted to include these sub-sectors. There are very few Mexican-owned solvent users in the electronics industry.

This project has attracted the attention of certain vendors of alternative chemicals, who are consequently marketing to companies identified by the project. This should speed conversion from ODS solvents.

Future Activities:

- Continue to identify and provide technical assistance to solvent users. In exploring project possibilities with potential beneficiaries, it is inevitable that some funds will be expended to determine if a project has eligible incremental costs.
- Prepare funding applications under the \$4.0 million line of grant. Monitor funding applications being processed under the line of grant and provide technical assistance to solve any problems that threaten to delay completion of projects. Oversee installation of equipment and training, and follow up to confirm that successful ODS emissions reductions have been achieved.

New Project Status Report

Article 9 Country: Malaysia
Project Title: Solvents conference
Incremental Cost: EPA - \$24,000
Timeframe: December 1992 - April 31, 1993

Project Description:

On February 24, 1993 a cooperative partnership to protect the stratospheric ozone layer was launched in Kuala Lumpur, Malaysia. The Department of Environment (DOE) of Malaysia, Motorola Inc., the Ministry of International Trade and Industry (MITI) of Japan, the U.S. Environmental Protection Agency (EPA), the Japan Electrical Manufacturers' Association (JEMA), the Japan Industrial Conference for Ozone Layer Protection (JICOP) and the World Bank/Industry Cooperative for Ozone Layer Protection (ICOLP) announced that they will work together to accelerate the phaseout of uses of ozone depleting solvents in the Malaysian electronics and metal cleaning industries. The partners will provide eligible firms with technical information on substitutes and alternatives to CFC-113 and methyl chloroform, plan training programs at companies operating in Malaysia that have implemented ozone-safe technologies, and assist eligible companies in writing funding applications.

Specific Activities:

The first project of this partnership was the Kuala Lumpur Conference on the Elimination of Ozone Depleting Solvents in Malaysia, April 26 - 28, 1993. Solvents experts from Malaysia, the United Kingdom, Sweden, Singapore, Japan, and the United States led workshop sessions on the Science of the Ozone Layer, the Multilateral Fund, Aqueous and Semi-Aqueous Cleaning, Ozone-Safe Metal and Precision Cleaning, and No-Clean Technologies. Representatives of companies that have already completed their phaseouts presented material on how they chose alternative cleaning methods, and the costs and benefits they incurred in the conversion.

On the final day of the conference, Malaysia DOE, Malaysia MITI, U.S. EPA, and Japan MITI led discussions on how Malaysian companies can apply for funding to finance their phaseouts of ozone-depleting solvents.

Output:

150 participants took part in the conference. This included 11 domestic experts, and 25 suppliers. These experts and suppliers will prove to be assets in helping eligible companies phase out. Participants were also asked to complete a survey about their companies ODS solvent consumption and activities. This will help to focus followup efforts.

As a result of this conference, work has already been initiated with Teledata Sdn, a Malaysian telecommunications company, which is now completing their solvents survey. Additionally, Exxon (Malaysia) agreed to identify additional solvent-using small and medium sized Malaysian companies that can replace methyl chloroform and CFC solvents using financing from the Fund. Exxon will forward the names of potential companies to Motorola/ICOLP, the U.S. EPA and the Malaysian Government.

Lessons Learned:

A. Methods to Identify Qualifying Companies

Companies and organizations in Malaysia who supply CFC-113 and methyl chloroform or purchase components and assemblies manufactured with these solvents have a comparative advantage in identifying small and medium-sized companies eligible for financing under the Multilateral Fund. In the future, it will be most effective to work with the chemical suppliers and invite their solvents customers to attend meetings about accelerating their phaseouts and to ask our multinational partners to identify their suppliers who are eligible to seek technical assistance and financing.

B. Usefulness of the Project Elements

The conference participants found the technical sessions on specific replacements for CFC-113 and methyl chloroform (eg. aqueous, semi-aqueous, no-clean) very informative. The sessions were small enough that discussions on problems in choosing and implementing ozone safe technologies were productive.

The presentations on accessing the Fund were important in explaining this complicated process that is perhaps intimidating to small and medium sized companies.

On day two of the conference, the participants and speakers visited one of three factories: Matsushita, Epson, or Motorola. The site-visits were an excellent element of the

conference because they showed operating ozone-safe technology and gave the participants the corporate and management perspective on planning the phaseout.

Project leadership by North American and Japanese companies, and large joint venture corporations who have pledged to phaseout their uses in Malaysia no later than 1997 without requesting local share ownership percentage. Funds from the Multilateral Fund, have important benefits. The early elimination serves the purpose of locally demonstrating suitable technology, building the local supply and service infrastructure network, developing local experts for technical cooperation, and otherwise educating solvent users and speeding the phaseout.

Future Activities:

Will focus on finalizing the conference report, preparing a funding application package for Teledata, and discussing phaseout possibilities with other conference participants. Additionally, the Conference recommended the following activities to expedite solvent phaseout work in the country:

1. It is useful to better advertise and educate Malaysian electronics and metal cleaning companies by producing outreach materials. Possible educational material discussed include a video in Chinese or Malay, brochures, and other important background information. Representatives of chemical suppliers including Dow, DuPont, and ICI offered to help distribute these outreach materials to their customers.
2. Small and medium sized companies need clearly written application materials with the necessary information, to apply to the Multilateral Fund using the Malaysian process.
3. It is important that the ozone layer protection unit established by DOE and MITI has the best technical information available to distribute to Malaysian industry.
4. A technical network is needed that can be managed by Motorola in Kuala Lumpur to hold periodic training seminars for eligible Malaysian companies planning their solvent phaseouts. These seminars may include factory site-visits, technical briefings, consultations, or follow-up meetings. Motorola could also house a technical library and will be the technical liaison for local solvents phaseout projects.
5. Motorola and the ozone layer protection unit should also have appropriate presentation materials on the background of the Montreal Protocol, the London and Copenhagen Amendments, the UNEP Technical Assessments, and the

Multilateral Fund so that they can make clear and useful presentations to SMIs.

EPA will be working with World Bank/ICOLP and the Malaysian government as requested to support the accomplishment of these tasks.

Ongoing Project Status Report

Article 5 Country: Thailand

Project Title: Followup activities from the Thailand workshop

Incremental Cost: \$108,000 expended to date from the \$203,000 approved in June of 1992

Timeframe: October 1992 - March 1993

Project Description:

Initial followup work has focused on Thai Airways, which has agreed to eliminate the use of methyl chloroform solvents at their Bangkok aircraft maintenance facility. The technology appropriate to the Thai facility will also be suitable for all other commercial aircraft maintenance facilities in developing countries since the same aircraft are utilized worldwide.

In order to eliminate this solvent use, three steps are being carried out:

1. Confirm the acceptability of alternatives and substitutes to the aircraft and aircraft component manufacturers and international flight safety organizations, and prepare and aircraft maintenance manual;
2. Engineer specific approved solutions for the Thai Airways facility, and
3. Competitively bid, award, finance and implement the new technology at Thai Airways.

World Bank/ICOLP and U.S. EPA have undertaken task 1. SAS and the Swedish EPA are undertaking task 2 which, together with task 3 will be funded through the approved World Bank project. Task 3 will be undertaken as soon as the SAS engineering study is completed.

Outputs (From Task 1: AIRCRAFT MAINTENANCE MANUAL)

- A committee of world renowned experts from major aerospace and technology companies and government agencies was assembled to draft the technical manual on eliminating the use of ozone-depleting substances in aircraft maintenance procedures. The following

countries are represented by experts on the committee: Canada, Chile, Denmark, Germany, Japan, Sweden, Thailand, United Kingdom, United States.

- Three drafts of the technical manual have been circulated to project committee members.
- Peer Review Draft is currently being assembled. Projected completion of this draft is July, 1993.
- The final product will prove vital to developing country airlines and airlines in developed countries.

In-Kind Contributions

- Many aerospace companies and government facilities have hosted project committee members for valuable site visits and have provided extensive technical information.
- Many aerospace and airline companies and government agencies have sent representatives to serve on the project committee at no cost for either time or expenses to the project. Each participant has contributed 10-35 days of effort plus direct travel expenses of \$5000 to \$15,000 for a total contribution worth in excess of \$600,000:

Near Term Activities

- Complete and distribute the Peer Review Draft.
- Evaluate comments received on Peer Review Draft and prepare the final version of the manual.
- Complete final review and publish the manual.
- Distribute the completed manual to airlines and manufacturing/maintenance facilities worldwide.
- Attend industry conferences to disseminate information contained in the manual.
- Help to develop applications to the Multilateral Fund to facilitate the phaseout from other developing country airlines, and provide follow-up consultation on related phaseout activities.

Lessons Learned

- Competing airlines are willing to share information to speed protection of the ozone layer. Exceptional benefits are being realized by bringing these users of ozone-depleting substances together to solve problems.

Ongoing Project Status Report

Article 5 Countries: China (additional participation from India, Malaysia, Mexico, Philippines)

Project Title: The Federation of Engineering Societies of China Association for Science and Technology (FESCAST) Conference

Incremental Cost: \$96,000

Timeframe: October 1992 - April 1993

Project Description/Outputs:

Brought key players together for discussions on technical and project specific funding issues in all sectors.

Held sessions in Aerosol Products, Air Conditioning, Chemicals, Foams, Halon, Refrigeration, and Solvents

Activities included site visits/consulting engineering which will result in the development of Fund projects.

Sponsoring and cooperating organizations:

The Federation of Engineering Societies of China
Association for Science and Technology
Chinese Association of Light Industry
Chemical Industry and Engineering Society of China
China Association of Refrigeration
Chinese Society of Environmental Science
Chinese Association of Fire Protection
China Association of Refrigeration and Air Conditioning
Beijing International Convention Center

In cooperation with:

The U.S. Environmental Protection Agency
National Environmental Protection Agency of China
United Nations Development Programme
United Nations Environment Programme
State Science and Technology Commission of China
Economics and Trade Office of the State Council of China
China's Ministry of Machinery and Electronics Industry
The Ministry of Light Industry of China
The Ministry of Chemical Industry of China
The Ministry of Commerce of China
The Ministry of Public Security of China
The Industry Cooperative for Ozone Layer Protection

The Alliance for Responsible CFC Policy
International Appliance Technical Conference
International Society of Refrigeration
Hong Kong Institution of Engineers
The World Bank

Participants:

450 participants from more than sixteen countries including: Australia, Austria, China, Canada, Denmark, France, Hong Kong, India, Italy, Japan, Korea, Malaysia, Mexico, Philippines, Singapore, Sweden, United Kingdom, United States.

23 exhibitors from China, Germany, Netherlands, Hong Kong, United States, World Bank, and United Nations Environment Programme.

Over 60 presentations by Chinese experts; over 65 presentations by foreign experts.

Additional Funding:

China organizers made substantial, in kind human and financial contribution to conference organization, facilities, and other expenses. Most speakers appeared without compensation for time. Very few speakers had sponsored travel--those sponsored with bilateral funds reimbursed for economy air fare only. UNDP, UNEP and the World Bank also supported the effort.

Lessons Learned:

- A. Chinese experts and companies are fully informed and at the cutting edge of technical issues in the areas of insulating foam and refrigerator technology. Particular emphasis should be placed on building national capability on existing halons alternatives and on solvent alternatives and substitutes.
- B. Company-to-company technical assistance in informal working sessions was greatly appreciated by Chinese participants.
- C. Conferences may be more successful with broad-based sponsorship and if there is a local contribution of in-kind organizing effort and financing. A substantial, and in the end worthwhile, portion of the EPA conference planning costs resulted from the interactive planning of how to best serve the needs of the Chinese conference participants.
- D. Plenary sessions with sector-specific break-out sessions may be more successful than one-track/one-room formats. Educational efforts are succeeding and as a result it is getting

less important to review background information on the Protocol and the Fund in China. Short clearly written explanations translated into national languages are most appreciated.

Appendix

Institutional Strengthening--Mexican Ozone Protection Unit Progress Report

In June of 1991, the Executive Committee approved \$285,000 in US bilateral support to fund the Institutional Strengthening request of Mexico. Those funds are part of \$350,000 to finance the activities of the OPU for three years. As of March 31, 1993, the OPU had expended approximately \$186,000.

Specific activities of the OPU have included the following:

- Hired three full time staff
- Established an adequate office communications infrastructure to allow for effective communication with ODS users and with implementing agencies
- Supported 6 workshops: 2 solvents workshops and 4 chiller workshops
- Helped to negotiate World Bank grant agreements for the \$4 million line of grant and the \$180,000 line of grant previously approved by the Executive Committee. Negotiated agreements with the financial intermediary to execute approved projects. Supported development of project proposals to eliminate ODS in the foams and solvents sectors.
- Responded to several hundred inquiries by Mexican industries interested in phasing out of ODS
- Helped to write and implement Mexico's ODS reduction laws
- Developed a database of Mexican ODS users and emissions

Lessons EPA learned in developing institutional capacity at the Mexican OPU:

- New ozone protection unit personnel often need basic information related to ozone depletion, to technologies available to support phaseout activities, and to requirements of the multilateral fund
- The OPU needs special skills and substantial time and energy to coordinate the efforts of all those involved in reducing ODS emissions, including implementing agencies,

bilateral collaborators, other governmental units, industry, ICOLP, and others.

- Establishment of an adequate office communications infrastructure is critical to the accomplishment of the mission and is often difficult in a developing country
- The OPU faces many competing demands which are difficult to order. The three professional staff manage the ODS phaseout efforts of the entire country including research, communications with the public, tracking CFC imports and exports with customs, and Multilateral Fund investment projects.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

28 September 1993

Dr. Omar El-Arini
Chief Officer
Multilateral Fund for the Implementation
of the Montreal Protocol

Dear Dr. El-Arini,

Attached please find a report on the status of projects being undertaken by the United States as bilateral contributions to the Fund. The status report also includes a request for approval of new spending on projects and a related offset against our assessed contribution for this new spending. A table which outlines the new activities for which we are requesting that offset is attached to this transmittal letter. A detailed description of related activities can be found in the attached project documentation. In some cases, the new activities are extensions to projects which were approved by the Executive Committee at an earlier date. In such cases, the sum that we are now requesting approval of is underlined and clearly noted in the project status report.

In total, the United States is asking for an offset of \$1,017,000 for new project work undertaken since last October. All of the requests for approval involve additional resources which cover incremental costs; sums specified are actual amounts spent during the funding period noted. The funded cooperation strictly relates to compliance with the provisions of the Protocol. The total funding level requested for approval as an offset against our contribution for 1993 is well below the 20% threshold for bilateral activities which was established by the Parties. All of the Article 5 Parties that we are collaborating with in these new activities have given approval for us to count expenses that we have incurred in these projects as part of the U.S. contribution to the Fund.

We appreciate the opportunity to provide this written report on the status of our bilateral activities, and we look forward to review and approval of our new bilateral activities at the Eleventh Executive Committee meeting.

Sincerely,

A handwritten signature in dark ink, appearing to read "Paul S. Horwitz", is written over the typed name.

Paul S. Horwitz
International Advisor
Stratospheric Protection Division



Summary of New Spending

<u>Country</u>	<u>Project Description</u>	<u>Amount</u>	<u>Page</u>
Ecuador	Reduction of CFC-11 in appliance insulation foam	50,000	1
Ecuador	Assistance in implementation of country program	11,000	3
China	Halon 1211 recovery/recharge training workshops	271,000	5
China	Halon management resource manual	32,000	9
China	FESCAST Conference	96,000	30
Malaysia	Solvents conference	24,000	23
Mexico	Technical support to complete projects using the World Bank \$4.0 million line of grant	136,000	14
Mexico	Chillers	259,000	17
Mexico	Solvents	138,000	20
	Total	<u>1,017,000</u>	

Ongoing Project Status Report

Article 5 Country: Ecuador

Project Title: Reduction of CFC-11 in appliance insulation foam

Incremental Cost: \$70,000 (of this amount, \$20,000 is the remainder of the \$41,000 approved in 1992 and \$50,000 is new spending)

Timeframe: October 1992 - September 1993

Project Description:

Sector: Foams

Technology: Reduction of CFC-11 in polyurethane insulation for household refrigerators through use of water/carbon dioxide as a blowing agent

Specific Activities:

Assisted in completing World Bank project proposal, including:

- gathering and analyzing final data from manufacturers and responding to OORG reviewer comments.
- assisting World Bank with completion of economic analysis in the foam project proposal documents.

Assisted with completion of Executive Committee approved foams project, including:

- preparing a detailed evaluation of reduced and CFC-free technologies. Evaluation has been provided to UNEP for use in its clearinghouse.
- providing information from suppliers of injection machines and foam systems to the Ecuadorean environmental ministry (MICIP) and to refrigerator manufacturers to inform the procurement process.
- preparing information, suggested standards and regulations for protection of health, worker safety, and environment associated with use of polyurethane foam systems in refrigerator factories.
- planning and conducting meetings with three

refrigerator manufacturers in Ecuador (Durex, Ecasa, and Indurama), in cooperation with Ecuador's Ministry of Industry, to finalize technical specifications regarding equipment investments required to convert to reduced CFC-11.

- reviewing proposed grant agreements and outlining process for completing the investment project including sequence of specific activities by beneficiaries, MICIP, Central Bank, UNDP and World Bank.
- holding meetings with MICIP, Central Bank, and World Bank to discuss proposed grant agreements and process for funding projects in Ecuador through the Multilateral Fund.
- providing technical assistance to MICIP and refrigerator manufacturers to help complete the project to achieve ODS reductions as soon as possible.

Output:

The project will reduce consumption of CFC-11 by 50 percent until the technologies are available for complete elimination of CFC-11.

One manufacturer has successfully converted to low-CFC foam using high-pressure equipment in February 1993, reducing CFC-11 consumption by four tons annually. When the foam conversion project is complete at all three manufacturers by the middle of next year, it will eliminate 25 metric tons annually of CFC-11 being used in the production of polyurethane foam insulation.

Future Activities:

No further bilateral assistance is contemplated, and this is the final report on this activity.

New Project Status Report

Article 5 Country: Ecuador

Project Title: Assistance in implementation of country program

Incremental Cost: \$11,000

Timeframe: October 1992 - September 1993

Project Description:

Specific Activities:

Assisted with completion of Executive Committee-approved aerosol projects, including planning and organizing meeting with 14 aerosol firms and Rety de Colombia, Colombian supplier of aerosol-grade hydrocarbons, to discuss strategy to convert Ecuador's aerosol industry.

Provided planning assistance to OPU, including:

- preparing selected annotated bibliography, in Spanish, of essential documents for use by a newly-established ozone protection unit. Bibliography has been forwarded to UNEP for use in its clearinghouse.
- compiled data to compare unconstrained consumption forecasts to phaseout requirements in Ecuador for four groups of controlled substances.
- identified and furnished names of other Latin American individuals working on ozone layer protection.
- recommended initial training for ozone protection staff, and planned training activities with UNDP.
- assisted in planning a UNDP-sponsored workshop, including identifying and furnishing videos, developing a proposed agenda, and recommending speakers

Output:

The activities will strengthen the Government of Ecuador's ability to implement a program to eliminate the use of ozone-depleting substances in the country, including completion of the aerosols investment project.

Material produced will be of benefit to other Spanish-speaking ozone protection units.

Future Activities:

Assist the OPU in updating usage data in the country program.

Assist the OPU in refining a detailed multi-year phaseout strategy and help develop a plan of activities for the OPU to implement the strategy.

Assist in developing a data collection and reporting system for ODS imports and consumption, based on the system developed by Mexico.

New Project Status Report

Article 5 country: China

Project Title: Halon 1211 recovery/recharge training workshops

Incremental Cost: \$321,000, of which \$50,000 was reported in 1992 as part of the regional halon 1211 training workshops project. \$271,000 is new spending.

Timeframe: October 1992 to September 1993

Project Description:

Sector: Halons

Technology: Training on improved extinguisher maintenance and servicing procedures, halon recovery/recharge machine operation, and other conservation measures to reduce unnecessary emissions.

Specific Activities:

Planned, prepared materials, organized and conducted three halon 1211 recovery/recharge training workshops in cooperation with China's Ministry of Public Security, the United Nations Development Programme Global Halon Project and the U.S. Navy. The specific objectives of the training workshops are to improve maintenance and servicing of fire extinguishers to prevent emissions, to inform Chinese fire officials on issues related to ozone depletion, to demonstrate and train participants to operate the recovery/recharge machines to reduce emissions and conserve existing halon, and to deploy machines and begin their operation in China.

Developed and translated into Chinese the recovery/recharge equipment manual, participants' study materials, participants' training notebooks, and graphic materials.

One workshop was held in Beijing in April 1993 and attended by 42 regional and local fire protection administrators, fire fighters, and manufacturing and extinguisher maintenance technicians.

In September 1993, two additional workshops for 86

participants were held in Hangzhou and Guangzhou. These areas include a substantial concentration of halon production and use. In Zhejiang Province (where Hangzhou is located), there are 10 factories producing 4,000 tons annually of halon 1211, 21 factories producing 700,000 extinguishers, and 28 fire extinguisher service centers.

The Guangzhou workshop also begins a comprehensive assessment of halon use and a survey of halon phase-out activities in Guangdong Province. This assessment, which is being done with the UNDP Global Halon Project, is supported by MPS, the Guangdong Province fire fighting bureau, and local and provincial fire equipment factories. The assessment will collect data to develop an accurate profile of current halon use in the area as a basis for future assistance to China. The assessment also will develop an understanding of the status of each halon phaseout activity underway in the province (such as investment projects and fire code revision) and identify activities where bilateral assistance might be useful to speed reduction of halon emissions.

In conjunction with the workshops, delivered 23 halon 1211 recovery/recharge units with accompanying compressors, fittings, hose kits, and equipment use log to China. 20 of the units and accompanying compressors were procured by UNDP under the Global Halon Project with technical assistance and coordination from US EPA. The machines are now operating in halon factories, extinguisher factories, and extinguisher maintenance facilities in the Beijing area and in Zhejiang Province and Guangdong Province. Detailed information is being collected on the operation of the machines and actual ODS reduction amounts will be reported in the next update.

Output:

The workshops trained individuals to manage and operate the 23 recovery/recharge machines now operating in China. The recovery/recharge machines will reduce halon-1211 emissions by an estimated 41 ODP-weighted tons annually. Detailed operating data is being recorded which will be used to quantify actual emissions reductions and support planning for continued effective reduction of halon use in China.

The workshops also disseminated urgent information on ozone-layer destruction and focused attention on halon's impact on the ozone layer. China has

demonstrated active interest in promoting reduction of halon emissions, including commitments to convert halon production lines; however the funding process for these projects is not complete. The workshops build on this interest. By operating the machines, China is taking immediate, practical steps to reduce halon emissions.

With full implementation of halon 1211 recycling in China, emissions will be reduced by an estimated 600 metric tons annually.

The Guangdong Province assessment will inform planning and implementation of a program of activities to further assist in reducing halon emissions in China.

Lessons learned:

ODS reductions can be achieved most efficiently and effectively by meeting project partners and gathering sector information as the first step in planning the project. Such a contact establishes relationships that are critical to a successful activity, enables planning and logistics to be completed with less time and resources, and allows the workshop activity to be better focused to achieve measurable ODS emission reductions.

Future workshops should be preceded by an assessment of halon manufacturing, handling, and fire extinguisher maintenance practices in the workshop area. Using the assessment, a draft plan should be developed to reduce halon emissions including, as necessary, deployment of recovery/recharge machines for the workshop region. The principal goal of future workshops will be to reduce halon use, and as a component, establish operational networks of recovery/recharge equipment.

Future Activities:

Halon constitutes 28% of China's consumption of ODS and is a key sector for achievement of ODS reductions. EPA will work with China under the auspices of the UNDP Global Halon Project to assist with workshops in two additional regions as part of China's program to phase out halon use. As determined to be necessary, recovery/recharge machines will be deployed to reduce halon emissions during the phase-out period. With each workshop, the EPA/UNDP role will decrease, as China builds capacity to conduct the training.

The EPA has discussed with China the possibility of providing technical assistance to the Ministry of

Public Security to complete the Executive Committee-approved halon investment projects in China.

The Chinese Ministry of Public Security and the EPA are working to identify other opportunities for bilateral cooperation to phase out halon use in China.

New Project Status Report

Article 5 country: China

Project Title: Halon management resource manual

Incremental Cost: \$32,000

Timeframe: October 1992 to September 1993

Project Description:

Sector: Halons

Technology: Research, and development of a resource manual to assist in the organization and planning of developing country projects to reduce unnecessary halon emissions.

Specific Activities:

As a basis for bilateral halon technical assistance in China, researched global halon management practices and resources, technical information, and halon use in China; and prepared a halon management resource manual. The manual includes general information about halon use, halon alternatives, and global halon emission reduction activities. The manual also includes an analytic framework for gathering and organizing country-specific information, and a strategy for planning a comprehensive program of emission reduction activities.

Developed the manual to be available to a wide audience of experts and project officers managing international technology transfer work and training for ozone layer protection, including the implementing agencies.

Output:

The manual and related research have served as the basis for EPA's halon-related bilateral assistance in China, Ecuador, Panama, Uruguay, and Venezuela.

When completed in December 1993, the manual will be furnished to the implementing agencies. It will be a useful reference in country-specific evaluation and planning of cost-effective, timely halon management projects that achieve reduction of emissions and promote conservation measures for existing halon.

Ongoing Project Status Report

Article 5 countries: Ecuador, Panama, Uruguay, and Venezuela

Project Title: Regional halon 1211 training workshops followup

Incremental Cost: \$77,000 (of the \$80,000 approved in 1992, \$3,000 remains unspent)

Timeframe: October 1992 to September 1993

Project Description:

Sector: Halons

Technology: Planning and implementation of halon management programs to reduce halon emissions.

Specific Activities:

Halon-related assistance in Latin America, as in China, is being conducted with support and cooperation from the UNDP Global Halon Project.

Developed a strategy to accurately assess country-specific use of halon and to deploy halon recovery/recharge machines where useful to achieve measurable emissions reduction. The strategy includes preparation of a country use assessment and development of a phaseout program plan. This project envisions deployment of recovery/recharge machines if useful to achieve substantial emissions reductions in each country. To date, agreements to plan a phaseout program have been obtained from Ecuador, Panama, Venezuela and Uruguay.

Initial missions to begin halon phase-out activities have been completed in Ecuador, Panama, and Uruguay. At the request of the Panamanian government, the project is providing technical assistance to speed the replacement of halon fire extinguishers with alternative fire extinguishing agents. Data collection for the assessment is complete and a recovery/recharge machine which was provided with assistance from the UNDP Global Halon Project is operating in Venezuela. The Venezuela assessment will be used as the basis for planning and implementing comprehensive halon management activities in Venezuela. A second mission to Ecuador provided detailed technical assistance to

the government's ozone protection unit and Ecuadorean fire protection experts.

Developed and translated into Spanish the operations manual for the halon recovery/recharge machines for use in Latin American countries.

Note: The China halon 1211 recovery/recharge training workshop project is part of this general ongoing activity. However, that project is being reported separately because of its size.

Output:

Accurate assessment of country-specific use, development of a country-specific plan to reduce halon emissions, and deployment of recovery/recharge machines, if necessary, for each participating country. Operation of recovery/recharge machines and logging of machine use data will achieve measured ODS emission reductions and inform planning and implementation of rational, effective measures to achieve further reduction of halon use in the participating countries.

Future activities:

Conduct assessments, develop phaseout plans, and deploy machines and monitor use to reduce halon emissions.

Ongoing Project Status Report

Project Title: Regional halon-1211 training workshops

Incremental Cost: Of \$429,000 approved in 1992, \$174,000 was spent and reported on 1992 on the Beaufort, South Carolina workshop. \$50,000 was spent in 1993 and \$205,000 remains unspent.

Project Description:

Sector: Halons

Specific Activities: Activities for the current year are reported in the status report for the China halon 1211 workshops.

Future Activities:

The remaining unspent funds will be used to support the Global Halon Project including provision of recovery/recharge machines.

Ongoing Project Status Report

Article 5 country: Venezuela

Project Title: Mobile air conditioner (MAC) recycling

Incremental Cost: \$69,000 of the \$115,000 approved in 1992
(\$46,000 remains unspent)

Timeframe: October 1992 to September 1993

Project Description:

Sector: Refrigerants

Technology: Recycling refrigerants during servicing of MACs

Specific Activities:

Researched MACs emissions reduction regulations in other countries to identify strategies that might be useful in Venezuela. Developed a technical outline to help gather information about the MACs servicing industry and MACs maintenance practices in Venezuela. Researched potential Venezuelan contractors and hired a contractor who has completed a study based on the technical outline. Gathered information on MACs recovery and recycling equipment, and MACs recycling practices and programs.

Output:

The study will inform the development and implementation of a program to reduce emissions from the MACs sector in Venezuela.

Future activities:

FONDOIN (the Venezuela ozone-protection unit) and US EPA, with support from UNDP's Global MACs Project, will develop and implement a demonstration program to reduce MACs emissions in Venezuela, including training, deployment of recycling machines and other activities determined to be useful.

New Project Status Report

Article 5 Country: Mexico

Project Title: Technical support to complete projects using the World Bank \$4.0 million line of grant

Incremental Cost: \$136,000

Timeframe: October, 1992 - September, 1993

Project Description:

Sectors: All

Technology: Adopting alternative technologies to convert Mexican enterprises from ODS-using products/processes to ozone-safe products/processes.

Specific Activities:

Working with the World Bank, Nacional Financiera (NAFIN), and the Mexican National Institute of Ecology's Ozone Protection Unit to support completion of investment subprojects using the World Bank \$4.0 million line of grant. Help enterprises from all sectors apply for funding for conversion projects. EPA's investment project role for this project has been to:

- review documentation and discuss with participants the project completion process, prepare a schematic representation of the process to identify interdependencies and key activities
- develop a workplan for each project that describes and schedules each activity required to complete the subproject.
- provide technical assistance to move each project forward as rapidly as possible while monitoring progress, periodically revising workplans and helping solve problems as they arise
- assist with project design to assure technical soundness, rapid approval, and quick bidding

- develop an understanding of the Mexican beneficiary's needs and prepare technical documents and specifications that assure an acceptable project proposal and a successful project
- arrange expert review and comment on technical specifications

Output:

A funding application process for \$4.0 million line of grant has been developed and understood by all parties. This process is enabling sub-projects under the line of grant to move forward. Sub-project applications are prepared by INE or US EPA and submitted by INE to NAFIN, which reviews and submits them to the World Bank for approval and transfer of funds to NAFIN. After funds are received, the enterprise procures approved goods and services under NAFIN and INE supervision.

Two project proposals with technical annexes and bid packages have been submitted to INE for submission to NAFIN and the World Bank. These projects will eliminate 665 ODP-weighted tons in foam-blowing applications. Two additional project applications, which will achieve approximately 200 tons of annual ODS reduction, are 50% completed and will be submitted to INE in November 1993.

The understanding of investment projects we have developed in Mexico is being used in our related work in Ecuador and China.

Lessons learned:

After the Executive Committee approves an investment project, many tasks must be completed before ODS emission reductions are achieved. Actual project completion necessitates meeting the needs of the project beneficiary and the legal and procedural requirements of the national government, the implementing agency and the financial intermediary, if one is used. The Ozone Protection Unit and the financial intermediary may be unaccustomed to making environmental grants and require time to develop and obtain approval of new procedures.

The fund application, technical specifications, bid package, technical annex and related contracts, as well as the procedures to prepare and approve these

documents, are complex. Before the first sub-project can be completed, procedures must be developed, negotiated, and approved by all parties to the process. This work can be difficult and time-consuming, and requires leadership.

For these reasons, it is often useful for someone with suitable experience, resources, and technical expertise to supply the sustained effort and attention necessary to resolve problems and push initial projects forward to completion.

The Ozone Protection Unit, the project beneficiary, and the financial intermediary (NAFIN, in Mexico) may often find it difficult to assume this role. Ozone Protection Units (OPUs) frequently have not established working relationships with the financial intermediary and may not be familiar with the procedures of either the implementing agency or the financial intermediary. Furthermore, in the case of Mexico, the OPU is responsible for managing all aspects of Mexico's phaseout program. This includes research, communications with the public, coordination with other governmental units, the private sector, and the implementing agencies. The demands on the three staff of the OPU make it difficult for them to find the time to manage investment projects to completion and achieve ODS reduction. In addition, the project beneficiary may be unsure how to move the project ahead and lacks familiarity with the requirements of the other participants in the process. The Ozone Protection Unit, the financial intermediary, and the project beneficiary all may lack technical expertise to complete bidding documents and other essential materials. Each organization has many other competing demands on its limited time and resources, as well.

An advocate for the project can supply the necessary sustained focus, resources, and technical expertise. The advocate can also through its work expedite the project to achieve ODS emissions reduction as soon as possible and build capacity in the Ozone Protection Unit and financial intermediary to complete future projects.

Future Activities:

Secure additional investment projects for the World Bank \$4.0 million line of grant.

Ongoing Project Status Report

Article 5 Country: Mexico

Project Title: Chillers

Incremental Cost: \$259,000

Timeframe: October, 1992 - September, 1993

Project Description:

Sector: Refrigerants

Technology: Training related to refrigerant containment, conservation, refrigerant management planning and equipment selection, activities to increase purchase of ozone-safe chillers, refrigerant recovery/recycle equipment.

Specific Activities:

Developed instructional materials in Spanish, arranged demonstrations and hands-on training on recovery/recycle equipment.

Developed information on the building chiller market in Mexico for possible future projects to finance the incremental costs of purchases of new ozone-safe chillers in new buildings, or to replace chillers which have reached the end of their useful life.

Organized and conducted two workshops for over 80 technicians from Mexican chiller servicing companies and IMSS, the Mexican medical ministry which operates 65% of the building chillers in Mexico. Provided instructor, instructional materials, and participants' materials for four additional workshops, with 420 participants, organized and conducted by INE, Mexico's environmental agency.

Identified and contacted qualified enterprises and prepared projects to provide refrigerant recovery equipment to four chiller servicing companies. The equipment will be purchased using funds from the \$4.0 million line of grant. Two of these applications have been submitted by INE through NAFIN, the financial intermediary, to the World Bank.

Output:

Four completed funding applications have been submitted to INE. Of these, two have been approved by NAFIN and submitted to the World Bank. When the four projects are funded and completed, they will achieve 2 ODP-weighted tons of annual emissions reduction. Additional companies have been identified as beneficiaries of projects to be prepared in the future. IMSS has also submitted an application to purchase recovery/recycle machines for its facilities throughout Mexico. When completed, the IMSS project is expected to reduce ODS refrigerant emissions by 15 ODP-weighted tons annually.

The materials developed for these workshops have been sent to UNEP for use in other countries. Emissions of CFCs from chillers in Mexico due to improper servicing, venting, and leaks are estimated to be 22 tons annually. By improving chiller maintenance and servicing, EPA estimates that these workshops can reduce at least half of those emissions. Future emission reductions will be achieved through completion, with EPA assistance, of investment projects to provide recovery and recycle machines and other refrigerant conservation equipment.

EPA and the Mexican OPU are also using these workshops to establish a database of chiller technicians throughout Mexico. The database will permit quality control of technicians' work. The Mexican OPU intends to encourage the use of these technicians through a promotional effort.

Developed capacity within the Mexican National Institute of Ecology's (INE) Ozone Protection Unit to organize and execute workshops.

Lessons Learned:

Training and other phase-out activities are most effective when based on a detailed knowledge of the country and sector, and on a comprehensive program (including investment projects) to reduce ODS use in that country. In this way workshops can be focused on specific actions to be taken and training materials can be tailored to the unique circumstances of the country such as types of commonly used equipment, servicing practices and skill levels of technicians. Demonstrations by manufacturers at workshops bring credible field experience to the classroom. Using a

resident chiller expert as workshop instructor also increases credibility and establishes good relations with students.

Future Activities:

One more workshop with IMSS (run by Mexico's OPU) and independent chiller servicing companies are planned for 1993 using the program and materials developed for the first workshops.

Ongoing Project Status Report

Article 5 Country: Mexico

Project Title: Solvents

Incremental Cost: \$288,000. Of this amount, \$150,000 was included in the \$360,000 approved in 1992, and \$138,000 is new spending.

Timeframe: October 1992 - September, 1993

Project Description:

Sector: Solvents

Technology: Technical assistance to convert ODS solvent-using companies to alternative technologies.

Specific Activities:

Prepared sectoral analysis and developed and implemented a strategy to identify solvent-using companies in Mexico. Spoke at Mexican trade association meetings to explain importance of conversion to ozone-safe technologies. Met with solvent distributors, manufacturers, importers, and others. Canvassed Mexican firms to solicit applications to the World Bank \$4.0 million line of grant.

Contacted over 50 firms, of which 24 were determined to be Mexican-owned ODS solvent users. Observed the manufacturing processes of 12 of the solvent-using firms and prepared technical analyses to identify appropriate alternative technologies.

After alternatives were researched and ten projects were developed, it was determined that seven of the projects had incremental costs of zero.

Prepared investment projects for two of the eligible beneficiaries under the World Bank \$4.0 million line of grant. Drafted funding applications under the line of grant including technical specifications.

Supported workshops being conducted by ICOLP/Northern Telecom and the World Environment Center to promote Mexican industry conversion to ozone-safe solvents.

Output:

Technical assistance to ten Mexican-owned users of ODS solvents. Two completed applications to the World Bank \$4.0 million line of grant (a third application is partially complete and will be submitted later this year and the remaining seven projects have zero incremental cost and will be financed by the enterprises). When the ten projects are complete in early 1994, they will achieve annual reductions of 272 ODP-weighted tons of CFC-113 and TCA.

Database of ODS-solvent-using enterprises, including candidates for possible future technical assistance. Support for the World Environment Center and the Industry Cooperative for Ozone Layer Protection (ICOLP) workshop in Monterrey.

Lessons Learned:

Locating enterprises eligible for assistance is best accomplished by establishing relationships and trust with key organizations and personnel in the solvents sector such as solvents distributors and manufacturers. Success requires a carefully designed program of sustained, coordinated activities. At high-volume solvent users, the savings related to conversion typically exceed the investment cost of the project, so incremental cost is zero or negative. Consequently, only relatively small projects can receive financing from the Multilateral Fund and cost per kilogram of reduction tends to be high.

Substantial project development is required before incremental costs can be estimated. At this point, incremental costs are often determined to be zero, or negative, because of savings related to reduced ODS solvent use. Small amounts of additional bilateral assistance can help establish the economic justification for the project to facilitate decision-making by executives and suppliers of capital.

In the absence of assistance, it is likely that despite the presence of potential benefits most of these enterprises would not convert until CFC prices become very high. Many lack technical expertise and have little capital available for equipment purchases. However, if a compelling economic case is developed, an enterprise is likely to obtain funds and convert because economic self-interest has been demonstrated and environmental benefits will accrue.

In addition to metal-cleaning applications, substantial quantities of ODS solvents are used by textile manufacturers, adhesive manufacturers, and adhesive users. Future technical assistance efforts will be targeted to include these sub-sectors. There are very few Mexican-owned solvent users in the electronics industry.

This project has attracted the attention of certain vendors of alternative chemicals, who are consequently marketing to companies identified by the project. This should speed conversion from ODS solvents.

Future Activities:

- Continue to identify and provide technical assistance to solvent users. In exploring project possibilities with potential beneficiaries, it is inevitable that some funds will be expended to determine if a project has eligible incremental costs.
- Prepare funding applications under the \$4.0 million line of grant. Monitor funding applications being processed under the line of grant and provide technical assistance to solve any problems that threaten to delay completion of projects. Oversee installation of equipment and training, and follow up to confirm that successful ODS emissions reductions have been achieved.

New Project Status Report

Article 5 Country: Malaysia

Project Title: Solvents conference

Incremental Cost: EPA - \$24,000

Timeframe: December 1992 - April 31, 1993

Project Description:

On February 24, 1993 a cooperative partnership to protect the stratospheric ozone layer was launched in Kuala Lumpur, Malaysia. The Department of Environment (DOE) of Malaysia, Motorola Inc., the Ministry of International Trade and Industry (MITI) of Japan, the U.S. Environmental Protection Agency (EPA), the Japan Electrical Manufacturers' Association (JEMA), the Japan Industrial Conference for Ozone Layer Protection (JICOP) and the World Bank/Industry Cooperative for Ozone Layer Protection (ICOLP) announced that they will work together to accelerate the phaseout of uses of ozone depleting solvents in the Malaysian electronics and metal cleaning industries. The partners will provide eligible firms with technical information on substitutes and alternatives to CFC-113 and methyl chloroform, plan training programs at companies operating in Malaysia that have implemented ozone-safe technologies, and assist eligible companies in writing funding applications.

Specific Activities:

The first project of this partnership was the Kuala Lumpur Conference on the Elimination of Ozone Depleting Solvents in Malaysia, April 26 - 28, 1993. Solvents experts from Malaysia, the United Kingdom, Sweden, Singapore, Japan, and the United States led workshop sessions on the Science of the Ozone Layer, the Multilateral Fund, Aqueous and Semi-Aqueous Cleaning, Ozone-Safe Metal and Precision Cleaning, and No-Clean Technologies. Representatives of companies that have already completed their phaseouts presented material on how they chose alternative cleaning methods, and the costs and benefits they incurred in the conversion.

On the final day of the conference, Malaysia DOE, Malaysia MITI, U.S. EPA, and Japan MITI led discussions on how Malaysian companies can apply for funding to finance their phaseouts of ozone-depleting solvents.

Output:

150 participants took part in the conference. This included 11 domestic experts, and 25 suppliers. These experts and suppliers will prove to be assets in helping eligible companies phase out. Participants were also asked to complete a survey about their companies ODS solvent consumption and activities. This will help to focus followup efforts.

As a result of this conference, work has already been initiated with Teledata Sdn, a Malaysian telecommunications company, which is now completing their solvents survey. Additionally, Exxon (Malaysia) agreed to identify additional solvent-using small and medium sized Malaysian companies that can replace methyl chloroform and CFC solvents using financing from the Fund. Exxon will forward the names of potential companies to Motorola/ICOLP, the U.S. EPA and the Malaysian Government.

Lessons Learned:

A. Methods to Identify Qualifying Companies

Companies and organizations in Malaysia who supply CFC-113 and methyl chloroform or purchase components and assemblies manufactured with these solvents have a comparative advantage in identifying small and medium-sized companies eligible for financing under the Multilateral Fund. In the future, it will be most effective to work with the chemical suppliers and invite their solvents customers to attend meetings about accelerating their phaseouts and to ask our multinational partners to identify their suppliers who are eligible to seek technical assistance and financing.

B. Usefulness of the Project Elements

The conference participants found the technical sessions on specific replacements for CFC-113 and methyl chloroform (eg. aqueous, semi-aqueous, no-clean) very informative. The sessions were small enough that discussions on problems in choosing and implementing ozone safe technologies were productive.

The presentations on accessing the Fund were important in explaining this complicated process that is perhaps intimidating to small and medium sized companies.

On day two of the conference, the participants and speakers visited one of three factories: Matsushita, Epson, or Motorola. The site-visits were an excellent element of the

conference because they showed operating ozone-safe technology and gave the participants the corporate and management perspective on planning the phaseout.

Project leadership by North American and Japanese companies, and large joint venture corporations who have pledged to phaseout their uses in Malaysia no later than 1997 without requesting local share ownership percentage Funds from the Multilateral Fund, have important benefits. The early elimination serves the purpose of locally demonstrating suitable technology, building the local supply and service infrastructure network, developing local experts for technical cooperation, and otherwise educating solvent users and speeding the phaseout.

Future Activities:

Will focus on finalizing the conference report, preparing a funding application package for Teledata, and discussing phaseout possibilities with other conference participants. Additionally, the Conference recommended the following activities to expedite solvent phaseout work in the country:

1. It is useful to better advertise and educate Malaysian electronics and metal cleaning companies by producing outreach materials. Possible educational material discussed include a video in Chinese or Malay, brochures, and other important background information. Representatives of chemical suppliers including Dow, DuPont, and ICI offered to help distribute these outreach materials to their customers.
2. Small and medium sized companies need clearly written application materials with the necessary information, to apply to the Multilateral Fund using the Malaysian process.
3. It is important that the ozone layer protection unit established by DOE and MITI has the best technical information available to distribute to Malaysian industry.
4. A technical network is needed that can be managed by Motorola in Kuala Lumpur to hold periodic training seminars for eligible Malaysian companies planning their solvent phaseouts. These seminars may include factory site-visits, technical briefings, consultations, or follow-up meetings. Motorola could also house a technical library and will be the technical liaison for local solvents phaseout projects.
5. Motorola and the ozone layer protection unit should also have appropriate presentation materials on the background of the Montreal Protocol, the London and Copenhagen Amendments, the UNEP Technical Assessments, and the

Multilateral Fund so that they can make clear and useful presentations to SMIs.

EPA will be working with World Bank/ICOLP and the Malaysian government as requested to support the accomplishment of these tasks.

Ongoing Project Status Report

Article 5 Country: Thailand

Project Title: Followup activities from the Thailand workshop

Incremental Cost: \$108,000 expended to date from the \$203,000 approved in June of 1992

Timeframe: October 1992 - March 1993

Project Description:

Initial followup work has focused on Thai Airways, which has agreed to eliminate the use of methyl chloroform solvents at their Bangkok aircraft maintenance facility. The technology appropriate to the Thai facility will also be suitable for all other commercial aircraft maintenance facilities in developing countries since the same aircraft are utilized worldwide.

In order to eliminate this solvent use, three steps are being carried out:

1. Confirm the acceptability of alternatives and substitutes to the aircraft and aircraft component manufacturers and international flight safety organizations, and prepare and aircraft maintenance manual;
2. Engineer specific approved solutions for the Thai Airways facility, and
3. Competitively bid, award, finance and implement the new technology at Thai Airways.

World Bank/ICOLP and U.S. EPA have undertaken task 1. SAS and the Swedish EPA are undertaking task 2 which, together with task 3 will be funded through the approved World Bank project. Task 3 will be undertaken as soon as the SAS engineering study is completed.

Outputs (From Task 1: AIRCRAFT MAINTENANCE MANUAL)

- A committee of world renowned experts from major aerospace and technology companies and government agencies was assembled to draft the technical manual on eliminating the use of ozone-depleting substances in aircraft maintenance procedures. The following

countries are represented by experts on the committee: Canada, Chile, Denmark, Germany, Japan, Sweden, Thailand, United Kingdom, United States.

- Three drafts of the technical manual have been circulated to project committee members.
- Peer Review Draft is currently being assembled. Projected completion of this draft is July, 1993.
- The final product will prove vital to developing country airlines and airlines in developed countries.

In-Kind Contributions

- Many aerospace companies and government facilities have hosted project committee members for valuable site visits and have provided extensive technical information.
- Many aerospace and airline companies and government agencies have sent representatives to serve on the project committee at no cost for either time or expenses to the project. Each participant has contributed 10-35 days of effort plus direct travel expenses of \$5000 to \$15,000 for a total contribution worth in excess of \$600,000:

Near Term Activities

- Complete and distribute the Peer Review Draft.
- Evaluate comments received on Peer Review Draft and prepare the final version of the manual.
- Complete final review and publish the manual.
- Distribute the completed manual to airlines and manufacturing/maintenance facilities worldwide.
- Attend industry conferences to disseminate information contained in the manual.
- Help to develop applications to the Multilateral Fund to facilitate the phaseout from other developing country airlines, and provide follow-up consultation on related phaseout activities.

Lessons Learned

- Competing airlines are willing to share information to speed protection of the ozone layer. Exceptional benefits are being realized by bringing these users of ozone-depleting substances together to solve problems.

Ongoing Project Status Report

Article 5 Countries: China (additional participation from India, Malaysia, Mexico, Philippines)

Project Title: The Federation of Engineering Societies of China Association for Science and Technology (FESCAST) Conference

Incremental Cost: \$96,000

Timeframe: October 1992 - April 1993

Project Description/Outputs:

Brought key players together for discussions on technical and project specific funding issues in all sectors.

Held sessions in Aerosol Products, Air Conditioning, Chemicals, Foams, Halon, Refrigeration, and Solvents

Activities included site visits/consulting engineering which will result in the development of Fund projects.

Sponsoring and cooperating organizations:

The Federation of Engineering Societies of China
Association for Science and Technology
Chinese Association of Light Industry
Chemical Industry and Engineering Society of China
China Association of Refrigeration
Chinese Society of Environmental Science
Chinese Association of Fire Protection
China Association of Refrigeration and Air Conditioning
Beijing International Convention Center

In cooperation with:

The U.S. Environmental Protection Agency
National Environmental Protection Agency of China
United Nations Development Programme
United Nations Environment Programme
State Science and Technology Commission of China
Economics and Trade Office of the State Council of China
China's Ministry of Machinery and Electronics Industry
The Ministry of Light Industry of China
The Ministry of Chemical Industry of China
The Ministry of Commerce of China
The Ministry of Public Security of China
The Industry Cooperative for Ozone Layer Protection

The Alliance for Responsible CFC Policy
International Appliance Technical Conference
International Society of Refrigeration
Hong Kong Institution of Engineers
The World Bank

Participants:

450 participants from more than sixteen countries including: Australia, Austria, China, Canada, Denmark, France, Hong Kong, India, Italy, Japan, Korea, Malaysia, Mexico, Philippines, Singapore, Sweden, United Kingdom, United States.

23 exhibitors from China, Germany, Netherlands, Hong Kong, United States, World Bank, and United Nations Environment Programme.

Over 60 presentations by Chinese experts; over 65 presentations by foreign experts.

Additional Funding:

China organizers made substantial, in kind human and financial contribution to conference organization, facilities, and other expenses. Most speakers appeared without compensation for time. Very few speakers had sponsored travel--those sponsored with bilateral funds reimbursed for economy air fare only. UNDP, UNEP and the World Bank also supported the effort.

Lessons Learned:

A. Chinese experts and companies are fully informed and at the cutting edge of technical issues in the areas of insulating foam and refrigerator technology. Particular emphasis should be placed on building national capability on existing halons alternatives and on solvent alternatives and substitutes.

B. Company-to-company technical assistance in informal working sessions was greatly appreciated by Chinese participants.

C. Conferences may be more successful with broad-based sponsorship and if there is a local contribution of in-kind organizing effort and financing. A substantial, and in the end worthwhile, portion of the EPA conference planning costs resulted from the interactive planning of how to best serve the needs of the Chinese conference participants.

D. Plenary sessions with sector-specific break-out sessions may be more successful than one-track/one-room formats. Educational efforts are succeeding and as a result it is getting

less important to review background information on the Protocol and the Fund in China. Short clearly written explanations translated into national languages are most appreciated.

Appendix

Institutional Strengthening--Mexican Ozone Protection Unit Progress Report

In June of 1991, the Executive Committee approved \$285,000 in US bilateral support to fund the Institutional Strengthening request of Mexico. Those funds are part of \$350,000 to finance the activities of the OPU for three years. As of March 31, 1993, the OPU had expended approximately \$186,000.

Specific activities of the OPU have included the following:

- Hired three full time staff
- Established an adequate office communications infrastructure to allow for effective communication with ODS users and with implementing agencies
- Supported 6 workshops: 2 solvents workshops and 4 chiller workshops
- Helped to negotiate World Bank grant agreements for the \$4 million line of grant and the \$180,000 line of grant previously approved by the Executive Committee. Negotiated agreements with the financial intermediary to execute approved projects. Supported development of project proposals to eliminate ODS in the foams and solvents sectors.
- Responded to several hundred inquiries by Mexican industries interested in phasing out of ODS
- Helped to write and implement Mexico's ODS reduction laws
- Developed a database of Mexican ODS users and emissions

Lessons EPA learned in developing institutional capacity at the Mexican OPU:

- New ozone protection unit personnel often need basic information related to ozone depletion, to technologies available to support phaseout activities, and to requirements of the multilateral fund
- The OPU needs special skills and substantial time and energy to coordinate the efforts of all those involved in reducing ODS emissions, including implementing agencies,

bilateral collaborators, other governmental units, industry, ICOLP, and others.

- Establishment of an adequate office communications infrastructure is critical to the accomplishment of the mission and is often difficult in a developing country
- The OPU faces many competing demands which are difficult to order. The three professional staff manage the ODS phaseout efforts of the entire country including research, communications with the public, tracking CFC imports and exports with customs, and Multilateral Fund investment projects.

- develop an understanding of the Mexican beneficiary's needs and prepare technical documents and specifications that assure an acceptable project proposal and a successful project
- arrange expert review and comment on technical specifications

Output:

A funding application process for \$4.0 million line of grant has been developed and understood by all parties. This process is enabling sub-projects under the line of grant to move forward. Sub-project applications are prepared by INE or US EPA and submitted by INE to NAFIN, which reviews and submits them to the World Bank for approval and transfer of funds to NAFIN. After funds are received, the enterprise procures approved goods and services under NAFIN and INE supervision.

Two project proposals with technical annexes and bid packages have been submitted to INE for submission to NAFIN and the World Bank. These projects will eliminate 665 ODP-weighted tons in foam-blowing applications. Two additional project applications, which will achieve approximately 200 tons of annual ODS reduction, are 50% completed and will be submitted to INE in November 1993.

The understanding of investment projects we have developed in Mexico is being used in our related work in Ecuador and China.

Lessons learned:

After the Executive Committee approves an investment project, many tasks must be completed before ODS emission reductions are achieved. Actual project completion necessitates meeting the needs of the project beneficiary and the legal and procedural requirements of the national government, the implementing agency and the financial intermediary, if one is used. The Ozone Protection Unit and the financial intermediary may be unaccustomed to making environmental grants and require time to develop and obtain approval of new procedures.

The fund application, technical specifications, bid package, technical annex and related contracts, as well as the procedures to prepare and approve these

Output:

Four completed funding applications have been submitted to INE. Of these, two have been approved by NAFIN and submitted to the World Bank. When the four projects are funded and completed, they will achieve 2 ODP-weighted tons of annual emissions reduction. Additional companies have been identified as beneficiaries of projects to be prepared in the future. IMSS has also submitted an application to purchase recovery/recycle machines for its facilities throughout Mexico. When completed, the IMSS project is expected to reduce ODS refrigerant emissions by 15 ODP-weighted tons annually.

The materials developed for these workshops have been sent to UNEP for use in other countries. Emissions of CFCs from chillers in Mexico due to improper servicing, venting, and leaks are estimated to be 22 tons annually. By improving chiller maintenance and servicing, EPA estimates that these workshops can reduce at least half of those emissions. Future emission reductions will be achieved through completion, with EPA assistance, of investment projects to provide recovery and recycle machines and other refrigerant conservation equipment.

EPA and the Mexican OPU are also using these workshops to establish a database of chiller technicians throughout Mexico. The database will permit quality control of technicians' work. The Mexican OPU intends to encourage the use of these technicians through a promotional effort.

Developed capacity within the Mexican National Institute of Ecology's (INE) Ozone Protection Unit to organize and execute workshops.

Lessons Learned:

Training and other phase-out activities are most effective when based on a detailed knowledge of the country and sector, and on a comprehensive program (including investment projects) to reduce ODS use in that country. In this way workshops can be focused on specific actions to be taken and training materials can be tailored to the unique circumstances of the country such as types of commonly used equipment, servicing practices and skill levels of technicians. Demonstrations by manufacturers at workshops bring credible field experience to the classroom. Using a

Ongoing Project Status Report

Article 3 Country: Mexico

Project Title: Chillers

Incremental Cost: \$259,000

Timeframe: October, 1992 - September, 1993

Project Description:

Sector: Refrigerants

Technology: Training related to refrigerant containment, conservation, refrigerant management planning and equipment selection, activities to increase purchase of ozone-safe chillers, refrigerant recovery/recycle equipment.

Specific Activities:

Developed instructional materials in Spanish, arranged demonstrations and hands-on training on recovery/recycle equipment.

Developed information on the building chiller market in Mexico for possible future projects to finance the incremental costs of purchases of new ozone-safe chillers in new buildings, or to replace chillers which have reached the end of their useful life.

Organized and conducted two workshops for over 80 technicians from Mexican chiller servicing companies and IMSS, the Mexican medical ministry which operates 65% of the building chillers in Mexico. Provided instructor, instructional materials, and participants' materials for four additional workshops, with 420 participants, organized and conducted by INE, Mexico's environmental agency.

Identified and contacted qualified enterprises and prepared projects to provide refrigerant recovery equipment to four chiller servicing companies. The equipment will be purchased using funds from the \$4.0 million line of grant. Two of these applications have been submitted by INE through NAFIN, the financial intermediary, to the World Bank.

Ongoing Project Status Report

Article 5 Country: Mexico

Project Title: Solvents

Incremental Cost: \$288,000. Of this amount, \$150,000 was included in the \$360,000 approved in 1992, and \$138,000 is new spending.

Timeframe: October 1992 - September, 1993

Project Description:

Sector: Solvents

Technology: Technical assistance to convert ODS solvent-using companies to alternative technologies.

Specific Activities:

Prepared sectoral analysis and developed and implemented a strategy to identify solvent-using companies in Mexico. Spoke at Mexican trade association meetings to explain importance of conversion to ozone-safe technologies. Met with solvent distributors, manufacturers, importers, and others. Canvassed Mexican firms to solicit applications to the World Bank \$4.0 million line of grant.

Contacted over 50 firms, of which 24 were determined to be Mexican-owned ODS solvent users. Observed the manufacturing processes of 12 of the solvent-using firms and prepared technical analyses to identify appropriate alternative technologies.

After alternatives were researched and ten projects were developed, it was determined that seven of the projects had incremental costs of zero.

Prepared investment projects for two of the eligible beneficiaries under the World Bank \$4.0 million line of grant. Drafted funding applications under the line of grant including technical specifications.

Supported workshops being conducted by ICOLP/Northern Telecom and the World Environment Center to promote Mexican industry conversion to ozone-safe solvents.

resident chiller expert as workshop instructor also increases credibility and establishes good relations with students.

Future Activities:

One more workshop with IMSS (run by Mexico's OPU) and independent chiller servicing companies are planned for 1993 using the program and materials developed for the first workshops.

documents, are complex. Before the first sub-project can be completed, procedures must be developed, negotiated, and approved by all parties to the process. This work can be difficult and time-consuming, and requires leadership.

For these reasons, it is often useful for someone with suitable experience, resources, and technical expertise to supply the sustained effort and attention necessary to resolve problems and push initial projects forward to completion.

The Ozone Protection Unit, the project beneficiary, and the financial intermediary (NAFIN, in Mexico) may often find it difficult to assume this role. Ozone Protection Units (OPUs) frequently have not established working relationships with the financial intermediary and may not be familiar with the procedures of either the implementing agency or the financial intermediary. Furthermore, in the case of Mexico, the OPU is responsible for managing all aspects of Mexico's phaseout program. This includes research, communications with the public, coordination with other governmental units, the private sector, and the implementing agencies. The demands on the three staff of the OPU make it difficult for them to find the time to manage investment projects to completion and achieve ODS reduction. In addition, the project beneficiary may be unsure how to move the project ahead and lacks familiarity with the requirements of the other participants in the process. The Ozone Protection Unit, the financial intermediary, and the project beneficiary all may lack technical expertise to complete bidding documents and other essential materials. Each organization has many other competing demands on its limited time and resources, as well.

An advocate for the project can supply the necessary sustained focus, resources, and technical expertise. The advocate can also through its work expedite the project to achieve ODS emissions reduction as soon as possible and build capacity in the Ozone Protection Unit and financial intermediary to complete future projects.

Future Activities:

Secure additional investment projects for the World Bank \$4.0 million line of grant.

Output:

Technical assistance to ten Mexican-owned users of ODS solvents. Two completed applications to the World Bank \$4.0 million line of grant (a third application is partially complete and will be submitted later this year and the remaining seven projects have zero incremental cost and will be financed by the enterprises). When the ten projects are complete in early 1994, they will achieve annual reductions of 272 ODP-weighted tons of CFC-113 and TCA.

Database of ODS-solvent-using enterprises, including candidates for possible future technical assistance. Support for the World Environment Center and the Industry Cooperative for Ozone Layer Protection (ICOLP) workshop in Monterrey.

Lessons Learned:

Locating enterprises eligible for assistance is best accomplished by establishing relationships and trust with key organizations and personnel in the solvents sector such as solvents distributors and manufacturers. Success requires a carefully designed program of sustained, coordinated activities. At high-volume solvent users, the savings related to conversion typically exceed the investment cost of the project, so incremental cost is zero or negative. Consequently, only relatively small projects can receive financing from the Multilateral Fund and cost per kilogram of reduction tends to be high.

Substantial project development is required before incremental costs can be estimated. At this point, incremental costs are often determined to be zero, or negative, because of savings related to reduced ODS solvent use. Small amounts of additional bilateral assistance can help establish the economic justification for the project to facilitate decision-making by executives and suppliers of capital.

In the absence of assistance, it is likely that despite the presence of potential benefits most of these enterprises would not convert until CFC prices become very high. Many lack technical expertise and have little capital available for equipment purchases. However, if a compelling economic case is developed, an enterprise is likely to obtain funds and convert because economic self-interest has been demonstrated and environmental benefits will accrue.

In addition to metal-cleaning applications, substantial quantities of ODS solvents are used by textile manufacturers, adhesive manufacturers, and adhesive users. Future technical assistance efforts will be targeted to include these sub-sectors. There are very few Mexican-owned solvent users in the electronics industry.

This project has attracted the attention of certain vendors of alternative chemicals, who are consequently marketing to companies identified by the project. This should speed conversion from ODS solvents.

Future Activities:

- Continue to identify and provide technical assistance to solvent users. In exploring project possibilities with potential beneficiaries, it is inevitable that some funds will be expended to determine if a project has eligible incremental costs.
- Prepare funding applications under the \$4.0 million line of grant. Monitor funding applications being processed under the line of grant and provide technical assistance to solve any problems that threaten to delay completion of projects. Oversee installation of equipment and training, and follow up to confirm that successful ODS emissions reductions have been achieved.

New Project Status Report

Article 5 Country: Malaysia

Project Title: Solvents conference

Incremental Cost: EPA - \$24,000

Timeframe: December 1992 - April 31, 1993

Project Description:

On February 24, 1993 a cooperative partnership to protect the stratospheric ozone layer was launched in Kuala Lumpur, Malaysia. The Department of Environment (DOE) of Malaysia, Motorola Inc., the Ministry of International Trade and Industry (MITI) of Japan, the U.S. Environmental Protection Agency (EPA), the Japan Electrical Manufacturers' Association (JEMA), the Japan Industrial Conference for Ozone Layer Protection (JICOP) and the World Bank/Industry Cooperative for Ozone Layer Protection (ICOLP) announced that they will work together to accelerate the phaseout of uses of ozone depleting solvents in the Malaysian electronics and metal cleaning industries. The partners will provide eligible firms with technical information on substitutes and alternatives to CFC-113 and methyl chloroform, plan training programs at companies operating in Malaysia that have implemented ozone-safe technologies, and assist eligible companies in writing funding applications.

Specific Activities:

The first project of this partnership was the Kuala Lumpur Conference on the Elimination of Ozone Depleting Solvents in Malaysia, April 26 - 28, 1993. Solvents experts from Malaysia, the United Kingdom, Sweden, Singapore, Japan, and the United States led workshop sessions on the Science of the Ozone Layer, the Multilateral Fund, Aqueous and Semi-Aqueous Cleaning, Ozone-Safe Metal and Precision Cleaning, and No-Clean Technologies. Representatives of companies that have already completed their phaseouts presented material on how they chose alternative cleaning methods, and the costs and benefits they incurred in the conversion.

On the final day of the conference, Malaysia DOE, Malaysia MITI, U.S. EPA, and Japan MITI led discussions on how Malaysian companies can apply for funding to finance their phaseouts of ozone-depleting solvents.

Output:

150 participants took part in the conference. This included 11 domestic experts, and 25 suppliers. These experts and suppliers will prove to be assets in helping eligible companies phase out. Participants were also asked to complete a survey about their companies ODS solvent consumption and activities. This will help to focus followup efforts.

As a result of this conference, work has already been initiated with Teledata Sdn, a Malaysian telecommunications company, which is now completing their solvents survey. Additionally, Exxon (Malaysia) agreed to identify additional solvent-using small and medium sized Malaysian companies that can replace methyl chloroform and CFC solvents using financing from the Fund. Exxon will forward the names of potential companies to Motorola/ICOLP, the U.S. EPA and the Malaysian Government.

Lessons Learned:**A. Methods to Identify Qualifying Companies**

Companies and organizations in Malaysia who supply CFC-113 and methyl chloroform or purchase components and assemblies manufactured with these solvents have a comparative advantage in identifying small and medium-sized companies eligible for financing under the Multilateral Fund. In the future, it will be most effective to work with the chemical suppliers and invite their solvents customers to attend meetings about accelerating their phaseouts and to ask our multinational partners to identify their suppliers who are eligible to seek technical assistance and financing.

B. Usefulness of the Project Elements

The conference participants found the technical sessions on specific replacements for CFC-113 and methyl chloroform (eg. aqueous, semi-aqueous, no-clean) very informative. The sessions were small enough that discussions on problems in choosing and implementing ozone safe technologies were productive.

The presentations on accessing the Fund were important in explaining this complicated process that is perhaps intimidating to small and medium sized companies.

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conference because they showed operating ozone-safe technology and gave the participants the corporate and management perspective on planning the phaseout.

Project leadership by North American and Japanese companies, and large joint venture corporations who have pledged to phaseout their uses in Malaysia no later than 1997 without requesting local share ownership percentage Funds from the Multilateral Fund, have important benefits. The early elimination serves the purpose of locally demonstrating suitable technology, building the local supply and service infrastructure network, developing local experts for technical cooperation, and otherwise educating solvent users and speeding the phaseout.

Future Activities:

Will focus on finalizing the conference report, preparing a funding application package for Teledata, and discussing phaseout possibilities with other conference participants. Additionally, the Conference recommended the following activities to expedite solvent phaseout work in the country:

1. It is useful to better advertise and educate Malaysian electronics and metal cleaning companies by producing outreach materials. Possible educational material discussed include a video in Chinese or Malay, brochures, and other important background information. Representatives of chemical suppliers including Dow, DuPont, and ICI offered to help distribute these outreach materials to their customers.
2. Small and medium sized companies need clearly written application materials with the necessary information, to apply to the Multilateral Fund using the Malaysian process.
3. It is important that the ozone layer protection unit established by DOE and MITI has the best technical information available to distribute to Malaysian industry.
4. A technical network is needed that can be managed by Motorola in Kuala Lumpur to hold periodic training seminars for eligible Malaysian companies planning their solvent phaseouts. These seminars may include factory site-visits, technical briefings, consultations, or follow-up meetings. Motorola could also house a technical library and will be the technical liaison for local solvents phaseout projects.
5. Motorola and the ozone layer protection unit should also have appropriate presentation materials on the background of the Montreal Protocol, the London and Copenhagen Amendments, the UNEP Technical Assessments, and the

Multilateral Fund so that they can make clear and useful presentations to SMIs.

EPA will be working with World Bank/ICOLP and the Malaysian government as requested to support the accomplishment of these tasks.

Ongoing Project Status Report

Article 5 Country: Thailand

Project Title: Followup activities from the Thailand workshop

Incremental Cost: \$108,000 expended to date from the \$203,000 approved in June of 1992

Timeframe: October 1992 - March 1993

Project Description:

Initial followup work has focused on Thai Airways, which has agreed to eliminate the use of methyl chloroform solvents at their Bangkok aircraft maintenance facility. The technology appropriate to the Thai facility will also be suitable for all other commercial aircraft maintenance facilities in developing countries since the same aircraft are utilized worldwide.

In order to eliminate this solvent use, three steps are being carried out:

1. Confirm the acceptability of alternatives and substitutes to the aircraft and aircraft component manufacturers and international flight safety organizations, and prepare and aircraft maintenance manual;
2. Engineer specific approved solutions for the Thai Airways facility, and
3. Competitively bid, award, finance and implement the new technology at Thai Airways.

World Bank/ICOLP and U.S. EPA have undertaken task 1. SAS and the Swedish EPA are undertaking task 2 which, together with task 3 will be funded through the approved World Bank project. Task 3 will be undertaken as soon as the SAS engineering study is completed.

Outputs (From Task 1: AIRCRAFT MAINTENANCE MANUAL)

- A committee of world renowned experts from major aerospace and technology companies and government agencies was assembled to draft the technical manual on eliminating the use of ozone-depleting substances in aircraft maintenance procedures. The following

countries are represented by experts on the committee: Canada, Chile, Denmark, Germany, Japan, Sweden, Thailand, United Kingdom, United States.

- Three drafts of the technical manual have been circulated to project committee members.
- Peer Review Draft is currently being assembled. Projected completion of this draft is July, 1993.
- The final product will prove vital to developing country airlines and airlines in developed countries.

In-Kind Contributions

- Many aerospace companies and government facilities have hosted project committee members for valuable site visits and have provided extensive technical information.
- Many aerospace and airline companies and government agencies have sent representatives to serve on the project committee at no cost for either time or expenses to the project. Each participant has contributed 10-35 days of effort plus direct travel expenses of \$5000 to \$15,000 for a total contribution worth in excess of \$600,000:

Near Term Activities

- Complete and distribute the Peer Review Draft.
- Evaluate comments received on Peer Review Draft and prepare the final version of the manual.
- Complete final review and publish the manual.
- Distribute the completed manual to airlines and manufacturing/maintenance facilities worldwide.
- Attend industry conferences to disseminate information contained in the manual.
- Help to develop applications to the Multilateral Fund to facilitate the phaseout from other developing country airlines, and provide follow-up consultation on related phaseout activities.

Lessons Learned

- Competing airlines are willing to share information to speed protection of the ozone layer. Exceptional benefits are being realized by bringing these users of ozone-depleting substances together to solve problems.

Ongoing Project Status Report

Article 5 Countries: China (additional participation from India, Malaysia, Mexico, Philippines)

Project Title: The Federation of Engineering Societies of China Association for Science and Technology (FESCAST) Conference

Incremental Cost: \$96,000

Timeframe: October 1992 - April 1993

Project Description/Outputs:

Brought key players together for discussions on technical and project specific funding issues in all sectors.

Held sessions in Aerosol Products, Air Conditioning, Chemicals, Foams, Halon, Refrigeration, and Solvents

Activities included site visits/consulting engineering which will result in the development of Fund projects.

Sponsoring and cooperating organizations:

The Federation of Engineering Societies of China
Association for Science and Technology
Chinese Association of Light Industry
Chemical Industry and Engineering Society of China
China Association of Refrigeration
Chinese Society of Environmental Science
Chinese Association of Fire Protection
China Association of Refrigeration and Air Conditioning
Beijing International Convention Center

In cooperation with:

The U.S. Environmental Protection Agency
National Environmental Protection Agency of China
United Nations Development Programme
United Nations Environment Programme
State Science and Technology Commission of China
Economics and Trade Office of the State Council of China
China's Ministry of Machinery and Electronics Industry
The Ministry of Light Industry of China
The Ministry of Chemical Industry of China
The Ministry of Commerce of China
The Ministry of Public Security of China
The Industry Cooperative for Ozone Layer Protection

The Alliance for Responsible CFC Policy
International Appliance Technical Conference
International Society of Refrigeration
Hong Kong Institution of Engineers
The World Bank

Participants:

450 participants from more than sixteen countries including: Australia, Austria, China, Canada, Denmark, France, Hong Kong, India, Italy, Japan, Korea, Malaysia, Mexico, Philippines, Singapore, Sweden, United Kingdom, United States.

23 exhibitors from China, Germany, Netherlands, Hong Kong, United States, World Bank, and United Nations Environment Programme.

Over 60 presentations by Chinese experts; over 65 presentations by foreign experts.

Additional Funding:

China organizers made substantial, in kind human and financial contribution to conference organization, facilities, and other expenses. Most speakers appeared without compensation for time. Very few speakers had sponsored travel--those sponsored with bilateral funds reimbursed for economy air fare only. UNDP, UNEP and the World Bank also supported the effort.

Lessons Learned:

A. Chinese experts and companies are fully informed and at the cutting edge of technical issues in the areas of insulating foam and refrigerator technology. Particular emphasis should be placed on building national capability on existing halons alternatives and on solvent alternatives and substitutes.

B. Company-to-company technical assistance in informal working sessions was greatly appreciated by Chinese participants.

C. Conferences may be more successful with broad-based sponsorship and if there is a local contribution of in-kind organizing effort and financing. A substantial, and in the end worthwhile, portion of the EPA conference planning costs resulted from the interactive planning of how to best serve the needs of the Chinese conference participants.

D. Plenary sessions with sector-specific break-out sessions may be more successful than one-track/one-room formats. Educational efforts are succeeding and as a result it is getting

less important to review background information on the Protocol and the Fund in China. Short clearly written explanations translated into national languages are most appreciated.

Appendix

Institutional Strengthening--Mexican Ozone Protection Unit Progress Report

In June of 1991, the Executive Committee approved \$285,000 in US bilateral support to fund the Institutional Strengthening request of Mexico. Those funds are part of \$350,000 to finance the activities of the OPU for three years. As of March 31, 1993, the OPU had expended approximately \$186,000.

Specific activities of the OPU have included the following:

- Hired three full time staff
- Established an adequate office communications infrastructure to allow for effective communication with ODS users and with implementing agencies
- Supported 6 workshops: 2 solvents workshops and 4 chiller workshops
- Helped to negotiate World Bank grant agreements for the \$4 million line of grant and the \$180,000 line of grant previously approved by the Executive Committee. Negotiated agreements with the financial intermediary to execute approved projects. Supported development of project proposals to eliminate ODS in the foams and solvents sectors.
- Responded to several hundred inquiries by Mexican industries interested in phasing out of ODS
- Helped to write and implement Mexico's ODS reduction laws
- Developed a database of Mexican ODS users and emissions

Lessons EPA learned in developing institutional capacity at the Mexican OPU:

- New ozone protection unit personnel often need basic information related to ozone depletion, to technologies available to support phaseout activities, and to requirements of the multilateral fund
- The OPU needs special skills and substantial time and energy to coordinate the efforts of all those involved in reducing ODS emissions, including implementing agencies,

bilateral collaborators, other governmental units, industry, ICOLP, and others.

- Establishment of an adequate office communications infrastructure is critical to the accomplishment of the mission and is often difficult in a developing country
- The OPU faces many competing demands which are difficult to order. The three professional staff manage the ODS phaseout efforts of the entire country including research, communications with the public, tracking CFC imports and exports with customs, and Multilateral Fund investment projects.