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STATE ENVIRONMENTAL PROTECTION ADMINISTRATION

MP/CPR/04/130 and TF/CPR/05/005
China Refrigeration Servicing Sector CFC Phase-Out Plan

Contract No. 2005/084
(Phase 1)

Final Report

SEPA
Beijing, China

April 2007

CONTENT

1. Introduction
2. Other Activities
3. Audit Report

ANNEXES

Annex I Minutes of the second training of trainer workshop on "Recovery CFC-12 Refrigerant from Mobile Air-conditioning"

Annex II Minutes of the third training of trainer workshop on "Recovery CFC-12 Refrigerant from Mobile Air-conditioning"

Annex III Minutes of the forth training of trainer workshop on "Recovery CFC-12 Refrigerant from Mobile Air-conditioning"

Annex IV Minutes of the fifth training of trainer workshop on "Recovery CFC-12 Refrigerant from Mobile Air-conditioning"

Annex V Minutes of expert proseminar of technical assistant project

1. Introduction

In light of the Work Plan and milestones of the contract execution, agreed between UNIDO and SEPA/FECO, the Special Working Group of FECO had finished the job just as follows by February 2006:

- a. Select the Domestic Procurement Agency
- b. Select the National training institutions(centre) and hold one training of trainers workshop
- c. Arrange and finish the first procurement of equipments
- d. Draw a detail proposal for the installation of R&R network
- e. Make the specification and quantity of equipment required for the R&R network

The results of all jobs are summarized in the Progress Report 1 and Progress Report 2 accepted by UNIDO. After that, SEPA/FECO carried on the contract and had finished the job as follows.

2. Other activities

1. Fifteen regional training centers had been selected. The list is as follows,

	Regional training centers	Location (Province)
1	China certification center of automobile product	Beijing
2	GuangDong Communication Polytechnic Vehicle Institute	Guangdong
3	Sales&Servicing department of Naveco Company	Jiangsu
4	Mobile testing and maintaining centre of Shan Dong Institute of Communication	Shandong
5	Changan SUZUKI Co.Ltd	Chongqing City
6	Training Center of Wuhan Communication Committee	Hubei
7	Vehicle servicing sector association of Shenzhen	Shenzhen
8	Xi An Tangdu Automobile Servicing Company	Shanxi
9	Jigang VolksWagen Automobile Servicing Ltd.,	Jilin
10	Training Center of Si Chuan Communication Committee	Sichuan
11	Training Center of Zhe Jiang Communication Committee	Zhejiang
12	Training Center of He Nan Communication Committee	Henan

13	Training Center of An Hui Communication Committee	Anhui
14	Training Center of Hu Nan Communication Committee	Hunan
15	Training Center of Fu Jian Communication Committee	Fujian

Four training of trainers workshops (TOT) were held in Beijing by the selected National Training Centre. There were total 44 trainers from the said regional training centers had been trained in 2006.(the minutes of the workshops are in Annex I-AnnexIV)

2. Five regional training centers had carried out training of technicians workshops in 2006.The jobs are in the following table.

		JSTC	SDTC	CQTC	HBTC	SZTC
1	Participant	14	18	27	20	20
	Period	2 nd -3 rd ,Jun.	16 th -17 th ,Oct.	19 th -20 th ,Oct.	18 th -20 th ,Oct.	14 th -15 th ,Nov.
2	Participant	16	18	25	10	20
	Period	4 th -5 th ,Jun.	19 th -20 th ,Oct.	26 th -27 th ,Oct.	1 st -3 rd ,Nov.	14 th -15 th ,Nov.
3	Participant	20	18	25	23	20
	Period	15 th -16 th ,Jun.	23 rd -24 th ,Oct.	2 nd -3 rd ,Nov.	8 th -10 th ,Nov.	20 th -21 st ,Nov.
4	Participant	20	19	26	15	18
	Period	19 th -20 th ,Jun.	26 th -27 th ,Oct.	9 th -10 th ,Nov.	20 th -22 nd ,Nov.	20 th -21 st ,Nov.
5	Participant	20	19	25	20	20
	Period	21 st -22 nd ,Jun.	30 th -31 st ,Oct.	16 th -17 th ,Nov.	27 th -29 th ,Nov.	22 nd -23 rd ,Nov.
6	Participant	18	16	18	17	18
	Period	29 th -30 th ,Jun.	6 th -7 th ,Nov.	23 rd -24 th ,Nov.	4 th -6 th ,Dec.	22 nd -23 rd ,Nov.
7	Participant	11	19	24	14	17
	Period	20 th -21 st ,Aug.	9 th -10 th ,Nov.	30 th ,Nov-1 st ,Dec.	8 th -10 th ,Dec.	27 th -28 th ,Nov.
8	Participant	16	16	27	18	20
	Period	22 nd -23 rd ,Aug.	13 th -14 th ,Nov.	7 th -8 th ,Dec.	11 th -13 th ,Dec.	27 th -28 th ,Nov.
9	Participant	10	19	20	13	17
	Period	7 th -8 th ,Sep.	16 th -17 th ,Nov.	14 th -15 th ,Dec.	15 th -17 th ,Dec.	29 th -30 th ,Nov.
10	Participant	11		18	12	19
	Period	9 th -10 th ,Sep.		21 st -22 nd ,Dec.	18 th -20 th ,Dec.	29 th -30 th ,Nov.
11	Participant	17		24		18
	Period	7 th -9 th ,Nov.		28 th -29 th ,Dec.		11 th -12 th ,Dec.
12	Participant	13				20
	Period	13 th -14 th ,Nov.				11 th -12 th ,Dec.
13	Participant	14				18
	Period	23 rd -24 th ,Nov.				25 th -26 th ,Dec.
14	Participant	9				20
	Period	17 th -18 th ,Dec.				25 th -26 th ,Dec.
15	Participant					20
	Period					27 th -28 th ,Dec.
16	Participant					20
	Period					27 th -28 th ,Dec.

Total	209	162	259	162	305
Total 1097 technicians had been trained in the 5 training centers in 2006.					
Note	Sales&Servicing department of Naveco Company(JSTC), Mobile testing and maintaining centre of Shan Dong Institute of Communication (SDTC), Changan SUZUKI Co.Ltd (CQTC), Training Center of Wuhan Communication Committee (HBTC), Vehicle servicing sector association of Shenzhen (SZTC)				

3. A technique & equipment study tour of CFCs R&R was taken by SEPA and UNIDO in USA and Japan from April 4th to 13th, 2006. After the meeting and discussion in Japan by three parties (SEPA, UNIDO and Japan), the specification of procurement equipment for the second round bidding was prepared in April 13th. An expert proseminar discussing and reviewing the specification was held on April 25th in China. (the minutes of the workshop is in Annex II). Then the specification was commented by UNIDO and Japan. By June 4, almost all the items of the specification were agreed among parties expect some minor issue.

4. The first round procured equipments were distributed to the end users. The distributive situation is as follows:

CFC-12 recovery machine	
Beneficiary	Quantity
National Training Center	4
Regional Training Center in Jiangsu	2
Regional Training Center in Guangdong	2
Regional Training Center in Jilin	2
Regional Training Center in Chongqing	2
Regional Training Center in Shandong	2
Regional Training Center in Wuhan	2
Regional Training Center in Xian	2
CFC recovery center in Beijing	2
3 vehicle disposal stations in Beijing	3
CFC recovery center in Jilin	2
9 vehicle disposal stations in Jinlin	9
CFC recovery center in Shandong	2
17 vehicle disposal stations in Shandong	17
CFC recovery center in Hubei	2
14 vehicle disposal stations in Hubei	14
CFC recovery center in Guangdong	2
23 vehicle disposal stations in Guangdong	23
CFC recovery center in Chongqing	2
1 vehicle disposal stations in Chongqing	1
CFC recovery center in Sichuan	2
21 vehicle disposal stations in Sichuan	21
CFC recovery center in Shanxi	2
9 vehicle disposal stations in Shanxi	9

CFC recovery center in Guangxi	2
2 vehicle disposal stations in Guangxi	2
CFC recovery center in Shanghai	2
3 vehicle disposal stations in Shanghai	3
CFC recovery center in Jiangsu	2
14 vehicle disposal stations in Jiangsu	14
Total	156

Refrigerant Identifier

Beneficiary	Quantity
National Training Center	2
Regional Training Center in Jiangsu	2
Regional Training Center in Guangdong	2
Regional Training Center in Jilin	2
Regional Training Center in Chongqing	2
Regional Training Center in Zhejiang	2
Regional Training Center in Shandong	2
Regional Training Center in Wuhan	2
Regional Training Center in Xian	2
CFC recovery center in Beijing	2
3 vehicle disposal stations in Beijing	3
CFC recovery center in Jilin	2
9 vehicle disposal stations in Jinlin	9
CFC recovery center in Shandong	2
17 vehicle disposal stations in Shandong	17
CFC recovery center in Hubei	2
14 vehicle disposal stations in Hubei	14
CFC recovery center in Guangdong	2
23 vehicle disposal stations in Guangdong	23
CFC recovery center in Chongqing	2
1 vehicle disposal stations in Chongqing	1
CFC recovery center in Sichuan	2
21 vehicle disposal stations in Sichuan	21
CFC recovery center in Shanxi	2
9 vehicle disposal stations in Shanxi	9
CFC recovery center in Guangxi	2
2 vehicle disposal stations in Guangxi	2
CFC recovery center in Shanghai	2
3 vehicle disposal stations in Shanghai	3
CFC recovery center in Jiangsu	2
14 vehicle disposal stations in Jiangsu	14
Total	156

CFC-12 R&R machine

Beneficiary	Quantity
National Training Center	6
Regional Training Center in Jiangsu	2
Regional Training Center in Guangdong	2
Regional Training Center in Jilin	2
Regional Training Center in Chongqing	2
Regional Training Center in Zhejiang	2

Regional Training Center in Shenzhen	2
Regional Training Center in Shandong	2
Regional Training Center in Wuhan	2
Regional Training Center in Xian	2
142 big vehicle servicing stations around China	142
Total	166
Acid degree machine	
Beneficiary	Quantity
National Training Center	2
Regional Training Center in Jiangsu	1
Regional Training Center in Guangdong	1
Regional Training Center in Jilin	1
Regional Training Center in Chongqing	1
Regional Training Center in Zhejiang	1
CFC recovery center in Shanghai	1
CFC recovery center in Jiangsu	1
Total	9
Storage Cylinder	
Beneficiary	Quantity
30 CFC recovery centers around China	60
Total	60

5. The end users had carried the R&R activities by using the first procured machine from April. After using the equipments for about one month, the feedback on the equipments is as follows:

a, The recovery speed of CR 700 machine made by CPS company is quick and it is easy to carry recovery activity both in vapor or liquid state. Because it is easy to take so it is suitable to do the CFC-12 recovery from one place to the other.

b, AC 500pro machine made by Robinair company is suitable to do the CFC-12 R&R activity. However, the screen display is in English so it is not easy for the technician to operate.

6. MIS for Monitoring in both vehicle servicing sector and vehicle disposal sector had been developed.

7. Four awareness generation workshops had been held around China. About 1,000 participants attended the workshops. They increased public awareness on importance of ozone layer protection and its practical implications, information dissemination on the CFC phase-out programme.

8. The survey on the vehicle disposal sector had been finished. 30 CFC recovery centers were selected by China National Resources and Recycling Association (CRRA). The list is as follows.

	CFC recovery centers	Location
1	Beijing Lianhe Vehicle Disposing Factory	Beijing
2	Tianjin Jinmeida Integrating Utilizing Co.,Ltd	Tianjin
3	Shijiazhuang Retired Vehicle Cooperation	Hebei
4	Taiyuan Resources Recovering&Reusing Co.,Ltd	Shanxi
5	Huhehaote Resources Recovering&Reusing Co.,Ltd	Huhehaote
6	Shenyang Qiushi Disposal Vehicle Recovering Co.,Ltd	Liaoning
7	Jilin Metal Recycling&Recovery Corporation Vehicle Disposing Center	Jilin
8	Heilongjiang Machnical Equipments Reusing Co.,Ltd	Heilongjiang
9	Shanghai Motor Vehicle Recovering Service Center	Shanghai
10	Jiangsu suwu Recovering&Reusing Co.,Ltd	Jiansu
11	Zhejiang yuantong Resources Recycling&Ship Dismantling Co.,Ltd	Zhejiang
12	Anhui Hualong Resources Recycling Co.,Ltd	Anhui
13	Fujian Wugong Disposal Vehicle Recovering&Dismantling Co.,Ltd	Fujian
14	Shandong Tongli Disposal Motor Vehicles Recovery & Dismantling Co.,Ltd	Shandong
15	Jiangxi Vehicle Recovering&Dismantling Co.,Ltd	Jiangxi
16	Henan Jinhui Resources Recovering&Reusing Co.,Ltd	Henan
17	Wuhan Xinhui Retired Vehicle Recovery Co.,Ltd	Hebei
18	Changsha Jinhui Disposal Vehicle Recovering Co.,Ltd	Hunan
19	Guangdong Metal Recovery Co.,Ltd	Guangdong
20	Guangdong Metal Recovery Co.,Ltd	Guangxi
21	Hainan Tongyuan Resources Recovering&Reusing Co.,Ltd	Hainan
22	Congqing Metal Recovery Co.,Ltd	Chongqing
23	Sichuan Retired Vehicle Operation Co.,Ltd	Sichuan

	CFC recovery centers	Location
24	Guizhou Metal Recovery Co.,Ltd	Guizhou
25	Yunnan Xinyuan Resource Recycling Industry Co.,Ltd	Yunnan
26	Shanxi Jinhui Disposal Vehicle Recovering Co.,Ltd	Shanxi
27	Ganshu Jinhui Resources Recycling Co.,Ltd	Ganshu
28	Qinghai Metal Recovery Co.,Ltd	Qinghai
29	Ningxia Metal Recovery Co.,Ltd	Ningxia
30	Xinjiang Jinye Vehicle Recovering Co.,Ltd	Xinjiang

9. Two policy issues are under developing in the cooperation with the relevant ministries. One is together with the department of Market System Development of Ministry of Commerce to compile "The Management Regulations of Recovery & Dismantling Retired Vehicle". The other is together with Ministry of Communications to compile "the study on the management policies and measures of recover refrigerant in vehicle servicing sector".

3. Audit report

3.1. Targets

Target achieved, 2004 (ODP tonnes)	Target set in Agreement, 2004 (ODP tonnes)
Total national CFC-12 consumption: 6,246	Total national CFC-12 consumption: 6,934
Total CFC consumption in the sector: 4,868	Total CFC consumption in the sector: 5,083

3.1.1 Consumption Data by Sector

In metric tonnes

Sector	CFC-11	CFC-12	Total
Manufacturing			
Aerosol	297.000	845.000	
Foam	8,418.051	116.000	
Refrigeration	883.000	720.000	
Solvents			
Other	463.052		
Servicing			
Refrigeration	303.000	4565.064	4,868.064

GRAND TOTAL	10,364.103	6,246.064	
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The consumption data for each sector listed above has been verified by SEPA and was officially reported to the Ozone Secretariat.

3.1.2 National CFC-12 Consumption (A7 consumption)

In metric tonnes

Substances	Import	Export	Production ¹
CFC-12	none	7,077.853	13,323.917

*Production did not include the quantities as feedstock.

The production data in the above table has been audited and verified by the World Bank. The appropriate audit report was already presented to the ExCom, however copy could be provided if required.

The import & export data are the official ones from the General Customs Administration of the People's Republic of China. Its original text can be provided for reference if required.

3.2 Achievement of Performance

China has met the Targets for the year 2004 set in the Agreement.

Achievement of Performance Targets for the Year 2004, ODP tonnes

Item	Target	Actual	Difference
A7 Consumption of CFC-12	6,934	6,246	688
Consumption of CFC 12 in the service sector	5,083	4,868	215

The data in the table above show that total national consumption of CFC-12 in 2004 amounted to 6,246 ODP tonnes, which is less than the 2004 consumption limit of 6,934 ODP tonnes; the under-utilisation is 688 ODP tonnes.

Total consumption of CFCs in the refrigeration servicing sector in 2004 was 4,868 tonnes, which is less than the consumption limit of CFCs of 5,083 tonnes set for 2004.

Annex I Minutes of the second training of trainer workshop on “Recovery CFC-12 Refrigerant from Mobile Air-conditioning”

Train the technicians in both vehicle servicing sector and vehicle disposal sector on good practices during serving and disposal of MAC, including recovery and recycling of CFC is one of the most important components under the CFCs phase-out plan in the refrigeration servicing sector of China. The first training of trainer workshop (TOT) had been held successfully on Jan.2006 in Beijing and the second TOT will be held from Feb.20 to Feb 24 in Beijing by China Certification Centre for Automobile Products(CCAP)- the National Training Centre as per the fixed plan. There were 10 trainers from National Training Center, three regional training centers and vehicle servicing sector association of Shenzhen city attending this workshop. (Trainers list is attached)

The following management presented the opening ceremony of the workshop:

Mr. Li Hongbing, Deputy Chief of Division III of FECO/SEPA; Mr. Huan Xueping, Chief of CCAP; Ms. Yi Xu, Senior Programme Officer of FECO/SEPA. The opening ceremony was chaired by Ms. Ma Shiming from CCAP. First, Mr. Li Hongbing made a brief opening address. He hoped that the trainers having been trained in this workshop study hard in the 4-days training so as to teach the technicians in both vehicle servicing sector and vehicle disposal sector. Mr.Huan Xueping introduced CCAP briefly and expressed that CCAP will try its best to carry out each TOT workshop. Ms. Yi Xu introduced the teachers for the TOT and made some requirement for the TOT.

After one-hour opening ceremony, the workshop began. The following topic had been trained in the 4-days workshop.

1. Ms.Yi Xu presented the basic knowledge on the China Refrigeration servicing sector CFC phase out plan. First She stated the important functions of ozone layer, the destroyed theory and the resulted harms as well as the composites and appliances of ODS. Then she introduced the process of ozone layer protection by the international society, the important international conventions and China Country Programme as well as the MAC sector actions for this. At last she introduced how to carry the plan in both vehicle servicing sector and vehicle disposal sector.

2. Professor Chen Jiangpin from Shanghai Jiaotong University taught the refrigerant used in MAC. He focus on the character differences between CFC-12 and HFC-134a.

3. Professor Chen Jiangpin also introduced how to use the training software to train the technicians.

4. Vice professor Tian Changqin from Technical Institute of Physics and Chemistry of Chinese Academy of Sciences taught the system and main components of MAC.

5. Mr. Wang Chenkuan, senior engineer of CCAP taught how to maintain the MAC, R&R and deal with CFC-12. He described carefully on the good practices in maintaining MAC.

6. Technicians from CPS and Robinair Company who win CFC-12 R&R equipment procurement in bidding taught how to use the equipments. After teaching, each trainer practices the equipments independently.

7. The trainers and teaches discussed carefully on how to carry out the training of technicians based on the arranged teaching schedules.

8. MIS developed technicians from China Association of Automobile Manufactures (CAAM) introduced briefly how to use MIS to collect the data on R&R CFC-12.

According to the feedback opinion from the first TOT, the teaching and practicing hours for how to use the equipment had been increased accordingly to make sure each trainer grasping the working principle and using method of CFC-12 R&R equipment.

After 4-days hard study each trainers passed the final examination with good grades. Branch Chief officer from UNEP, Mr. Rajendra Shende , Programme Officer from UNEP, Mr. Hu Shaofeng and Division Chief of FECO/SEPA , Mr. Xiong Kang presented the closing ceremony and issued the "Quality Certificate" for each trainer. Mr. Shende gave congratulations to each trainer for passing the test. He tried to explain to each participant the great meaning of the project that they participated in for protecting environment by showing some vivid datum. In this way, he hoped that the trainers will try their best to carry out this project.

Generally this TOT was held successfully and fruitfully. According to the Evaluation Feedback Forms from the trainers, the method, contents and arrangements for the training are all good. The TOT raised each trainer's consciousness on protecting ozone layer and increased the good practice on maintaining MAC which forms a good foundation for carrying the training of technicians.

Annex 1 List of Trainers

No.	Name	Working Unit	Duty/ Technical title
1	Wen Tiyou	Changan SUZUKI Co.Ltd	Engineer
2	Chen Qiang	Changan SUZUKI Co.Ltd	Engineer
3	Mo Jianzhang	GuangDong Communication Polytechnic Vehicle Institute	Lab assistant
4	Li Bo	GuangDong Communication Polytechnic Vehicle Institute	Lab assistant
5	Guo Hailong	GuangDong Communication Polytechnic Vehicle Institute	Postgraduate
6	He Weifeng	FAW Car Sales Co. Ltd Service Department	Training Lecturer
7	Li Jingling	FAW Car Sales Co. Ltd Service Department	Training Lecturer
8	Yang Tuanhui	vehicle servicing sector association of Shenzhen	General Secretary
9	Zhang Jianan	CCAP	Senior Engineer
10	Zhu Kaiqiang	CCAP	Engineer

Annex II Minutes of the third training of trainer workshop on “Recovery CFC-12 Refrigerant from Mobile Air-conditioning”

Train the technicians in both vehicle servicing sector and vehicle disposal sector on good practices during serving and disposal of MAC, including recovery and recycling of CFC is one of the most important components under the CFCs phase-out plan in the refrigeration servicing sector of China. The first training of trainer workshop (TOT) and the second TOT had been held successfully on Jan. and Feb. 2006 in Beijing and the third TOT will be held from Sep.4 to Sep.8 in Beijing by China Certification Centre for Automobile Products(CCAP)- the National Training Centre as per the project plan. There were 10 trainers from three regional training centers attending this workshop. (Trainers list is attached)

The following management presented the opening ceremony of the workshop:

Mr. Li Hongbing, Deputy Chief of Division III of FECO/SEPA; Ms. Yi Xu, Senior Programme Officer of FECO/SEPA. The opening ceremony was chaired by Ms. Ma Shiming from CCAP. First, Mr. Li Hongbing made a brief opening address. He explained three points to each participants, that is: 1. The attitude of this TOT, 2. How to learn in this TOT, 3. The task which need to be done after being trained. Ms. Yi Xu introduced the teachers for the TOT and made some detail requirement for the TOT.

After one-hour opening ceremony, the workshop began. The following topic had been trained in the 4-days workshop.

1. Ms. Zhu Kaiqiang from the Automobile working group presented the basic knowledge on the China Refrigeration servicing sector CFC phase out plan. First She stated the important functions of ozone layer, the destroyed theory and the resulted harms as well as the composites and appliances of ODS. Then she introduced the process of ozone layer protection by the international society, the important international conventions and China Country Programme as well as the MAC sector actions for this. At last she introduced how to carry the plan in both vehicle servicing sector and vehicle disposal sector.

2. Mr. Wang Chenkuan, senior engineer of CCAP taught the refrigerant used in MAC. He focus on the character differences between CFC-12 and HFC-134a.

3. Mr. Wang Chenkuan also taught how to maintain the MAC, R&R and deal with CFC-12. He described carefully on the good practices in maintaining MAC.

4. Mr. Gong Jinlong, senior engineer of CCAP introduced how to use the training software to train the technicians.

5. Mr. Gong Jinlong together with technicians from Robinair Company who win CFC-12 R&R equipment procurement in bidding taught how to use the CFC12 R&R equipments. After teaching, each trainer practices using the equipments independently.

6. Mr. Yu Qizhang, senior engineer from CCAP taught the system and main components of MAC.

7. The trainers and teaches discussed carefully on how to carry out the training of technicians workshops based on the arranged teaching schedules.

8. MIS developed technicians from China Association of Automobile Manufactures (CAAM) introduced briefly how to use MIS to collect the data on R&R CFC-12.

After 4-days hard study each trainers passed the final examination with good grades. In the end each trainers got the "Quality Certificate" for the training.

Generally this TOT was held successfully and fruitfully. According to the Evaluation Feedback Forms from the trainers, they all satisfied with the method, contents and arrangements for the training. The TOT raised each trainer's consciousness on protecting ozone layer and increased the good practice on maintaining MAC which forms a good foundation for the next step of carrying the training of technicians workshop.

Annex 1 List of Trainers

No.	Name	Working Unit	Duty/ Technical title
1	Zhang Lijun	Mobile testing and maintaining centre of Shan Dong Institute of Communication	Engineer
2	Xu Gang	Mobile testing and maintaining centre of Shan Dong Institute of Communication	Lab tester
3	Zhu Fumin	Mobile testing and maintaining centre of Shan Dong Institute of Communication	Engineer
4	Yin Xiangquan	Mobile testing and maintaining centre of Shan Dong Institute of Communication	Lab tester
5	Zeng Yong	Training Center of Wuhan Communication Committee	
6	Wang Jianzhong	Training Center of Wuhan Communication Committee	Instructor
7	Chen Zonghan	Training Center of Wuhan Communication Committee	Senior Instructor
8	Wang Xuehui	Vehicle servicing sector association of Shenzhen	Technician
9	Wu Zhiwen	Vehicle servicing sector association of Shenzhen	
10	Li Yuanming	Vehicle servicing sector association of Shenzhen	

Annex III Minutes of the forth training of trainer workshop on "Recovery CFC-12 Refrigerant from Mobile Air-conditioning"

Train the technicians in both vehicle servicing sector and vehicle disposal sector on good practices during serving and disposal of MAC, including recovery and recycling of CFC is one of the most important components under the CFCs phase-out plan in the refrigeration servicing sector of China. The fourth TOT will be held from Jan.30 to Feb.2 in Beijing by China Certification Centre for Automobile Products(CCAP)- the National Training Centre as per the project plan. There were 14 trainers from five regional training centers attending this workshop. (Trainers list is attached)

The following management presented the opening ceremony of the workshop:

Ms. Yi Xu, Senior Programme Officer of FECO/SEPA. The opening ceremony was chaired by Mr. Yu Qizhang from CCAP. First, Ms. Yi Xu made a brief opening address. She explained three points to each participants, that is: 1. The attitude of this TOT, 2. How to learn in this TOT, 3. The task which need to be done after being trained. Ms. Wang Ying from CCAP introduced the teachers for the TOT and made some detail requirement for the TOT.

After one-hour opening ceremony, the workshop began. The following topic had been trained in the 4-days workshop.

1. Mr. Yu Qizhang from CCAP presented the basic knowledge on the China Refrigeration servicing sector CFC phase out plan. First he stated the important functions of ozone layer, the destroyed theory and the resulted harms as well as the composites and appliances of ODS. Then he introduced the process of ozone layer protection by the international society, the important international conventions and China Country Programme as well as the MAC sector actions for this. At last he introduced how to carry the plan in both vehicle servicing sector and vehicle disposal sector.

2. Mr. Wang Chenkuan, senior engineer of CCAP taught the refrigerant used in MAC. He focus on the character differences between CFC-12 and HFC-134a.

3. Mr. Wang Chenkuan also taught how to maintain the MAC, R&R and deal with CFC-12. He described carefully on the good practices in maintaining MAC.

4. Mr. Gong Jinlong, senior engineer of CCAP introduced how to use the training software to train the technicians.

5. Mr. Gong Jinlong together with technicians from Robinair Company who win CFC-12 R&R equipment procurement in bidding taught how to use the CFC12 R&R equipments. After teaching, each trainer practices using the equipments independently.

6. Mr. Yu Qizhang, senior engineer from CCAP taught the system and main components of MAC.

7. The trainers and teaches discussed carefully on how to carry out the training of technicians workshops based on the arranged teaching schedules.

After 4-days hard study each trainers passed the final examination with good grades. In the end each trainers got the "Quality Certificate" for the training.

Generally this TOT was held successfully and fruitfully. According to the Evaluation Feedback Forms from the trainers, they all satisfied with the method, contents and arrangements for the training. The TOT raised each trainer's consciousness on protecting ozone layer and increased the good practice on maintaining MAC which forms a good foundation for the next step of carrying the training of technicians workshop.

Annex 1 List of Trainers

No.	Name	Working Unit	Duty/ Technical title
1	Zhu Xuejun	Training Center of He Nan Communication Committee	Engineer
2	Li Mingli	Training Center of He Nan Communication Committee	Engineer
3	Zhao Zimin	Training Center of He Nan Communication Committee	Engineer
4	Wu Yongjian	Training Center of He Nan Communication Committee	Lecturer
5	Yue Xianjie	Training Center of He Nan Communication Committee	Lecturer
6	Lv Xuanzheng	Training Center of An Hui Communication Committee	Senior Lecturer
7	Xiang Benxue	Training Center of An Hui Communication Committee	Lecturer
8	Ye Shuang	Training Center of An Hui Communication Committee	Lecturer
9	Jiang Nanxi	Training Center of Hu Nan Communication Committee	Assistant Engineer
10	Zhao Jinfu	Training Center of Hu Nan Communication Committee	Assistant Engineer
11	Zheng Xueqin	Training Center of Fu Jian Communication Committee	
12	Wu Xiaoming	Training Center of Fu Jian Communication Committee	
13	Ma Lin	China Certification Centre for Automotive Products	Assistant Engineer
14	Jia Jingsheng	China Certification Centre for Automotive Products	Senior Engineer

Annex IV Minutes of the fifth training of trainer workshop on "Recovery CFC-12 Refrigerant from Mobile Air-conditioning"

Train the technicians in both vehicle servicing sector and vehicle disposal sector on good practices during serving and disposal of MAC, including recovery and recycling of CFC is one of the most important components under the CFCs phase-out plan in the refrigeration servicing sector of China. The fifth TOT will be held from Feb. 6 to Feb. 9 in Beijing by China Certification Centre for Automobile Products(CCAP)- There were 10 trainers from four regional training centers attending this workshop. (Trainers list is attached)

The following management presented the opening ceremony of the workshop:

Ms. Yi Xu, Senior Programme Officer of FECO/SEPA. The opening ceremony was chaired by Mr. Yu Qizhang from CCAP. First, Ms. Yi Xu made a brief opening address. She explained three points to each participants, that is: 1. The attitude of this TOT, 2. How to learn in this TOT, 3. The task which need to be done after being trained. Ms. Wang Ying from CCAP introduced the teachers for the TOT and made some detail requirement for the TOT.

After one-hour opening ceremony, the workshop began. The following topic had been trained in the 4-days workshop.

1. Mr. Yu Qizhang from CCAP presented the basic knowledge on the China Refrigeration servicing sector CFC phase out plan. First he stated the important functions of ozone layer, the destroyed theory and the resulted harms as well as the composites and appliances of ODS. Then he introduced the process of ozone layer protection by the international society, the important international conventions and China Country Programme as well as the MAC sector actions for this. At last he introduced how to carry the plan in both vehicle servicing sector and vehicle disposal sector.

2. Mr. Wang Chenkuan, senior engineer of CCAP taught the refrigerant used in MAC. He focus on the character differences between CFC-12 and HFC-134a.

3. Mr. Wang Chenkuan also taught how to maintain the MAC, R&R and deal with CFC-12. He described carefully on the good practices in maintaining MAC.

4. Mr. Gong Jinlong, senior engineer of CCAP introduced how to use the training software to train the technicians.

5. Mr. Gong Jinlong together with technicians from Robinair Company who win CFC-12 R&R equipment procurement in bidding taught how to use the CFC12 R&R equipments. After teaching, each trainer practices using the equipments independently.

6. Mr. Yu Qizhang, senior engineer from CCAP taught the system and main components of MAC.

7. The trainers and teaches discussed carefully on how to carry out the training of technicians workshops based on the arranged teaching schedules.

After 4-days hard study each trainers passed the final examination with good grades. In the end each trainers got the "Quality Certificate" for the training.

Generally this TOT was held successfully and fruitfully. According to the Evaluation Feedback Forms from the trainers, they all satisfied with the method, contents and arrangements for the training. The TOT raised each trainer's consciousness on protecting ozone layer and increased the good practice on maintaining MAC which forms a good foundation for the next step of carrying the training of technicians workshop.

Annex 1 List of Trainers

No.	Name	Working Unit	Duty/ Technical title
1	Sun Jian	Xi An Tangdu Automobile Servicing Company	Servicing Technician
2	Shen Fengqiang	Xi An Tangdu Automobile Servicing Company	Servicing Technician
3	Guan Zhenshan	Xi An Tangdu Automobile Servicing Company	Servicing Technician
4	Jin Hejun	Jigang VW Automobile Servicing Ltd., Ji Lin Province	Engineer
5	Wu Chunhua	Jigang VW Automobile Servicing Ltd., Ji Lin Province	Servicing Technician
6	Fang Wen	Training Center of Si Chuan Communication Committee	Assistant
7	Wu Jiankang	Training Center of Si Chuan Communication Committee	Lecturer
8	Xu Weiren	Training Center of Zhe Jiang Communication Committee	Servicing Technician
9	Xia Liangyao	Training Center of Zhe Jiang Communication Committee	Senior Lecturer
10	Liu Meiling	Training Center of Zhe Jiang Communication Committee	Lecturer

Annex V Minutes of expert proseminar of technical assistant project

China refrigeration servicing sector CFCs phase-out plan had been carried on for over one year so many technical aid jobs (including revising the published training manual , discussing and revising the specification of procurement equipment and carrying out public awareness activities) need to be discussed by experts. In order to develop such jobs well, SEPA/FECO decided to organize sector expert to attend the expert technical aid proseminar on 24th to 25th April 2006 in Beijing GuoHong Hotel. In that way, we can develop the relative technical aid job as soon as possible.

There are 11 people attending this proseminar including relative leader and staff from SEPA/FECO, professors from relative University (Participants list is attached).

First Mr. XiongKang, Chief of Division III of FECO/SEPA, expressed thanks to the attended experts fro the supports of MAC refrigeration servicing project. He pointed that it is difficult to carry out refrigeration servicing sector CFCs phase-out plan. MAC servicing sector is rather important among all the sectors in this project and to carry out CFCs phase-out in this sector will become a model for other sectors. Then, Ms, YiXu, senior Programme Officer of FECO/SEPA introduced the progress of the project in 2005 and the task of this proseminar. The topic and results of the proseminar are as follows,

1. Mr. Tian Changqing introduced the technique & equipment survey of CFCs R&R in USA and Japan from April 4th to 13th ,2006. He introduced in three aspects: survey schedule, survey content and survey result. He also introduced ARI 740-1998 standard for R&R refrigerant equipment of USA acquired in this survey. This standard formed a important foundation for the discussion on specification of procurement equipment.

2. Discussed and revised the specification of procurement equipment(SPE). According to the comments on the SPE of the first bidding from Japan, the experts revised the SPE on the basis of ARI 740-1998 standard, the discussion results in Japan and the feedback of using the first procurement equipment. In the end the draft of SPE was formed to be review by Japan and UNIDO.

3. Discussed and revised the training manual for republishing. Experts expressed their own opinions on the training manual of the first edition. After discussing, the staff of SEPA/FECO will summarize the revise opinion by May 1st and put it on the internet. Then

Mr. Huang Xinzhaoh will modify it and form the second edition. In the end Mr. Chen Jiangpin and Mr. Tian Changqin will review it and form the third edition.

4. Discussed and revised the software for training. After holding two training of trainers workshop, the software for training had been modified and added some contents by Jin Ge software company based on the feedback of the workshop. The experts discussed the modified software in this proseminar and raised relative comments on it. Mr. Chen Jianpin summarized all these comments and will tell Jin Ge company to do the relative modification.

5. Discuss the preparation jobs for the International Seminar for New Generation MAC supported by UNEP. First Ms. Yi Xu introduced the background and purpose of this Seminar and then the experts gave their advices mainly on how to raise the fund for the seminar and how to organize this seminar. In the end, it is decided that two relative organizing committee should be set for the seminar. One is to raise the fund from the big MAC manufacturer and the other is to focus on the technique of the seminar and to review the articles for the seminar and form the final Article Contribution of the seminar.

6. Discuss the awareness generation activities of 2006. Ms. Yi Xu introduced the awareness generation activities which need to carry out in 2006 and the content of the newsletter is described especially. She requested every expert to contribute actively. Mr. Yu Yuanjun expressed that he will send the Magazines published by China Refrigeration and Air-conditioning Industry Association(CRAA) periodically for reference of the Newsletter.

7. Discuss the relative job for the policy development. First, Ms. Yi Xu introduce that now the policy development job is focus on vehicle disposal sector. There are two jobs that is : to draw the new criterion for dismantling retired vehicles and to Study on Distributing Operating Fund for CFC-12 Recovery in Vehicle Disposal Sector. She requested experts to give advice on the other jobs need to do in policy development.