



**OFFICE OF ENVIRONMENT & EMERGENCY MANAGEMENT**

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December 30, 2013

MEMORANDUM

TO: Director  
FROM: Program Manager/RAC Instructor  
SUBJECT: Trip Report

Transmitted for your information is a summary of a trip report for Professor Bertoldo Esteban Jr. of the College of Micronesia-FSM, Pohnpei Campus and myself. Per Travel Authorizations number TK0462 and TK0463 authorize our official travel duty assignment to conduct a Training on Refrigeration and Air Conditioning in the State of Yap from December 18-20, 2013. Such training is part of the core activities charted under the Pacific Regional Hydrochlorofluorocarbon Phase-out Management Plan (HPMP) which currently under implementation stage.

Since Yap has already chartered their RAC association, it is indeed an incentive for them to receive the first technician training.

Should you need more details, please let us know.

Thank you,

Tilson T. Kephos

Bertoldo Esteban

Cc: Assistant Director,

## Summary

On December 17, 2013, Associate Professor Bertoldo Esteban Jr. from the College of Micronesia-FSM/Pohnpei Campus and I traveled to Yap to conduct a Technician Training in Refrigeration and Air Condition to re-enforce the Montreal Protocol. Such training is targeting the technicians who are currently servicing the refrigeration and air conditioning in the state of Yap. As charted as one of the main core activities in the implementation of the phase-out of HCFC in the FSM, the training adapted the same training materials and strategies used by Mr. Michael Moller from Australian Pacific Technical College who conducted the similar training in Pohnpei from October 21-23, 2013.

The training contents as indicated in the attached Training Program, covers a wide areas from Ozone Science to demonstration of recovering and retrofitting from HCFC refrigerant such R-22 to HFC such as R-410A.

During the introductory session for the training, I delivered a presentation covering the initial background of how Montreal Protocol came into being and how it obligates the FSM Government to engage the RAC associations and other stakeholders to collaborate one another and join the other member countries of the Montreal Protocol to address the environmental impacts of refrigerants currently used in the RAC sectors.

Such introductory session also covers the Ozone Depleting Substance (ODS) Regulation, where copies of ODS regulation were provided for the participants. The regulation was briefly presented as two or more items in such regulation relate to the RAC technician requirements. The penalties under such regulation was also summarized and presented during the training.

With the great preparation of the newly chartered Refrigeration and Air Conditioning (RAC) Association of the State of Yap, the technician training went smoothly during the three full days at the Yap Small Business Development Center until it was



successfully completed. Professor Bertoldo conducted most of the technical sessions that deals with services of RAC technicians. The training brought together a total of seventeen technicians from both private and public sectors. This trade still shows that female are not ready to engage in such tradesman as similar to that of Pohnpei.

As I observed the participants, I decided to do an instant analyzes on the demographic characteristics of the participants. The age composition ranges from 27 to 56 respectively which yield a mean age at 45 while median age is at 47.5. This indicates that fifty percent of the participants concentrated at the 47<sup>th</sup> age bracket which would implies that younger working age group are not in this trade.

While COM-FSM/Pohnpei campus has a low rate of graduates in this trade, I think both state and national government should be alerted on this. The implementation of Montreal Protocol is also highly dependent on the RAC technician to sustain the changes and maintenance not only throughout the HCFC phase-out schedule but also during the transitional hurdles as technology shifted toward the natural hydrocarbon refrigerants. If the workforce in this field is not able to cope and withstand the technological changes, this will impact the overall implementation and may undermine our compliance to this international treaty.

While both private and pubic sectors are noticeably engage in this RAC association, we should continue to encourage the collaboration and cooperative relationship between these two vehicles running the economy.

The closing of the training brought together several supervisors and CEOs of the participants to witness and learn more on the undertakings of the Montreal Protocol. This is indeed also contributes to the awareness campaign of the Montreal Protocol.

During the closing some RAC equipment/tools were given to the Yap RAC association for their daily servicing. Along with those previously sent to Yap we have given them the following: 1 recovery machine, 1 micron gauge, 1 weighing scale w/hose and 1 leak detector. Since OEEM received 3 of each, 1 package is strategically located in Yap, while the other states along with Pohnpei Campus will share the other two.

The Yap Customs Office also received 1 refrigerant identifier with battery charger. The other refrigerant identifier will be shared by Pohnpei, Chuuk and Kosrae since they are in close proximity.

Below are some of the snap shots taken during the training.



#### Issues:

- Although our recovery cylinder was confiscated by the Transportation and Security Administration (TSA) in Guam, the participants were able to bring more than one recovery cylinders for the hands-on-exercises. United in Pohnpei accepted the package however, TSA in Guam confiscated the item.
- One session was not fully covered due to lack of R-407C on the island, however similar techniques were demonstrated to supplement the actual retrofitting from HCFC to HFC. Multiple cylinders were used to substitute the actual retrofitting of an AC unit with R-407C.

#### Recommendation:

- Since 30 pounder of R-407C cylinder is not available for the training in any of the state, OEEM must step in to purchase one cylinder of R-407C for each state to actually perform the retrofitting process.
- OEEM to work alongside with COM-FSM/Pohnpei Campus to find ways to improve the enrollment and graduation rate of RAC trade.
- Review of MOU/Contract on Equipment Handover between each RAC and OEEM should be completed as soon as possible.
- OEEM to conduct a RAC meeting in Pohnpei, Kosrae and Chuuk in order to accelerate the establishment of RAC association in these states. Yap was fortunate for they have scheduled their RAC meeting when I was there during the data collection process.
- RAC technician training in Chuuk and Kosrae should be scheduled within the first quarter of CY 2014.
- Data collection of 2013 data should also be conducted during the same time frame (1<sup>st</sup> qtr of 2014) to allow ample time for compilation of annual reports to MLF and Ozone Secretariat which due in May.



**Multilateral**  
the Implementation of the

# **Re-enforcing the Montreal Protocol**

## **Best Practice Education and Training in Refrigeration & Air Conditioning: Technician Level**

**Colonia, Yap State**

**December 18-20, 2013**

Day 1: 18 December 2013		
08:30 - 09:00	<b>Registration of participants</b>	YAP RAC Association
09:00 -09:15	Opening Remarks	Tilson Kephas National Ozone Officer of FSM
09:15- 09:30	Introduction of participants	
09:30 – 09:45	Morning Tea Break and Group Photo	
09:45-11:00	<ul style="list-style-type: none"> <li>• Overview of Montreal Protocol/FSM Ratification</li> <li>• Overview of HCFC Phase-out Management Plan</li> <li>• Overview of Phase-out Schedule</li> <li>• Overview of Ozone Depleting Substance Regulation in relation to RAC Technicians</li> <li>• Overview of Quota and Licensing</li> </ul>	Tilson Kephas National Ozone Officer of FSM
11:00 - 12:00	Ozone science and Montreal protocol/Lecture	Bert Esteban Jr. RAC Associate Professor COM-FSM
12:00 - 13:00	<b>LUNCH BREAK</b>	
13:00-14:45	Refrigerants and alternatives/ lecture	Bert Esteban Jr. RAC Associate Professor COM-FSM
14:45-15:00	Afternoon Tea	
15:00-17:00	Identifying refrigerants by using electronic refrigerant identifier/ workshop demonstration	Bert Esteban Jr. RAC Associate Professor COM-FSM

<b>Day 2: 19 December 2013</b>		
08:15 – 8:30	<b>Review of the previous lesson</b>	Bert Esteban Jr. RAC Associate Professor COM-FSM
08:30 – 09:45	<b>Air conditioning and Refrigeration tube practices: Cutting, Flaring, Swaging and brazing/video and discussions</b>	Bert Esteban Jr. RAC Associate Professor COM-FSM
09:45 – 10:00	<b>Morning Tea Break</b>	
10:00 – 12:00	ACR tubes practices/hands-on	Bert Esteban Jr. RAC Associate Professor COM-FSM
12:00 - 13:00	LUNCH BREAK	
13:00-14:45	Pressure test, evacuation and refrigerant recharging/lecture & demonstration	Bert Esteban Jr. RAC Associate Professor COM-FSM
14:45-15:00	Afternoon Tea	
15:00-17:00	Practical exercises	Bert Esteban Jr. RAC Associate Professor COM-FSM

<b>Day 3: 20 December 2013</b>		
08:15 – 8:30	<b>Review of the previous lesson</b>	Bert Esteban Jr. RAC Associate Professor COM-FSM
08:30 – 09:45	<b>Refrigerant recovery and retrofitting procedures</b>	Bert Esteban Jr. RAC Associate Professor COM-FSM
09:45 – 10:00	<b>Morning Tea Break</b>	
10:00 – 12:00	Recovery practices/hands-on	Bert Esteban Jr. RAC Associate Professor COM-FSM
12:00 - 13:00	LUNCH BREAK	
13:00-14:45	Retrofitting of air conditioning system/hands-on	Bert Esteban Jr. RAC Associate Professor COM-FSM
14:45-15:00	Afternoon Tea	
15:00 –17:00	Continuation of hands-on	Bert Esteban Jr. RAC Associate Professor COM-FSM
17:00-17:30	Wrap-Up and Way Forward	
18:00 – 22:00	Dinner Hosted by OEEM and YAP RAC	