



OFFICE OF ENVIRONMENT & EMERGENCY MANAGEMENT
PO BOX PS-69

Palikir, Pohnpei FM 96941 Phone: (691) 320-8814/8815 Fax: (691) 320-8936

May 19, 2014

MEMORANDUM

TO: Director

FROM: Program Manager/RAC Instructor

SUBJECT: Trip Report on RAC Technician Training in Kosrae

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. As recommended to shift the training dates from 13-15 May 2014 to 9-12 May 2014, Professor Bertoldo and I took the flight to Kosrae on the 9th of May 2014.

Upon arrival, a meeting was arranged by the President of Kosrae RAC Association at the Gazebo at Nautilus Resort. The meeting was to discuss and strategize the lessons to fit the remaining days for the training. Since May 9th 2014 was an holiday (FSM Constitution Day), only few of the Kosrae RAC members showed up for the meeting. This is the first setback that I realized, however we managed to discuss and agreed to conduct the training on Saturday and Monday.

Should you need more details, please let us know.

Thank you,

A handwritten signature in blue ink, appearing to read "Tilson T. Kephas", is written over a horizontal line.

Tilson T. Kephas

A handwritten signature in blue ink, appearing to read "Bertoldo Esteban", is written over a horizontal line.

Bertoldo Esteban

Cc: Assistant Director,

Summary

On May 9, 2014, Associate Professor Bertoldo Esteban Jr. from the College of Micronesia-FSM/Pohnpei Campus and I traveled to Kosrae to conduct a Technician Training in Refrigeration and Air Conditioning to re-enforce the Montreal Protocol exclusively on the Hydrofluorocarbon Phase-out Management Plan (HPMP). Such training is targeting the RAC technicians who are currently servicing the refrigeration and air conditioning in the state of Kosrae. 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 as well as Technician Training in Yap in December 2013.

The training contents as indicated in the attached Training Program, covers a wide areas from Ozone Science, Government policies on Montreal as well as demonstration identification of refrigerants using the refrigerant identifier and recovering and such R-22 to HFC such as R-410A.

Upon arrival, we briefly meet with the RAC members at the Gazebo outside the Nautilus Resort to discuss the training and how will it progress in the coming days. We agreed to have the training on Saturday and Monday. While the caterer could not accommodate the refreshment and lunch, we have no other choice but to negotiate with Tree Lodge Restaurant to provide for Saturday.



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 global environmental impacts caused by refrigerants currently used in the RAC sectors.

Such introductory session also covers the Ozone Depleting Substance (ODS) Regulation, where one copy of the ODS regulation was provided to the President of the Kosrae RAC to share amongst the members of the association. The regulation was briefly presented as two or more items in such regulation relate to the RAC technician requirements.

I also briefly touched based on the requirement for certification as it is stipulated in the ODS regulations.

As I observed the participants, I decided to conduct another instant analyzes on the demographic characteristics of the participants as I did during the Yap Technician Training. The result portrayed the age composition which ranges from 26 to 65 respectively which yield a mean age at 44.8 while median age is at 42. This indicates that fifty percent of the participants concentrated at the 42nd age bracket which would implies that younger working age group are not in this trade. As we can infer that the active working age population ranges from 15-49, this picture is similar to that of the State of Yap where median age falls at either second or the last active working age cohort of 40 to 44 or 45 to 49 age bracket.

Mean	44.77778
Standard Error	4.088527
Median	42
Mode	#N/A
Standard Deviation	12.26558
Sample Variance	150.4444
Kurtosis	-0.32184
Skewness	0.33518
Range	39
Minimum	26
Maximum	65
Sum	403
Count	9
Largest(1)	65
Smallest(1)	26
Confidence Level(95.0%)	9.428159

This should send signal that while COM-FSM/Pohnpei campus has a trade in RAC both FSM government and state government must also advocate the importance of refrigeration and air conditioning so the rate of enrollment and graduates would be increased. The graduate rate as recorded during the 59th Commencement Exercises in 2014, there are only three graduates in this field. 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 use of refrigerant identifier was also demonstrated as shown in the picture below. This tool is one of most important tools to detect any content of a container, unit or even a cylinder. Although labels and color codes are being used on any cylinder, the contents may not be the same as what is shown on the label. The technicians are already aware of counterfeit refrigerants and at the same time requesting OEEM to provide refrigerant identifier for them. The need for such equipment is highly needed for both Customs officers as well as the technicians. The solution on providing refrigerant identifier is that OEEM will provide each Customs office one refrigerant identifier that will be shared with the RAC Association of that particular state.



Brief discussion was also touched based on the alternative refrigerants and its precautions as some are highly toxic and flammable. While some of the alternatives are not a threat to ozone but they are on the other hand a threat to the climate systems. Future endeavors on best alternatives suitable for the FSM, is to start on the HFCs which have low global warming potentials and at the same time complement the FSM Proposal to amend the Montreal Protocol exclusively to phase-down the use of HFCs. At the current import trends in the FSM, the R-134A accounted for about 56 percent. This is conspicuously put things in perspective as this refrigerant is mostly used in freezers, chillers, refrigerators etc. This implies that more and more households in the FSM are furnished with such appliances rather than air conditioning units. Although R-410A accounted for 17 percent trailing R-22, this also implies that there is a growing number of air conditioning units are being imported into the country.

After the training, we briefly discussed the Memorandum of Understanding between OEEM and the Kosrae State RAC Association on Handover of Tools and Equipment. The Kosrae RAC agreed to review the MOU and let us know the progress as we returned to Pohnpei. Copies of the MoU were distributed to the officers of the Kosrae RAC Association.

The training went well regardless of no afternoon refreshments during the two full days due to the prices.

During the closing, I invited the Assistant Secretary for Customs and Tax Administration, Director of KIRMA and General Manager of Kosrae Radio Broadcast since there are the potential stakeholders that would also educate the general public on issues relating to the protection of ozone layer.



During the closing some RAC equipment/tools were given to the Kosrae RAC association for their daily servicing. Along with those previously sent to Kosrae we have given them a recovery machine.

Issues:

- 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. Both vacuuming and recovery exercises were done using an AC unit and a 30 pounder recovery cylinder.
- Shipment of weighing scale and other kits takes too long to arrive
- Holidays and Week-ends are not suitable for training
- Unknown facts about how many appliances that are actually using any refrigerants in each state.
- Unknown facts about how many of these appliances are still running on R-22.

Recommendation:

- Continue to re-emphasize the importance for 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 Handover of Equipment between Kosrae RAC Association and OEEM should be completed as soon as possible.
- RAC technician training in Chuuk should be conducted in August 2014 after Professor Bertoldo returned from his vacation in the Philippines.
- Conduct training during week days but not on holidays and week-ends.
- Start preparation/meeting with state stakeholders and partners for the education awareness campaign to coincide with the 27th Anniversary of Montreal Protocol
- Conduct a sample survey on business establishments in each state to gather more detail information on number of appliances and refrigerants being used.
- Comparison of such collected information with customs records
- Having such result will contribute to the banning process of HCFC-based equipment.



Multilateral Fund
for the Implementation of the Montreal Protocol

Re-enforcing the Montreal Protocol

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

Tofol, Kosrae State – Federated States of Micronesia

May 9-12, 2014

Day 1: 9 May 2014 (Friday-Holiday – FSM Constitution)		
4:00-4:30pm	Upon Arrival – Prep meeting	Gazebo, Nautilus Resort Hotel
Day 2: 10 May 2014 (Saturday)		
08:30 - 09:00	Registration of participants	YAP RAC Association
09:00 -09:15	Opening Remarks	Tilson Kephass 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"> • Overview of Montreal Protocol/FSM Ratification • Overview of HCFC Phase-out Management Plan • Overview of Phase-out Schedule • Overview of Ozone Depleting Substance Regulation in relation to RAC Technicians • Overview of Quota and Licensing 	Tilson Kephass 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 - 13:30	LUNCH BREAK	
13:30-14:45	Refrigerants and alternatives/ lecture	Bert Esteban Jr. RAC Associate Professor COM-FSM
14:45 - 17:00	Identifying refrigerants by using electronic refrigerant identifier/ workshop demonstration -Participants take turn using refrigerant identifier	Bert Esteban Jr. RAC Associate Professor COM-FSM

Day 3: 12 May 2014 (Monday)

08:15 – 8:30	Review of the previous lesson	Bert Esteban Jr. RAC Associate Professor COM-FSM
08:30 – 09:45	Air conditioning and Refrigeration tube practices: Cutting, Flaring, Swaging and brazing/video and discussions	Bert Esteban Jr. RAC Associate Professor COM-FSM
09:45 – 10:00	Morning Tea Break	
10:00 – 12: 00	-ACR tubes practices/hands-on - Pressure test, evacuation and refrigerant recharging/lecture & demonstration	Bert Esteban Jr. RAC Associate Professor COM-FSM
12:00 - 13:30	LUNCH BREAK	
13:30-14:30	Refrigerant recovery and retrofitting procedures	Bert Esteban Jr. RAC Associate Professor COM-FSM
14:30 – 16: 50	-Recovery practices/hands-on -Retrofitting of air conditioning system/hands-on - Continuation of hands-on	Bert Esteban Jr. RAC Associate Professor COM-FSM
16:50-17:00	Wrap-Up and Way Forward	Tilson Kephass
18:30 – 22:00	Dinner Hosted by OEEM	Bully Hayes Restaurant