Environmental Standard Operating Procedure			
Originating Office: **MCAS Miramar Environmental Management Department**	Revision: Original	Prepared By: Environmental Management Department	Approved By: William Moog
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Title: Refrigerant Replacement (MVAC):

1.0 PURPOSE

The purpose of this Environment Standard Operating Procedure (ESOP) is to provide environmental guidelines for conducting refrigerant replacement (MVAC) operations onboard Marine Corps Air Station (MCAS), Miramar.

2.0 APPLICATION

This guidance applies to individuals that drain or recycle refrigerants and drain used air conditioning (A/C) or refrigeration system lubricants. Freon is a hazardous material that must be properly handled and recycled upon drainage. Used system lubricants must be treated as hazardous waste. In the case of repairs, shop personnel will drain the used refrigerant and store it for recycling and refill the equipment with recycled refrigerant.

3.0 REFERENCES

- 29 CFR 1910 (Code of Federal Regulations)
- 40 CFR
- Clean Air Act of 1990 (EPA)
- 22 CCR (California Code of Regulations)
- MCO P5090.2A (USMC Environmental Compliance and Protection Manual)
- FRL-5199-4

4.0 PROCEDURE

4.1 Discussion:

Station personnel must recover Freon from A/C units for recycling and drain contaminated mineral oil from refrigeration equipment. Generally, if the cost to repair an old piece of equipment is greater than 65% of the cost to purchase new equipment, the unit is replaced. This rule does not apply to vehicle air conditioning units.

Hazardous materials and hazardous wastes must be managed properly to avoid environmental impacts. Only approved containers must be used for these materials.

Contact Environmental Management Department (EMD) for replacement or repair of equipment.

4.2 Operational Controls:

The following procedures apply:

1. Ensure that a Material Safety Data Sheet (MSDS) for refrigerants, lubricants, and any other materials involved in this process are available and current.

2. Drain all refrigerant and mineral oil from vehicles or units prior to be replacement.

3. Mark the A/C units in vehicles and refrigeration units which have been drained of all Freon and mineral oil with "Empty" and the date on all sides of the unit. Maintain the form at work station for a minimum of three (3) years.

4. Fill out and attach a copy of a completed Refrigerant Removal Certification Form to each refrigeration unit or A/C system (in vehicle) from which refrigerant was replaced.

5. Deposit all used mineral oil into the used mineral oil drums in the hazmat area, and keep mineral oil separate from all other petroleum, oils, and lubricants (POL), as it is chlorinated.

6. Drain all refrigerant (R-134a, R-404a and R-12 in some older vehicles) into the Robinair for recycling (R-22 is not recycled).

7. Ensure that the following process sequence is followed when draining refrigerant from a unit:

   A. Recovery: remove the refrigerant from the unit into an external container.

   B. Recycle: (through the Robinair) to clean the refrigerant for reuse by oil separation and single or multiple filter dryers.

   C. Reclaim: restore refrigerant to original chemical specification so it can be reused.

8. Label all containers. Store containers in approved storage lockers.

9. When draining refrigerant from a system or unit do not fill the collection tank in excess of 80% of the tanks rated volume.

10. If the tank is going to be transported, ensure the level of refrigerant in the tank does not exceed 60% of the tanks rated volume at 70^{o} Fahrenheit.

11. Use only approved containers for draining and storing used refrigerant and mineral oil.

12. Post signs reading "Non-Flammable Compressed Gas" around area and on hazardous materials (HAZMAT) storage locker.

13. Dispose of all used rags in red FOD buckets, and take to "Air Frames" Building for disposal when buckets are full. They will exchange dirty rags for clean rags.

14. Clean up all spills immediately and report the spill to the shop supervisor.

15. Maintain a fully stocked spill kit nearby in a designated location known to all unit personnel.

16. Maintain fire extinguishers nearby in known locations.

17. Use proper Personal Protective Equipment (PPE) including; latex gloves, face shields, safety glasses and steel toe boots, when handling Freon or mineral oil.

18. Perform all Freon draining procedures outdoors as it displaces oxygen (O_2), and is considered an asphyxiate.

19. Ensure that all training and inspection records are current and available for inspection for three years.

20. If there are any specific situations or other concerns not addressed by this procedure, contact the Environmental Management Department (EMD).

4.3 Documentation and Record Keeping:

The following records must be maintained for hazardous materials/wastes and equipment:

1. MSDS for refrigerants R-22, R-134a and R404a, R-12.
2. Inspection and training records.
3. Refrigerant Removal Certification forms (maintained by CLC-11 for 3 years).
4. HW Log Book
5. Spill Log Book
6. Inspection records.

4.4 Training:

All affected personnel must be trained in this ESOP and the following:

1. Training for utilities/equipment repair 52C10.
2. Basic Refrigeration Mechanic 1161.
3. Fundamentals of Refrigeration.
4. EPA Refrigerant Recovery or Recycling Device Acquisition Certification.
5. Student Handbook for Section 608 Technician Certification.
6. Hazard Communication (HazCom) Training, (initial and annual).

7. Hazardous Waste Operations and Emergency response (HazWOPER) Training (initial and annual).

8. HAZMAT Supervisor Training (Supervisor/Hazmat Coordinator only).

4.5 Emergency Preparedness and Response Procedures:

Refer to Marine Corps Order (MCO) P5090.2A, Subject: Oil/Hazardous Substance Spill/Spill Prevention Control & Countermeasures (OHSS/SPCC) for MCAS Miramar. This includes calling the Fire Department and the EMD. The EMD will notify the Environmental Protection Agency (EPA) regarding refrigerant releases.

4.6 Inspection and Corrective Action:

The Environmental Compliance Coordinator (ECC) shall designate personnel to perform inspections. The ECC shall ensure deficiencies noted during the inspections are corrected immediately. Actions taken to correct each deficiency shall be recorded on the inspection sheet.

Refrigerant Replacement (MVAC) – Inspection Checklist	
Date:	Time:
Installation:	Work Center:
Inspector's Name:	Signature:

Inspection Items	Yes	No	Comments
1. Are MSDSs for refrigerants (R-22, R-134a, R404a and R-12) current and available for inspection? *(29 CFR 1910, 40 CFR, 22 CCR)*			
2. Is a MSDS for mineral oil current and available for inspection? *(29 CFR 1910, 40 CFR, 22 CCR)*			
3. Is all Freon and mineral oil drained from each vehicle/unit which is to be replaced of? *(40 CFR, MCO P5090.2A)*			
4. Are vehicles/units marked with "Empty" on all sides after being drained of Freon and oil? *(40 CFR, MCO P5090.2A)*			
5. Is a copy of a completed Refrigerant Removal Certification Form filled out and attached to the A/C system/unit the refrigerant was removed from? *(40 CFR, 22 CCR, MCO P5090.2A)*			
6. Is all used oil deposited into the used mineral oil			

drum located in the Hazardous Materials Area, and kept separate from other POL drums? *(40 CFR, 22 CCR, MCO P5090.2A)*			
7. Is all used Freon (other than R-22) deposited into the Robinair for recycling? *(MCO P5090.2A)*			
8. Is the following process sequence used when draining refrigerant from a unit? A. Recovery: remove the refrigerant from the unit into an external container, without necessarily testing it. B. Recycle: (through the Robinair) to clean the refrigerant for reuse by oil separation and single or multiple filter dryers. C. Reclaim: restore refrigerant to original chemical specification so it can be reused. *(MCO P5090.2A)*			
9. Are all refrigerant containers labeled and kept outside the generator bay in approved hazardous material lockers? *(MCO P5090.2A)*			
10. Is a Refrigerant Replacement Certification Form filled out whenever refrigerant is removed on any workstation? *(MCO P5090.2A)*			
11. When draining refrigerant from a unit, is the tank it is being drained into filled to no more than 80% of the tanks rated volume at any time? *(MCO P5090.2A)*			
12. If the tank is going to be, is the level of refrigerant in the tank no more than 60% of the tanks rated volume, at 70^{o} Fahrenheit? *(MCO P5090.2A)*			
13. Are only approved containers used to drain and store Freon and mineral oil (separately)? *(40 CFR, 22 CCR, MCO P5090.2A)*			
14. Are signs reading "Non-Flammable Compressed Gas" posted around the area and on storage lockers? *(40 CFR, 22 CCR, MCO P5090.2A)*			
15. Are all spills properly cleaned up immediately? *(40 CFR, 22 CCR, MCO P5090.2A)*			
16. Is a fully stocked spill kit kept nearby in a designated location known to all shop personnel? *(29 CFR 1910, 40 CFR, 22 CFR)*			
17. Are fire extinguishers kept nearby in a designated location known to all personnel? *(29 CFR 1910, 40 CFR, 22CFR, MCO P5090.2A)*			

18. Is PPE (gloves, eye protection, and steel-toed shoes) used when handling Freon or mineral oil? *(29 CFR 1910)*			
19. Are Freon draining procedures only performed outdoors, as Freon displaces oxygen ($0_{2)}$?*)* *(29 CFR 1910, MCO P5090.2A)*			
20. Are training and inspection records current and available for inspection? *(MCO P5090.2A 9104.1(k)(5)- inspection only)*			

ADDITIONAL COMMENTS:

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CORRECTIVE ACTION TAKEN:

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Environmental Compliance Coordinator

Name: _____

Signature: _____

Date: _____