

Environmental Standard Operating Procedure			
Originating Office: <b>MCAS Miramar Environmental Management Department</b>	Revision: Original	Prepared By: Environmental Management Department	Approved By: William Moog
File Name: WEL-ESOP	Effective Date: 17 Sep 2007	Document Owner: EMD	

Title: Welding

### 1.0 PURPOSE

The purpose of this Environmental Standard Operating Procedure (ESOP) is to provide environmental guidelines for performing welding activities.

### 2.0 APPLICATION

This guidance applies to those individuals who perform daily welding operations onboard Marine Corps Air Station (MCAS) Miramar.

### 3.0 REFERENCES

- 29 CFR 1910, 1926 (Code of Federal Regulations)
- MCO P4790.2C (Marine Corps Order)
- MCO P5090.2A (USMC Environmental Compliance and Protection Manual)
- OPNAV 5090 (Office of the Chief of Naval Operations Instruction)
- Station Order 6280.1A

### 4.0 PROCEDURE

#### 4.1 Discussion:

Welding operations require the use of hazardous materials such as argon, oxygen, acetylene and nitrogen gases. Proper ventilation and personnel protective equipment (PPE) must be utilized to protect personnel from toxic fumes and vapors generated by welding operations. All hazardous materials must be stored in approved containers, and must be managed properly to minimize impacts to human health and the environment. Units are equipped with approved compressed gas storage tanks and aboveground storage tanks (ASTs), as necessary. Units should contact the Environmental Management Department (EMD) for replacement of or to request additional containers.

## 4.2 Operational Controls:

The following procedures apply:

1. Ensure that Material Safety Data Sheets (MSDS) for argon, oxygen, acetylene, nitrogen and all materials associated with this practice are current and available for inspection.
2. Ensure that the operation manual for each piece of equipment is available and is in a designated location known to all personnel.
3. Ensure that records of all required training and certifications are current and available for inspection.
4. Ensure turnover folder information is kept for this practice.
5. Wear appropriate PPE including but not limited to eye protection, welding face shields, gloves, hearing protection, aprons, coveralls and steel-toed boots.
6. Ensure that fire extinguishers are nearby in designated locations known to all personnel.
7. Obtain a Base Fire Permit before conducting welding operations outside of welding shop.
8. Use only argon, acetylene, oxygen and/or nitrogen from approved compressed gas storage tanks for welding operations.
9. Conduct periodic equipment maintenance as recommended by manufacturer.
10. Ensure ventilation carries vapors and fumes away from the point of operation and into an area where they do not cause a health concern to other personnel.
11. Maintain two-thousand (2,000) cubic feet per minute (CFM) through the exhaust system.
12. Welding on Chemical Agent Resistant Coating (CARC) vehicles and equipment are prohibited.
13. Ensure that proper surface preparation (e.g. paint removal) is conducted prior to welding operations.
14. Ensure that oxygen and acetylene tanks are segregated and secured with caps attached when stored and during transportation with a rope or chain.
15. Never cut or pierce containers that have held combustibles, potentially flammable materials, or pressurized cylinders, pipes or vessels.
16. Never conduct welding operations in areas containing explosive dust or vapors.
17. Document periodic inspections of storage areas.
18. Ensure that warning signs reading "Welding in Process" are clearly visible and legible from a distance of 25 feet in any direction.
19. Ensure that barricades are in place, sectioning off the area during welding operations.

20. Maintain personnel who are observing welding operations at safe distance from and shielded from the welding arc.
21. If there are any specific situations or other concerns not addressed by this procedure, contact the EMD.

#### **4.3 Documentation and Record Keeping:**

The following records must be maintained:

1. MSDSs for all materials associated with this practice.
2. Training records and certifications for personnel.
3. Operation manuals for all welding equipment.
4. Hazardous materials inventory (must match Authorized Usage List).
5. Inspection records.

#### **4.4 Training:**

All personnel must be trained in this ESOP, to include the following, as applicable:

1. Hazard Communication (HazCom) training.
2. Respiratory Protection course.
3. On-the-job training.

#### **4.5 Emergency Preparedness and Response Procedures:**

Refer to: Marine Corps Order (MCO) P5090.2A, Environmental Compliance and Protection Manual; Chapter 7; Emergency Planning and Response.

#### **4.6 Inspection and Corrective Action:**

The Environmental Compliance Coordinator (ECC) shall perform or 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.

Welding – Inspection Checklist

Date:	Time:
Installation:	Work Center:
Inspector's Name:	Signature:

Inspection Items	Yes	No	Comments
1. Are MSDSs for all materials associated with this practice current and available for inspection? <i>(29 CFR 1910)</i>			
2. Are the operation manuals for each piece of equipment available and in a designated location known to all personnel? <i>(MCO P5090.2A)</i>			
3. Are required current training and certifications maintained for all personnel? <i>(MCO P5090.2A)</i>			
4. Is turnover folder information kept for this practice? <i>(MCO P4790.2C)</i>			
5. Is appropriate PPE worn as needed? <i>(29 CFR 1910)</i>			
6. Are fire extinguishers maintained nearby in designated locations known to all personnel? <i>(29 CFR 1910, MCO P5090.2A)</i>			
7. Is a Base Fire Permit obtained before conducting welding operations outside of welding shop? <i>(29 CFR 1926, Station Order 6280.1A)</i>			
8. Are only argon, acetylene, oxygen and/or nitrogen from approved compressed gas storage tanks used for welding operations? <i>(29 CFR 1926, MCO P5090.2A)</i>			
9. Is periodic equipment maintenance conducted as recommended by the manufacturer(s)? <i>(MCO P5090.2A)</i>			
10. Does ventilation carry vapors and fumes away from the point of operation and into an area where they do not cause a health concern to other personnel? <i>(29 CFR 1910)</i>			
11. Is 2,000 CFM maintained through the exhaust system? <i>(29 CFR 1910)</i>			
12. Is welding on CARC coated vehicles and equipment avoided? <i>(MCO P5090.2A)</i>			
13. Is proper surface preparation accomplished prior to welding operations?			

(29 CFR 1926))			
14. Are observers kept a safe distance from welding operations and shielded from the welding arc? (29 CFR 1926)			
15. Are oxygen and acetylene tanks segregated and secured with caps attached when stored and transported? (29 CFR 1910)			
16. Is cutting containers with potentially flammable, combustible, or pressurized materials prohibited? (MCO P5090.2A)			
17. Are welding operations halted in areas containing explosive dust or vapors? (MCO P5090.2A)			
18. Are warning signs reading "Welding in Process" clearly visible and legible from a distance of 25 feet in any direction? (29 CFR 1910, MCO P5090.2A, OPNAV 5090)			
19. Are barricades in place, sectioning off the area during welding operations? (29 CFR 1910, MCO P5090.2A, OPNAV 5090)			

**ADDITIONAL COMMENTS:**

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**CORRECTIVE ACTION TAKEN:**

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**Environmental Compliance Coordinator**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_