**Battery**

On-the-Job Training Facilitator Guide



# Change History

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| **Change/ Revision Number** | **Change/Revision Description** | **Changed/Revised Pages** | **Changed/Revised Date** | **Approved By** | **Approval Date** |
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[The individuals who will make up the audience of this course are painters for Electric Boat (EB) and have demonstrated the need to master the core skills and knowledge within the painter trade. 42](#_Toc111405520)

[Training is required to familiarize and instruct painters with the requirements and methods of XP Marco Plural Operation in support of submarine Overhaul & Repair. 42](#_Toc111405521)

[By the end of this course, the trainee will be familiar with understanding and operating the Marco Plural System/equipment bas prescribed by Electric Boat (EB) standards. 42](#_Toc111405522)

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# Facilitator Guide Instruction Key

Each page in the facilitator guide includes a combination of information:

1. Information that you explain to the learners
2. Information that is just for you

You may see the following icons throughout this guide. They provide visual indicators that you should emphasize key procedural or conceptual information, or to assist you with engagement and interaction opportunities for the learners:

|  |  |
| --- | --- |
| Icon | Definition |
| A picture containing text, kitchenware  Description automatically generatedFacilitator Note | Facilitator notes call out relevant details about the subject matter. This information assists you in presenting the material to the learners. |
| Icon  Description automatically generatedImportant Note/ Warning or Caution | This symbol identifies an important note or calls your attention to hazards, warnings, and cautions. It is important to point out hazards to the learners so they are aware of them when performing a task or step. |
| Icon  Description automatically generatedGroup Discussion | Facilitating a group discussion serves two purposes:1. It encourages learner interest and engagement in the training.
2. It helps you gauge whether learners are understanding the content.
 |
| Icon  Description automatically generatedLearning Activity | Adult learners learn by doing. These activities provide opportunities for learners to reflect, analyze, and evaluate what they are learning, all of which are important steps in the learning process. |



# Course Preparation Instructions

## Training Room Setup

Ensure the training room is set up, including:

* Classroom with projector and computer for presentation.
* Computer terminals are available

During the Session

Follow these facilitation tips to make learning fun, meaningful, and relevant for the learners:

1. Ask questions throughout the presentation to draw learners into the discussion.
2. Link the information to a real-life situation by sharing your experiences and asking learners to consider possible scenarios and how to resolve them.
3. Monitor the learners’ participation in small- and large-group activities, providing on-the-spot corrections and critiques of the learners’ performance.

|  |  |
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| Icon  Description automatically generated | **Important Note:** Before presenting this training, facilitators must thoroughly prepare by studying this facilitator guide and reviewing all identified reference material. |

# Introduction to the Marco Plural Course

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| **Slide:** N/A**Time:** 5 minutes**PG page:** N/A |  |
| **Personalization:**  |
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| Display the title screen as learners enter the room.* Welcome the learners as they enter the room.
* Ask the learners from a scale of 1-10; 1 being not knowledgeable about the Paint Trade at all and 10 being very knowledgeable, ask how knowledgeable they are about the Paint Trade.
* Introduce yourself after all learners have gathered and are settled.
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# Introduction

Open up the course with a brief introduction of your background and the course.

* Your Name
* Your Background in X
* What you want to teach in this class
* Best advice for doing well in this course and overall in the Paint Trade

# Agenda

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| **Slide:** N/A**Time:** 3 minutes**PG page:** N/A |  |
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|  |
| A picture containing text, kitchenware  Description automatically generated | Share with learners the key topics that will be covered in this section, as well as the importance of the topic.**Animation:** N/A |
| Review the course agenda and introduce the course topic. * Topic 1: The Key Parts of the Marco Plural System
* Topic 2: The Operational Procedures of the Marco Plural Sprayer Job Task
* Topic 3: Safely working with the Marco Plural Sprayer
* Topic 4: The Maintenance Requirements of the Marco Plural Sprayer
* Topic 5: NESHAP Guidance & Compliance
* Topic 6: Working with Thinners
* Topic 7: The Clean Air Act
* Topic 8: Marco Plural OJT Training
 |

# Facility Information

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| **Slide:** N/A**Time:** 2 minutes**PG page:** N/A |  |
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| * Introduce the learners to the facility information.
* Emergency Exits
* Emergency Numbers
* Muster Stations
* Fire Extinguishers
* Automated External Defibrillators (AED)
* Cardiopulmonary Resuscitation (CPR)
* Other
 |

# Class Rules

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| **Slide:** N/A**Time:** 1 minute**PG page:** N/A |  |
| **Personalization:**  |
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| Icon  Description automatically generated | Review the class rules:* Place cell phones on silent
* Be respectful of each other
* Participate in class discussions and activities
* Ask questions
* Avoid sidebar conversations
 |

# Course Learning Objectives

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| **Slide:** N/A**Time:** 5 minutes**PG page:** N/A |  |
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Read the objectives or have the learners take turns reading the objective to the class. Ask for volunteers.

Upon successful completion of this course, you will be able to:

* Mastery of the Marco Plural Sprayer to the standards of Electric Boat.
* Identify the key components of the Marco Plural System
* Strong ability to describe the operational procedures of the Marco Plural System
* Strong ability to properly work with PPE
* Verifiable understanding of mandatory safety standards and operational maintenance with the XP Plural Spray Pump
* Understands the role of the Operations Supervisor & how they log and track work
* Describes NESHAP Guidance & Compliance
* Demonstrates the thinning process when needed
* Can effectively explain the Clean Air Act elements within D251
* Demonstrates the ability to Startup, Operate & Shutdown the Marco Plural Sprayer effectively, efficiently, and safely using approved procedures and processes IAW SDD-02668

# Occupational Safety and Health

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| Note: You may skip this slide if the learners have covered it in other paint trade courses. |
| Federal law entitles you to a safe workplace free of recognized health and safety hazards. You have the right to speak up about hazards without fear of retaliation. You also have the right to:* Receive workplace safety and health training in a language you understand.
* Work on machines that are safe.
* Receive the required safety equipment, such as gloves or a harness to protect you from falls, for you to do your job.
* Be protected from toxic materials.

Always ask questions if you do not understand work instructions and speak up if you feel unsafe. |
| * Lead a group discussion about how to prevent workplace injuries. Share a personal story about how you keep the workplace safe for the learners.
* The goal of this activity is to help learners understand why workplace safety is our number one priority.
* Emphasize that no employee should have to risk death or injury to earn a paycheck.
 |
| Being aware of workplace safety hazards helps to keep us safer at work. We stay aware by:* Identifying hazards
* Recognizing how hazards can hurt us
* Being aware of what contributes to hazards
 |

# Topic 1: The Key Parts of the Marco Plural System

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Read out loud “Topic 1: The Key Parts of the Marco Plural System” before advancing to the next slide.

What are the Key Parts of the Marco Plural System?

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| **Slide:** N/A**Time:** 10 minutes**PG page:** N/A |  |
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| What parts does the Marco Plural Sprayer consist of?There are 22 parts:1. Air Motor Supply Hose
2. Main Controls
3. Air Inlet ¾ inch
4. High Pressure Fluid Pump
5. Air Motor
6. Fluid Heater
7. Solvent Flush Pump
8. Solvent Flush Pump Air Controls
9. Seven Gallon Paint Hopper
10. Cart
11. Brake
12. Handle
13. Fluid Control Assembly
14. Tie Rods
15. Motor Adapter Plate
16. Adjustable Packing Nuts with Wet Cups
17. Yoke with Rod Bearings
18. Recirculation Lines
19. Yoke Position Nut
20. Static Mixer Tubes
21. Motor Position Indicator
22. Over-Pressure Rupture Disk
 |

Activity: Interacting with the Marco Plural Sprayer

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| **Slide:** N/A**Time:** 15 mins**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | The course will open up with a visit to the Marco Plural Sprayer in a workstation, as the learners are asked to guess “what this tool is used for? And “guess how many parts the tool consists of”. (Answer: 22) During a group activity, knowledge checks will be asked by the instructor to volunteers. The learners are to guess “what part is which” in pairs to stimulate learning and engagement. After one round, the instructor asks the learners to volunteer their answers a second time, as they point out the parts again on the Marco Plural Sprayer tool, signifying who is falling behind in the learning process, the instructor makes additional corrections before moving on to Topic 2. |

# Topic 2: The Operational Procedures of the Marco Plural Sprayer

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Read out loud “Topic 2: The Operational Procedures of the Marco Plural Sprayer” before advancing to the next slide.

How to Operate the Marco Plural Sprayer

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| **Slide:** N/A**Time:** 45 minutes**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | Share with learners the key elements that are covered in the Marco Plural Course, as well as the importance of the topic.**Animation:** N/A |
| Instructions for safely operating the Marco Plural System:* Setup:
1. Ensure that the spray machine has been grounded.
2. Request that Temporary Services plug in the power cord for heater use.
3. Hook up the air supply to the spray machine.
4. Before placing the paint into the saddlebags, ensure that it has been mixed.
5. Place the paint into the saddlebags.
* Pressure Relief
1. Engage the spray gun safety latch.
2. Shut off the air to the pump.
3. Close the bleed-type master air valve.
4. Disengage the spray gun safety latch.
5. Hold the metal part of the spray gun firmly to the side of the grounded pail and trigger the spray gun to relieve the pressure.
6. Engage the spray gun safety latch.
7. Close the dual shut handle (spray). and open the circulation handle.
8. Flush after relieving A and B fluid pressure through the mix manifold.
* Operational Check of the Diffuser
	1. Remove the spray tip.
	2. Aim the spray gun into a grounded metal pail, holding the spray gun firmly to the pail.
	3. Using the lowest possible pressure, trigger the spray gun.
	4. If the fluid emitted is not diffused into an irregular stream, replace the diffuser immediately.
* Connect Air & Fluid Hoses
1. Connect a grounded fluid hose to the fluid heater discharge (item F) outlet union of the surge tank outlet manifold.
2. Connect a grounded air supply hose to the air inlet union.
3. Connect a spray gun to the fluid hose.
4. Circulate: (WARNING: Never heat Fast Clad above 140°F)
5. Ensure that all valves are in the closed position prior to turning the air on to the spray machine.
6. Turn the regulator down to 0 psi.
7. Place the valve for circulating the paint into the open position. (The valve for spraying needs to remain in the closed position.)
8. Turn on the air.
9. Raise the pressure on the regulator to 15 – 30 psi to start circulating the paint through the heaters. (This may take a few minutes.)
10. Circulate the paint through the heaters until the paint is at temperature. (Fast Clad ER is 85-130°F.)
11. Once the paint is at temperature, spray operations may begin.
* Spraying
1. Turn the regulator to 0 psi.
2. If not already on, turn the air on to the spray machine.
3. Open the valve for spraying
4. Turn the pressure up on the regulator to 30 psi and adjust as needed once spraying has started.
5. When spraying operations are complete, turn the regulator to 0 psi and place the valve for spraying into the closed position.
* Flushing
1. Ensure that the suction hose used for the thinner is in the thinner.
2. Ensure that the valves used for circulating and spraying are in the closed position.
3. Decrease regulator pressure on the face of the unit to 0 psi.
4. Open the valve to allow the thinner to be pumped through the mixing block, fluid line, and spray gun.
5. With the spray gun touching the bucket, pull the trigger and slowly raise pressure on the regulator until adequate pressure for flushing is attained.
6. Continue flushing until clean thinner is coming out of the gun.
* Shutdown
1. Ensure that the heaters are off.
2. Turn the regulators to 0 psi.
3. Turn off the air to the spray machine.
4. Ensure that pressure has been removed from the line prior to disconnecting the spray gun or the spray line.
* Ensure that the valve positions are as follows:
	+ Flushing valve – closed
	+ Circulating valve – open
	+ Spraying valve – closed
 |

Activity: Engaging in the Processes of the Marco Plural Sprayer

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| **Slide:** N/A**Time:** 1.5 hours**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | Learners will be next taught the 8 functions/processes of using the Marco Plural Sprayer by the instructor step-by-step, one process at a time. The instructor asks the learners to form numbered small groups, with one person designated as a leader/note taker for the process as each process is first demonstrated by the instructor. This role can rotate authority throughout the 1.5-hour training and review. |

# Topic 3: Safe Operation of the Marco Plural Sprayer

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Read out loud “Topic 3: Safe Operation of the Marco Plural Sprayer” before advancing to the next slide.

Operating the Marco Plural Sprayer Safely to Standards

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General Safety

* Ensure safety precautions are briefed prior to operation.
	+ Always wear hearing protection, anti-vibratory gloves, face shield, hard hat, leatherwork gloves, protective footwear, and safety eye wear.
* Spray equipment generates very high fluid pressure spray from the gun, potentially causing leaks or rupturing components.
* This high pressure can inject fluid through the skin and into the body, potentially causing extreme and serious bodily injury, including the need for amputation.
	+ Fluid injected or splashed into the eyes or on the skin can cause serious damage.

Employee Safety

* Employees shall never point the spray gun at anyone or any part of the body, put a hand or fingers over the spray tip, or try to “blow back” paint; this is not an air spray system.
* Employees shall always follow the Pressure Relief Procedure (see Instruction section 4.A) before cleaning or removing the spray tip or servicing any part of the system equipment.
* Employees shall never try to stop or deflect leaks with the hand or body.
* Equipment safety devices shall be inspected before use to ensure that they are in proper working order.

WARNING

* If any fluid appears to have penetrated the skin, it shall be reported to the hospital immediately for medical attention.
	+ The doctor or nurse shall be informed of what fluid was injected. This situation shall not be treated as a simple cut.

Grounding Safety

* Air and Fluid Hoses
	+ Only grounded hoses with a maximum of 500 feet combined hose length shall be used to ensure grounding continuity.
* Spray Gun
	+ Grounding is obtained through connection to a properly grounded fluid hose and pump.
* Solvent Pails
	+ Used when flushing
	+ Only metal pails, which are conductive, shall be used and placed on a grounded surface.
	+ The pail shall not be placed on a non-conductive surface, such as cardboard or paper, which interrupts the grounding continuity.

Static Electricity Safety

* + Created by the flow of fluid through the pump and hose.
* To reduce the risk of Static Sparking
	+ The pump
	+ The object being sprayed
	+ And all other spray equipment being used or located in the spray area shall be grounded
* Be sure to ground all of the spray equipment.
	+ If every part of the spray system is not properly grounded, sparking may occur and the system may become hazardous.
* Sparking may also occur when plugged in or unplugging a power supply cord.
	+ Sparks can ignite fumes from solvents and the fluid being sprayed and cause a fire or explosion causing potentially serious bodily harm.
* Power supply cords in the spray area shall not be plugged in or unplugged (50 feet in all directions) when there is any chance of igniting fumes still in the air.

Flushing Safety

1. Before flushing, the entire system and flushing pails shall be properly grounded.
2. Instruction section 4.A shall be followed, and the spray tip shall be removed from the gun.
3. The lowest possible fluid pressure shall be used, and firm metal-to-metal contact between the spray gun and the pail shall be maintained during flushing to reduce the risk of:
	* Fluid Injection
	* Static Sparking Splashing

Spray Gun Safety

1. All spray gun safety devices shall be inspected to ensure that they are operating properly before each use.
2. Employees shall not remove or modify any part of the spray gun, as this can cause a malfunction and result in serious bodily injury.
3. Whenever spraying stops, even for a short period, the spray gun safety latch shall be set in the closed or off position to make the spray gun inoperable.
	* Failure to set the safety latch can result in accidental triggering of the spray gun.
4. The spray gun diffuser breaks up the spray, reducing the risk of fluid injection when the tip is not installed. The diffuser operation shall be checked regularly, using the test outlined in Instruction section 4.C.
5. The gun shall never be operated with the trigger guard removed.
	* The trigger guard reduces the risk of accidently triggering the gun if it is dropped or bumped.
6. Extreme caution shall be used when cleaning or changing spray tips.
	* If the spray tip clogs while spraying, the spray gun safety latch shall be engaged immediately.
	* Instruction section 4.A shall always be followed before removing the spray tip to clean it.
	* Never wipe off built-up paint around the spray tip until pressure has been fully relieved, and the spray gun safety latch is engaged.

Hose Safety

1. All fluid hoses shall have spring guards on both ends.
	* The spring guard helps protect the hose from kinks or bends at, or close to, the coupling, which could result in a hose rupture.
2. All fluid connections shall be tightened before each use.
	* High-pressure fluid can dislodge a loose coupling or allow high-pressure spray to be emitted from the coupling.
3. Employees shall never use a damaged hose.
	* Before each use, the entire hose shall be checked for cuts, leaks, abrasions, bulging cover, or damage to the hose couplings.
	* If any of these conditions exist, the hose shall be replaced immediately.
4. Employees shall not try to re-couple the hose or mend it with tape or any other devices.
5. A repaired hose cannot safely contain high pressure.

Activity: Responding Safely with the Marco Plural Sprayer

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| **Slide:** N/A**Time:** 1.5 hours**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | The instructor will now get into a serious overview of all the safety concerns and procedures will using the Marco Plural Sprayer and it’s components like hoses, the use of solvent pails etc. over the course of 1.5 hours. After a strong review of each safety precaution and PPE via knowledge checks, the tool will now be shown live in class so the instructor can successfully engage the learners on all the safety precautions to be aware of regarding its hose and various parts. (This tool will not be turned on or used while classroom training.)The instructor will do an overview of each safety area, as the learners observe one more time, asking for feedback on potential mistakes to avoid.Then one by one, volunteers will be brought in front of the class to successfully recall one of the 6 safety areas, parts or processes as the instructor and class makes corrections to ensure this learning has been captured to a high level of proficiency. There will be a special focus on the dangers of Spark Electricity, and it’s hazards, working the Spray Gun safely; properly flushing the solvents pails and more. |

# Topic 4: Maintenance Requirements

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Read out loud “Topic 4: Maintenance Requirements” before advancing to the next slide.

The Maintenance Requirements of the Marco Plural Sprayer

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| **Slide:** N/A**Time:** 30 minutes**PG page:** N/A |  |
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The maintenance requirements of the Marco Plural Sprayer includes:

* Filters
1. Once a week check, clean, and replace as needed:
	* Both pump filters; see lower manual for instructions
* Seals
1. Once a week, check and tighten throat seals on both pumps.
	* Be sure to follow the Pressure Relief Procedure, prior to tightening seals.
2. There must be zero pressure on the pumps when adjusting.
* Cleaning
1. Ensure equipment is grounded.
2. Be in a well-ventilated area.
3. Turn off all heaters and allow unit to cool.
4. Flush Material.
5. Relieve Pressure.
6. Shutdown Sprayer and secure all power.
7. Clean external surfaces with clean rag and solvent compatible with spray material used.
8. Allow to dry before using again.

Activity: Following Maintenance Standards

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| **Slide:** N/A**Time:** 30 mins**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | The instructor will demonstrate the 3 main operational areas of maintenance over the course of 30 minutes with knowledge checks included as a group activity to ensure learners understand this lesson. |

# Topic 5: NESHAP Guidance & Compliance

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Read out loud “Topic 5: NESHAP Guidance & Compliance” before advancing to the next slide.

NESHAP Guidance & Compliance

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| **Slide:** N/A**Time:** 45 minutes**PG page:** N/A |  |
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| * Standard Practice
1. (SP) 07-12 and Environmental
	* Groton (ENV-Groton) -20 require D251 to perform certain operational and administrative functions to comply with the provisions of the NESHAP regulation.
* NESHAP Compliance
1. The objective of this regulation is to protect public health and the environment by reducing emissions of volatile organic hazardous air pollutants (VOHAP) from surface coating operations associated with the production and repair of ships.
	* Based on the EB Shipyard’s annual use of approximately 10,000 gallons and its potential to emit more than 25 tons per year of any combination of HAP, it is subject to, and must comply with, the NESHAP for Shipbuilding and Ship Repair (Surface Coating).
* Paint & Production Shop Operating Guidelines
1. Paint and Production Shops shall be kept clean and orderly to minimize the chance of an accidental spill of paint or solvent.
2. All containers of paints and solvents shall have a lid tightly secured when not in use.
	* (This pertains to all containers, vendor cans, half-gallon, and one-gallon plastic buckets.)
3. Paints labeled “NESHAP Low-Usage Exempt” must have the NESHAP Low Usage Exempt label applied to any secondary containers (e.g., half-gallon and one-gallon plastic buckets) used for issuing that paint.
	* Labels will be supplied to the shop attendants.
4. In the event of a paint or solvent spill, the material shall be cleaned immediately.
	* Any solvent-soaked rags shall be placed in a closed container.
	* For spills of one gallon or more, the Fire Department (860-433-3333) and Environmental (860-433-2710) shall be notified

**How to track the work processes:*** Recording
1. The method for recording paints and respective expiration dates being received into the paint shops is essential for tracking the shelf-life of the paints stored in the shops.
2. The Log Sheet Book will be kept in the paint shop.
3. The shop attendants on first and second shift are responsible for recording all paint delivered from A-6 in the Log Sheet Book.
4. Responsible Operations Supervisors shall ensure that these forms are filled out daily or when paint orders are received.

**The Role of the Supervisor:*** Supervisor
1. Responsible Operations Supervisors will be responsible for recording of any thinning of paint by their crew members in the NESHAP Weekly Thinning and Spray Gun Cleaning Log.
2. The Responsible Operations Supervisor must turn the Log in weekly to the NESHAP Operations Data System (NODS) Administrator.
 |

Activity: The Role of the Operation Supervisor

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| **Slide:** N/A**Time:** 30 mins**PG page:** N/A |  |
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|  |
| A picture containing text, kitchenware  Description automatically generated | The instructor will review the role of the Operation Supervisor alongside mandatory standards of NESHAP Guidance & Compliance, which are an important focus in this course.The instructor then passes around the “Log Sheet Book” that is turned in weekly NESHAP Operations Data System (NODS) Administrator.A final activity in this section is a review of paint labels and cans, some which have a firm lid, some without a label, some with a wrong label or poorly written label, and paint cans that do not qualify as secondary, and the appropriate sizes of cans.A knowledge check of “which size of paint can spill” qualifies for a call to the Fire Department and Environmental, and at what home number to call. |

# Topic 6: The Thinning Process

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Read out loud “Topic 6: The Thinning Process” before advancing to the next slide.

Working with Thinners

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* Inspections:
1. For production shops, prior to spray painting, the following inspections shall be performed:
	* Spray lines
	* Spray pumps and guns (for any damage or loose connections that could cause an accidental discharge of paint or solvents).
* Signs
	+ Signs shall be posted at the paint issue points showing which paints can be thinned and the allowed amount of thinner that can be used.
	+ For some paints, there will be an additional column for allowed cold-weather thinning (40°F or less), which is different from the column for “normal” conditions.
* Thinning
	+ Any thinning of paint is restricted to situations where it is necessary for the application of the paint, must be within the guidelines for allowable thinning of that particular paint
		- Must be approved by the Responsible Operations Supervisor.
* No Thinning
	+ If no paint thinning occurs during the week, the Responsible Operations Supervisor shall write, in large letters, “NONE” to indicate such, and the NESHAP Weekly Thinning and Spray Gun Cleaning Log shall be signed and dated.
* Adding Thinner
	+ Thinner shall not be added to any paint except where explicitly permitted by the following:
* The applicable class paint schedule;
	+ An approved paint application procedure; and/or
	+ Where otherwise approved by D341 (Non-Metallic Materials Engineering).

Activity: Identifying Thinners

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| A picture containing text, kitchenware  Description automatically generated | The learners will get an overview about the thinning paint processes and rules which is determined via signage by the Responsible Operations Supervisor in advance. The instructor will show some examples of the signage as a demonstration around the ship and/or workstation and if available, with examples of what the paint looks like thinned or solid. |

# Topic 7: The Clean Air Act

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Read out loud “Topic 7: The Clean Air Act” before advancing to the next slide.

Compliance with the Clean Air Act

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Critical Data Points:

* The importance of compliance to the Clean Air is critical to EB operations across many trades.
* As stewards of environmental responsibility, it is expected and mandated all levels of leadership ensure we comply in great detail throughout all aspects of department 251.
* Critical Data Points to note:

1. The consumption of thinner is not authorized without the supervisor recording the amount.

* + This responsibility falls on the supervisor!

2. All amounts expended are recorded and documented. This allows for a detailed monitoring of consumption and is a tool to also monitor efficiency when using paints, solvents, etc.

* + It cannot be overstated.
	+ All amounts must be documented and reported. No exceptions.

Activity: Reviewing the Clean Air Act

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| **Slide:** N/A**Time:** 15 mins**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | Volunteers will be asked quick knowledge check questions about the Clean Air Act before moving to the next topic. |

# Topic 8: Marco Plural OJT Training

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Read out loud “Topic 8: Marco Plural OJT Training” before advancing to the next slide.

Marco Plural OJT Training

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| Active Demonstration of all Points from Topic 2 including:1. Setup
2. Pressure Relief
3. Grounding
4. Operational Check of the Diffuser
5. Connecting Air & Fluid Hoses
6. Circulate
7. Spraying
8. Flushing
9. Shutdown
 |

Activity: Working with the Marco Plural Sprayer

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| **Slide:** N/A**Time:** 3 hours**PG page:** N/A |  |
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| A picture containing text, kitchenware  Description automatically generated | Learners will now don proper PPE, placed in small groups of 3-5 and asked to demonstrate satisfactory Marco Plural Sprayer techniques and processes as first taught in Topic 2 in a full day On-The-Job Training as supervised by the instructor. Note: Ideally a Record Operation Supervisor will be avail on this second day of training to provide their final critiques and advise the learners in a final assessment of their mastery of this topics and proper practice of the tool.Learners will be brought over to the ship areas where the use of the Marco Plural Sprayer will occur by all parties. At the workstation, the live Marco Plural Sprayer will be shown again and then demonstrated by the instructor first via safety checks and knowledge checks on its use.The learners will again be quizzed on its parts as the instructor gauges the skill level, success, and approval of each learner in passing this course. One by one they will operate the tool carefully under the supervision and mentoring of the instructor.As a final assessment, the instructor will provide a final approval of skill mastery per group then per learners before wrapping up this course.  |

# Resources

* Reference 4 3A0420F, XP-70 Plural Sprayer Manual Page 12
* Ref 1, Pages 6-10
* Ref 1, Pages 3-5
* Ref 4, Page 30
* Ref 5, Pages 3-6

On-the-Job Training Guide

# Training Plan Information and Instructions

Training plans outline the specific skill requirements for on-the-job training (OJT). They document which skills the employee lacks at the start of the training and measure the skills the employee acquires during the training.

# Job Description

# The individuals who will make up the audience of this course are painters for Electric Boat (EB) and have demonstrated the need to master the core skills and knowledge within the painter trade.

# Training is required to familiarize and instruct painters with the requirements and methods of XP Marco Plural Operation in support of submarine Overhaul & Repair.

# By the end of this course, the trainee will be familiar with understanding and operating the Marco Plural System/equipment bas prescribed by Electric Boat standards.

# Skill Requirements

List the skills and/or information required to perform the job to Electric Boat’s standards. Record the skills as specifically and briefly as possible.

The employee must demonstrate proficiency in the Marco Plural Sprayer including use of safety and emergency procedures,to the satisfaction of the supervisor or designated trainer, by demonstrating these skills:

* Mastery of the Marco Plural Sprayer to the standards of Electric Boat.
* Identify the key components of the Marco Plural System
* Strong ability to describe the operational procedures of the Marco Plural System
* Strong ability to properly work with PPE
* Verifiable understanding of mandatory safety standards and operational maintenance with the XP Plural Spray Pump
* Understands the role of the Operations Supervisor & how they log and track work
* Describes NESHAP Guidance & Compliance
* Demonstrates the thinning process when needed
* Can effectively explain the Clean Air Act elements within D251
* Demonstrates the ability to Startup, Operate & Shutdown the Marco Plural Sprayer effectively, efficiently and safely using approved procedures and processes IAW SDD-02668

# How You Are Evaluated

## Proficiency Assessment

Observe the employee’s ability to apply knowledge and to perform each skill in a satisfactory manner.

## Performance Checklist

|  |  |
| --- | --- |
|  | Performance ChecklistExplain to the employees that the Proficiency Card contains a performance checklist that identifies critical tasks and performance criteria. Employees must complete the competency-based instruction and independent practice before attempting the assessment.When employees are ready to be evaluated, they perform the tasks that appear in the performance checklist. After the employee’s successful completion of the task, both you and the employee add your digital signatures to the Proficiency Card. The signatures confirm the employee is proficient and can work independently. |

|  |  |
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|  | Check for understanding by asking a few follow-up questions to ensure employees understand how they will be evaluated.For your convenience, a copy of the performance criteria for this course appears at the end of this OJT guide. |

# Agenda

| Topic | Overview |
| --- | --- |
| Topic 1: The Key Parts of the Marco Plural System | An overview of the 22 parts of the Marco Plural System |
| Topic 2: The Operational Procedures of the Marco Plural Sprayer | The 8 functions/processes of using the Marco Plural Sprayer System |
| Topic 3: Safe Operation of the Marco Plural Sprayer | Proper PPE and Safety Standards |
| Topic 4: Maintenance Requirements | Maintenance of the tool as advised  |
| Topic 5: NESHAP Guidance & Compliance | * The Role of the Operations Supervisor & how they log and track work
* A description of NESHAP Guidance & Compliance
 |
| Topic 6: The Thinning Process | * Demonstration of the thinning process when needed
 |
| Topic 7: The Clean Air Act | The Clean Air Act elements within D251 |
| Topic 8: Marco Plural OJT Training | Demonstration of the ability to Startup, Operate & Shutdown the Marco Plural Sprayer effectively, efficiently and safely using approved procedures and processes  |
| Resources | * Reference 4 3A0420F, XP-70 Plural Sprayer Manual Page 12
* Ref 1, Pages 6-10
* Ref 1, Pages 3-5
* Ref 4, Page 30
* Ref 5, Pages 3-6
 |

# Performance Checklist

|  |  |
| --- | --- |
|  | The Proficiency Card’s critical tasks and performance criteria appear here for your reference. Use the Proficiency Card to document your evaluation of the employee’s performance against the performance criteria. |

| Critical Task/Performance Criteria |
| --- |
| 1. Can identify all 22 parts of the Marco Plural Sprayer
 |
| 1. Can use proper PPE and safety measurement for all hoses, parts, solvent pails and thinning paints.
 |
| 1. Can explain the Clean Air Act and consult Emergency services effectively in a timely manner.
 |
| 1. Operates the Tool fully to full standards in the Paint trade.
 |

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