

Module 900 – INTRODUCTION TO OPERATOR PERFORMED MAINTENANCE

Lesson Description:

An introductory course in operator maintenance. Topics include: maintenance related safety issues; definitions of “maintenance” practices and procedures (i.e., routine/general maintenance, preventive maintenance and predictive maintenance); lockout/tagout; cleaning and inspecting equipment; lubricating equipment, machinery and tooling; adjusting equipment processes; and performing minor repairs. In addition, troubleshooting and process adjustment will be introduced and discussed. Course also requires a tour of a maintenance department (organizational structure, tool cribs, stores, PM activities/checklists, SOP’s, work order system, etc.). *Prerequisite:* Module 700 – *Industrial Safety & Environmental Protection*.

Learning Objectives:

At the completion of this lesson, the student will be able to:

- ◆ Explain routine maintenance, preventive maintenance, and predictive maintenance.
- ◆ Identify the common trades, craft areas or disciplines that makeup a maintenance department.
- ◆ Define *Operator Performed Maintenance* (OPM) – Define *Operator Assisted Maintenance* (OAM) and state the differences between the two.
- ◆ Define *Total Productive Maintenance* (TPM) and explain the operator’s role in TPM.
- ◆ Explain and recognize common safety issues/situations associated with OPM.
- ◆ Explain the cleaning and inspection process and their relationship to each other.
- ◆ Use visual guides and panel controls (gauges, leaks, reservoirs/sight glasses, filters, control panel prompts, adverse coil conditions, galling, etc.) as maintenance indicators.
- ◆ Explain basic lubrication theories, types of lubricants, classifications, delivery systems, and common applications and procedures.
- ◆ Understand basic troubleshooting, process adjustment and repair work commonly associated with OPM/OAM.

Methods of Instruction:

Lecture, tour, video, self-study reading, application demonstrations/simulations (individual and group) and real-world examples.

Methods of Evaluation:

Individual presentations, “show me” demonstrations (*Skill Checks*), written reports and written quizzes/exam (*PROficiency Practices and Assessment*) during and after training.

Lesson Materials Provided by PMA:

- ◆ PMAEF *Student Workbook – Introduction to Operator Performed Maintenance*
- ◆ PMAEF Video: “*Lockout for Safety, Lockout for You!*” (Part Two)
- ◆ PMAEF *Instructor’s Guide* with *SMART* Lesson Plan, *Skill Checks* and *PROficiency Practices & Assessment*.
- ◆ Student Handouts and Exercises
- ◆ Overhead Transparencies
- ◆ PMAEF Item Banks (assessment questions) for construction of end of lesson examination.

- ◆ List of recommend student reading and study materials (textbooks, PMA Level III CARs, Internet/CD-ROM courses, consultants, etc.).
 - ☞ Note: Student Workbooks, handouts, transparencies and item bank provided on CD or disk.

Lesson Topics & Content Outline:

- ◆ **Introduction to Maintenance**
 - Maintenance and TPM
 - Routine, Preventive and Predictive Maintenance (Proactive vs. Reactive)
 - Maintenance Safety (pinch points, lockout-tagout, clean up)
 - The Role of OPM/OAM and CLAIR Duties
 - Common Hand Tools Used to Service Equipment
 - The Maintenance Department (Role, organization/departments, structure, trades/crafts, PM/PdM checklists/devices, job aids/SOPs, tool cribs, stores, work order system and shop).
- ◆ **Equipment Cleaning & Inspection**
 - Initial Cleaning
 - Handling and Using Cleaning Solutions and Solvents
 - Inspection Procures, Techniques & Precautions
 - Inspection and Cleaning Documentation.
- ◆ **Equipment Lubrication**
 - Friction and Lubrication Theory
 - Viscosity Selection
 - Lubricate Contamination
 - Changing Lubricants
 - Grease Guns and Fittings
 - Lubrication Feed Systems
 - Lubrication Procedures
 - Lubricant, Coolant and Solvent Storage and MSDS.
- ◆ **Introduction to Troubleshooting and Process Adjustments**
 - What is Troubleshooting?
 - Troubleshooting: A 5-Step Approach
 - Visual Indicators
 - Pareto Concept
 - Fishbone Charts and Diagrams
 - IF and THEN Decision Tables
 - Electrical Troubleshooting.
- ❖ **End of Lesson Exam (PROficiency Assessment)**
- ❖ **Administer PMAEF/JARC Post-Test, Version B.**
- ❖ **NIMS Level I Metalforming Skills Credential.**

☞ Note: See SMART Lesson Plan contained in the Instructor's Guide for detailed topic content, flow of lesson, and in-training assessments (*PROficiency Practices* and *Skill Checks*). A tour of an industrial maintenance department (preferably metalworking) led by the Maintenance Manager or Superintendent is required for this lesson. Lubrication hardware (grease guns, fittings, sight glasses, etc.) and common hand tools not provided.