

Maintenance Excellence Glossary

Establishing Your Strategy for
Profit and Customer-Centered Maintenance



The “*Mother*” of All Maintenance and MRO Materials
Management Glossaries With Color Illustrations

By
Ralph W. “Pete” Peters, Founder

The Maintenance Excellence Institute

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The Maintenance Excellence Institute

Maintenance Excellence Begins With PRIDE in Maintenance

To Our Readers:



Thanks for requesting information from The Maintenance Excellence Institute International. I hope you find our publications useful on your personal journey toward maintenance excellence. We have had over 5,000 people from over 75 countries download our free publications from PRIDE-in-Maintenance.com since 2003. All current free publications have been updated with added material and color illustrations/graphics. We now have over 30 brand new topics and plus detailed information on our [Training for Maintenance Excellence](#) workshop offerings for public and custom in-house presentations. Information on how to get an autographed copy of my book from McGraw-Hill Professional Book Division and a 25% savings over publisher prices.

My book; *Maintenance Benchmarking and Best Practices: A Profit and Customer- Centered Approach* is the cornerstone for our major new workshop for [Developing Your Scoreboard for Maintenance Excellence](#). This is a true workshop for an organizational team and is just like 4-5 days of personal one-on-one consulting. Extensive pre-workshop exercises provide four of today's most beneficial tools for benchmarking and improving your current maintenance operation. For the first time ever, workshop attendees (and book purchasers) get our complete [Scoreboard for Maintenance Excellence](#) in Excel format, the only item we have not provided free from our website. A true results-based workshop; where attendee plan of actions are developed, presented in class and taken back home for final review.

This book and the workshop guide you go through, is the "how to" for conducting a very comprehensive self- assessment. But we can also provide results for you immediately by conducting the [Scoreboard for Maintenance Excellence Assessment](#) as a service to you. Your results from this very positive and proven benchmarking process will:

- Define your future best practice needs with specific recommendations
- Reinforce current successes and develop more [PRIDE-in-Maintenance](#) attitudes
- Support future investments you need from "the top" to fully implement best practices
- Validate results and ROI from maintenance investments and the value of our services

When we perform the assessment a client-specific [Scoreboard for Maintenance Excellence](#), a [CMMS Benchmarking System](#) and The [Maintenance Excellence Index](#) are three important deliverables from this first step that will validate your future success and the value of our services. Specific recommendations from the assessment are directed toward our Mission-Vision-Value and your total operations success.

About The Maintenance Excellence Institute International

Our Mission: To achieve Profit and Customer-Centered results for public and private sector clients with [Continuous Reliability Improvement](#) of all maintenance resources.

Our Vision: To achieve [PRIDE-in-Maintenance](#) from within the crafts work force and their Maintenance Leaders. To have Top Leaders realize the true value of their total maintenance operation and then take positive action to achieve maintenance excellence.

Our Value: The cornerstone value of The Maintenance Excellence Institute is to implement profit-centered practices. Our value comes from achieving our Mission/Vision to add measurable value to each organization within our selected client base.

Firepower: From an ethical standpoint we cannot guarantee savings nor be paid based upon the actual client savings. We provide value and results for each client immediately with our [Scoreboard for Maintenance Excellence Assessment](#) process. However, I can personally guarantee we will bring the firepower to reinforce your current successes and your maintenance needs to Top Leaders in your organization! We sincerely hope you enjoy and apply topics from the attached free publication.

Thanks Again for visiting [PRIDE-in-Maintenance.com](#) and for using our free publications to support the mission- essential area of maintenance.

Ralph W. "Pete" Peters

MAINTENANCE EXCELLENCE GLOSSARY

Now With Color Illustrations

Introduction: The following terms and definitions are from the area of maintenance management and Continuous Reliability Improvement to include the maintenance storeroom operation, inventory management and MRO materials management areas. This collection of terminology brings together a number of references sources with the personal collections of staff from The Maintenance Excellence Institute International. It provides one of today's most comprehensive sources of terms and definitions for the maintenance, reliability and MRO materials management processes.

New Terms: New terms are always welcomed to this evolving collection of terminology. Many new terms have been added from previous editions of this glossary to include new methodologies and processes developed by staff from The Maintenance Excellence Institute during the 1980s and 1990s. This edition of The Maintenance Excellence Glossary includes the following new terms and methodologies with color illustrations:

- The Scoreboard for Excellence
- The Scoreboard for Maintenance Excellence
- The Scoreboard for Facilities Management Excellence
- The CMMS Benchmarking System
- Maintenance Excellence Index
- MVP-Most Valuable People
- Continuous Reliability Improvement
- ACE Team Benchmarking Process
- Overall Craft Effectiveness
- Chief Maintenance Officer
- Profit-Centered Maintenance
- Profit and Customer-Centered Maintenance
- PRIDE in Maintenance
- PRIDE Teams
- Business Vacation
- Team Work Works

Your Comments and Recommended Additions Welcomed: We welcome your suggested additions to this glossary for recommended updates to this glossary. Please contact:

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About The Maintenance Excellence Institute International

We Build Upon the Basics - We strongly believe in basic maintenance best practices as being essential for profit-centered maintenance. We understand the need for the traditional reliability-centered maintenance and TPM- type processes. However we build upon the basics and then go well beyond the traditional RCM/TPM approaches with Continuous Reliability Improvement (CRI). Our improvement strategy includes all maintenance resources, equipment and facility assets as well as the crafts people and equipment operators. It also includes MRO materials management assets, maintenance informational assets and the added value resource of synergistic team-based processes.

It Is About Your Gained Value - We help you gain people with PRIDE in Maintenance-----
People Really Interested in Developing Excellence in Maintenance. They are your internal people with greater PRIDE in Maintenance who will add value to their own unique maintenance operation by implementing today's proven best practices for maintenance excellence. Your gained value is a measurable return on investment from our unique approach and from the contributions of your team.

Profit-Centered Results - We work together to achieve your goals and to validate the projected results we set out together to achieve. The Maintenance Excellence Institute is an Alliance of highly qualified individuals, other consulting organizations, selected MRO manufacturers and maintenance service providers in collaboration, with cooperation and commitment to serve you. Our capabilities with Alliance Members expand to cover the total scope of maintenance operations improvement. You gain value with measurable results from our profit- centered approach to **Maintenance Excellence Services, Operational Services** and from our **Training for Maintenance Excellence**.



Maintenance Excellence Services - We recommend that you begin with a Maintenance Excellence Assessment to “determine where you are” with opportunities for improvement. Then let us help you apply today's best practices for **Maintenance Excellence** to:

- Implement Preventive and Predictive Maintenance Technology
- Achieve Effective Planning and Scheduling
- Improve Maintenance Storeroom Operations
- Develop Improved MRO Materials Management
- Go Beyond RCM and TPM with Continuous Reliability Improvement (CRI)
- Maximize Asset Uptime and Overall Equipment Effectiveness (OEE)
- Increase Craft Wrench Time and Overall Craft Effectiveness (OCE) SM
- Achieve Benefits from Effective Craft Skills Development

About The Maintenance Excellence Institute International

- Develop Operator-Based Maintenance for PRIDE in Ownership
- Select and Implement Effective CMMS/EAM
- Implement Profit-Centered Maintenance Performance Measurement
- Provide Critical Asset Performance Facilitation
- Evaluate Contracted Maintenance Services
- Conduct Facility and Critical Asset Condition Assessments
- Perform Energy Management, Security and Regulatory Compliance Audits

Operational Services Provide - Highly qualified, temporary resources to manage and lead plant maintenance (or facilities management) operations over a short duration, transitional period of time. They also provide effective leadership to implement your strategic, tactical or operational improvement plans while in a temporary services role. **Operational Services** provide grass roots support to successful implementation of today's best maintenance practices and achieve the results we define during a **Maintenance Excellence Services** engagement. Our capabilities for **Operational Services** include:

- Managing and Leading Your Total Maintenance Operation as Manager or Supervisor
- Serving as Your Chief Maintenance Officer (CMO) for a larger multiple site operation
- Providing Planning For Maintenance Excellence as interim staff planners at all levels
- Managing Storeroom Operations and Providing Support for Modernization
- Managing and Leading Your Craft Skills Development
- Performing Critical Asset Performance Facilitation and PM/PdM Program Development

Training for Maintenance Excellence - Our **Training for Maintenance Excellence** offerings provide public workshops and custom in- house sessions on maintenance best practice topics. Professional development is very important element of our overall approach to helping improve the important "business of maintenance". Our suite of over 25 course offerings focuses on creating organizational awareness and an internal understanding that maintenance must be managed and led as a profit center. Successful implementation of today's best practices requires changes in philosophies, attitudes and the application of technical knowledge.

Training for Maintenance Excellence can provide a measurable return on investment to justify your training dollars. The most beneficial part is that **Training for Maintenance Excellence** "is not over when it's over". Following completion of each session, whether as an in-house presentation or a public session, there is a personalized follow-up scheduled for each participant. Personal follow-up and one on one coaching is to help you apply what you have learned. Course abstracts and our current public workshop schedule along with a recommended approach for planning your **Training for Maintenance Excellence** are available.

About The Maintenance Excellence Institute International

Free Publications - People from over 70 countries around the World have received valuable free publications from PRIDE-in-Maintenance.com. Visit us today and add to your maintenance library the info we share for free.

Book by TMEII Founder Ralph W. "Pete" Peters

McGraw-Hill's Professional Book Division book entitled: ***Maintenance Benchmarking and Best Practices-A Profit and Customer-Centered Approach*** is available. This book by TMEII founder Ralph W. "Pete" Peters provides today's most practical publication and 'how to' guide for helping you apply today's best practices in a practical, down to earth manner and with a measurable return on your maintenance investments.

**Act Now and
You Can Receive a Signed Author's Copy and a 25%
Discount Over Publisher Prices!**

Maintenance Excellence Glossary With Color Illustrations

Introduction: Mother of All Maintenance and MRO Materials Management Glossaries The following terms and definitions are from the area of maintenance management, reliability, maintenance storeroom operations, and inventory and MRO materials management areas. We have had enough of that mean time between failures (**MTBF**). **We are mean enough!** We need **LTBF**; less time between fun.

I hope this publication is provides some fun for you as I share serious stuff, fun stuff and some special family and consulting memories with you! **And this is not in my book only the full color, E-Book version of my original manuscript has it and of course this free publication from PRIDE-in-Maintenance.com. Please email me with your comments to: PETE@PRIDE-in-Maintenance.com**

Thanks to Sandy Dunn, the leader of Assetivity in Australia (www.assetivity.com.au) and the owner of probably the world's best site for plant maintenance professionals, the: Plant Maintenance Resource Center at: www.Plant-Maintenance.com.

Many of the maintenance terms included in this publication came from Sandy Dunn.

Assetivity was founded by, and is led by, [Sandy Dunn](#). Sandy has more than 20 years experience in Maintenance and Operations Management, gained primarily in the Resources sector in Western Australia, Queensland (Australia), South Africa, Chile and Indonesia. This experience includes senior line management positions and senior consulting roles. He holds a first class honours degree in Industrial Engineering, and a Masters degree in Business Administration. Prior to establishing Assetivity, Sandy was a Consulting Team Leader with PricewaterhouseCoopers consulting.



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A



ABC inventory policy - Collection of prioritizing practices to give varied levels of attention to different classes of inventories. For example, Class A items typically make up 15 to 25 percent of stock items but 75 to 85 percent of inventory value. Class C items, in turn, might be 60 percent of the stock items but only 10 percent of the inventory value. Class B items would be somewhere in between these two.

ACE Team Benchmarking System (Also The ACE System) - A team-based process for using experienced crafts people, supervisors and planners to develop a consensus on maintenance repair times and work content/wrench time. It involves **A Consensus of Experts** (ACE's) for first evaluating a job for improved methods, tools, special equipment and root cause elimination. Secondly, this process then develops a consensus on work content and then spread sheets for work content comparison (slotting). The process provides a methodology for a planner to develop reliable planning times for a wide range of jobs using a relative small number of benchmark jobs arranged on spreadsheets by craft areas.

Actuarial analysis - Statistical analysis of failure data to determine the age-reliability characteristics of an item.

Adjustments - Minor tune-up actions requiring only hand tools, no parts, and usually lasting less than a half hour.

APL - See Applications Parts List

Applications Parts List - A list of all parts required to perform a specific maintenance activity. Typically set up as a standard list attached to a Standard Job for Routine Tasks. Not to be confused with a Bill of Materials.

Maintenance Excellence Glossary

Apprentice - A craftsperson in training, typically following a specifically defined technical training program while gaining hands on experience in a craft area to gain a specified number of hours experience.

Area Maintenance - A method for organizing maintenance operations in which the first-line maintenance leader is responsible for all maintenance crafts within a certain department, area or location within the facility.

Asset Care - An alternative term for the maintenance process. A kinder, gentler term but still pure maintenance and physical asset management.

Assets - The physical resources of a business, such as plant equipment, facilities, building systems, fleets, or their parts and components; unlike in the accounting definition, in maintenance this is commonly taken to be any item of physical plant or equipment.

Asset List - A register of physical assets (equipment, facilities, building systems, etc.) usually with information on manufacturer, vendor, specifications, classification, costs, warranty, and tax status.

Asset Management - The systematic planning and control of a physical asset resource throughout its economic life; the systematic planning and control of a physical resource throughout its life. This may include the specification, design, and construction of the asset, its operation, maintenance and modification while in use, and its disposal when no longer required.

Asset Number - A unique alphanumerical identification of an asset list, which is used for its management.

Asset Register - A list of all the assets in a particular workplace, together with information about those assets, such as manufacturer, vendor, make, model, specifications etc.

Asset Utilization - The percentage of total time the equipment/asset is running.

Maintenance Excellence Glossary

Availability - The probability that an asset will, when used under specified conditions, operates satisfactorily and effectively. Also, the percentage of time or number of occurrences for which an asset will operate properly when called upon; the proportion of total time that an item of equipment is capable of performing its specified functions, normally expressed as a percentage. It can be calculated by dividing the equipment available hours by the total number of hours in any given period.

Available Hours - The total number of hours that an item of equipment is capable of performing its specified functions. It is equal to the total hours in any given period, less the downtime hours.

Average Life - How long, on average, a component will last before it suffers a failure. Commonly measured by Mean Time Between Failures (MTBF).

B

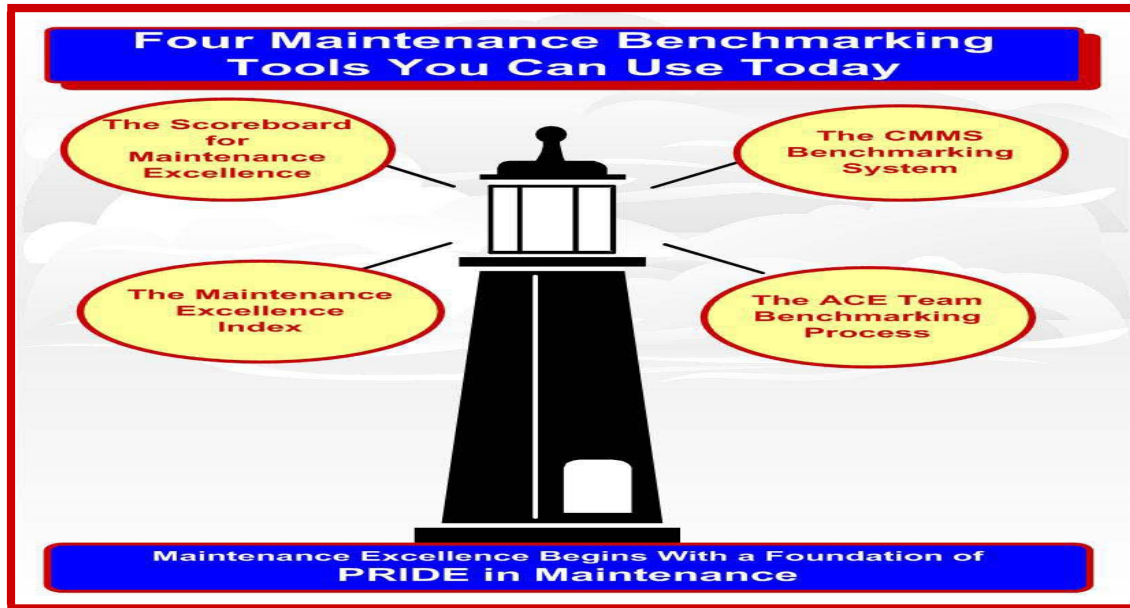


Backlog - Work orders planned and prioritized, waiting scheduling and execution; Work which has not been completed by the "required by date". The period for which each Work Order is overdue is defined as the difference between the current date and the "required by date". All work for which no 'required by' date has been specified is generally included on the backlog. Backlog is generally measured in "crew-weeks"; the total number of labor hours represented by the work on the backlog, divided by the number of labor hours available to be worked in an average week by the work crew responsible for completing this work. As such, it is one of the common Key Performance Indicators (KPI) used in maintenance.

Bar Code-An identification method using symbols for encoding data using lines of varying thickness, designation alphanumeric characters.

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Benchmarking - the process of comparing performance with other organizations, identifying comparatively high performance organizations, and learning what it is they do that allows them to achieve that high level of performance.



Bill of Materials (BOM) - List of components and parts for an asset, usually structured in hierarchical layers from gross assemblies or major end items to minor items down to component parts; a list of all the parts.

BOM - See Bill of Materials

Breakdown - Failure to perform to a functional standard; a specific type of failure where an item of plant or equipment is completely unable to function.

Breakdown Maintenance - A maintenance strategy or policy where no maintenance is done until an item fails and no longer meets its functional standard; see No Scheduled Maintenance.

Built-in Test Equipment (BITE) - Diagnostic and checkout devices integrated into equipment to assist operation, trouble shooting and service.

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Business Vacation: A well planned event that combines real business and/or training with a fun time either before or after the event. “Killing two birds with one stone” for fun and professional development at a place such as The Maintenance Excellence Institute International’s oceanfront site; The Breakwaters on Oak Island in North Carolina.



TMEII's: Breakwaters Oceanfront Business Retreat Site in Oak Island, NC
“The Best Possible Place for Training”
The Only Thing We Overlook is The Ocean!

C



Calibrate - To verify the accuracy of equipment and assure performance within tolerance, usually by comparison to a reference standard that can be traced to a primary standard.

Maintenance Excellence Glossary

Call-out - To summon a tradesperson to the workplace during his normal non-working time so that he can perform a maintenance activity (normally an emergency maintenance task)

Capital - Durable items with long life or high value that necessitates asset control and depreciation under tax guidelines, rather than being expensed.

Carrying Costs - Expense of handling, space, information, insurance, special conditions, obsolescence, personnel and the cost of capital or alternative use of funds to keep parts in inventory. Also, called holding costs.

CBM (Condition Based Maintenance) - Maintenance based on the measured condition of an asset. Testing and/or inspection of characteristics that will warn of pending failure and performance of maintenance after the warning threshold but before total failure. Predictive maintenance technologies such as vibration analysis, thermography/infrared, oil analysis and ultrasonic provide tools and technology for condition based maintenance; An equipment maintenance strategy based on measuring the condition of equipment in order to assess whether it will fail during some future period, and then taking appropriate action to avoid the consequences of that failure. The terms Condition Based Maintenance, On-Condition Maintenance and Predictive Maintenance can be used interchangeably.

Central Maintenance-A method for organizing maintenance operations in which the maintenance leader is responsible for all maintenance and all craft areas operating on call from a central location to support the entire operation.

Change out-The removal of a component or part and the replacement of it with a new or rebuilt one.

Chief Maintenance Officer (CMO) - The technical leader (or actual leader) of a profit-centered maintenance operation within a large or small corporation or non- manufacturing organization. First coined, defined and promoted by staff from The Maintenance Excellence Institute in the late 1990's, the CMO represents the prototype of the New Millennium leader for maintenance and physical asset management and the maintenance process as a true profit center.

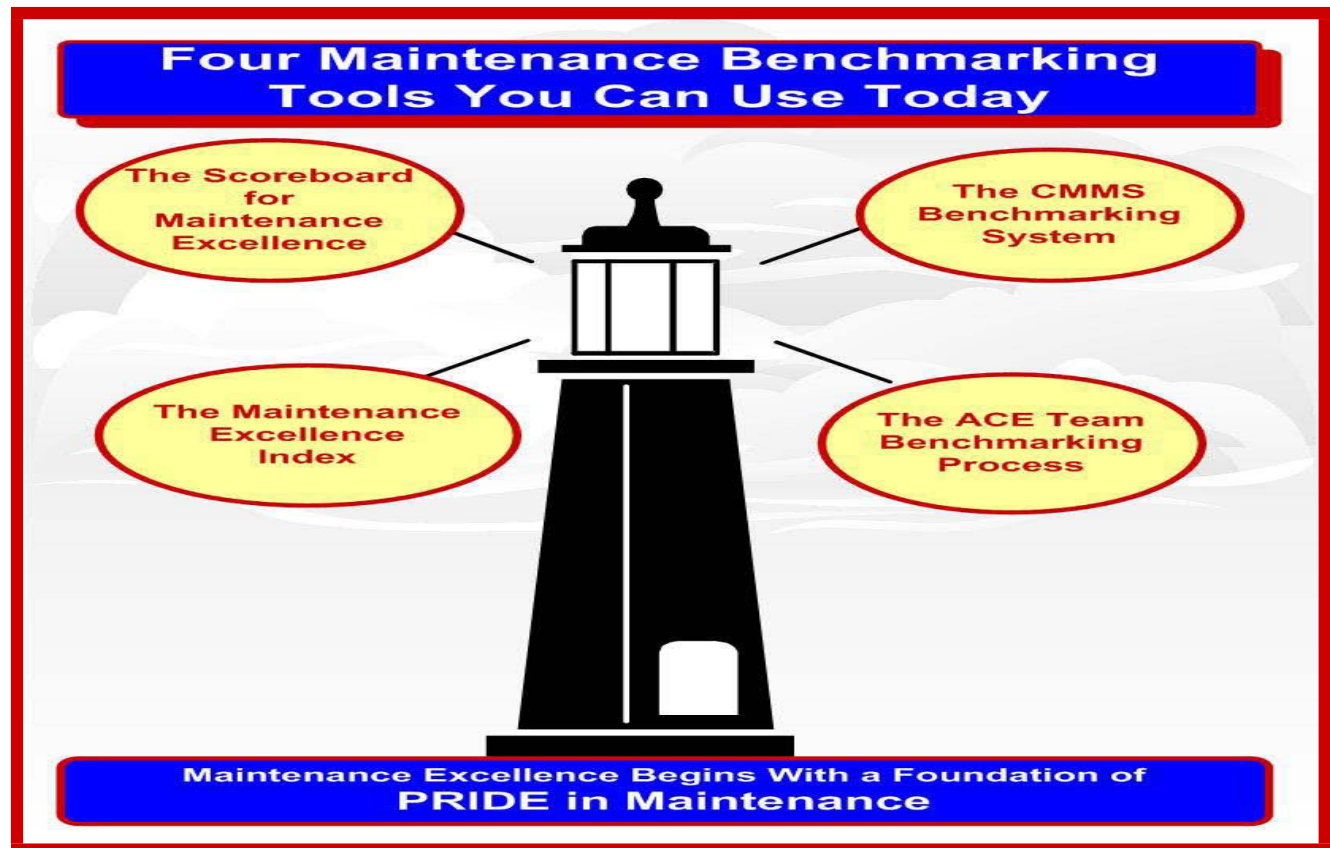
Checkout - The determination of the working condition of a system.

Maintenance Excellence Glossary

Clean - To remove all sources of dirt, debris, and contamination for the purpose of inspection and to avoid chronic losses.

CMMS (see Computerized Maintenance Management Systems) - Integrated computer system modules such as work orders, equipment, inventory, purchasing, planning and preventive maintenance that support asset management and overall maintenance management.

CMMS Benchmarking System - A methodology developed by staff from The Maintenance Excellence Institute to evaluate the effectiveness of a CMMS/EAM installation. A process for evaluating CMMS/EAM implementation progress and full utilization of system functionality to enhance best practices.



CMO - See Chief Maintenance Officer

Code - Symbolic designation used for identification, e.g. failure code, repair code, commodity code.

Maintenance Excellence Glossary

Commodity Code - Classifications of parts by group and class according to their material content or type of consolidation of procurement, storage, and use.

Component - A constituent part of an asset, usually modular and replaceable, that may be serialized and interchangeable; a subassembly of an Asset, usually removable in one piece and interchangeable with other, standard components (e.g. Truck engine).

Component Number - Designation, usually structured by system, group, or serial number.

Condition Monitoring - The use of specialist equipment to measure the condition of equipment. Vibration Analysis, Oil Analysis and Thermography are all examples of Condition Monitoring techniques.

Conditional Probability of Failure - The probability that an item will fail during a particular age interval, given that it survives to enter that age.

Confidence - Degree of certainty that something will happen. For example, a low confidence of replenishment means repair parts probably will not be readily available and is one reason that maintenance personnel retain excess parts in uncontrolled areas.

Configuration - The arrangement and contour of the physical and functional characteristics of systems, equipment, and related items of hardware or software; the shape of a thing at a given time. The specific parts used to construct a machine.

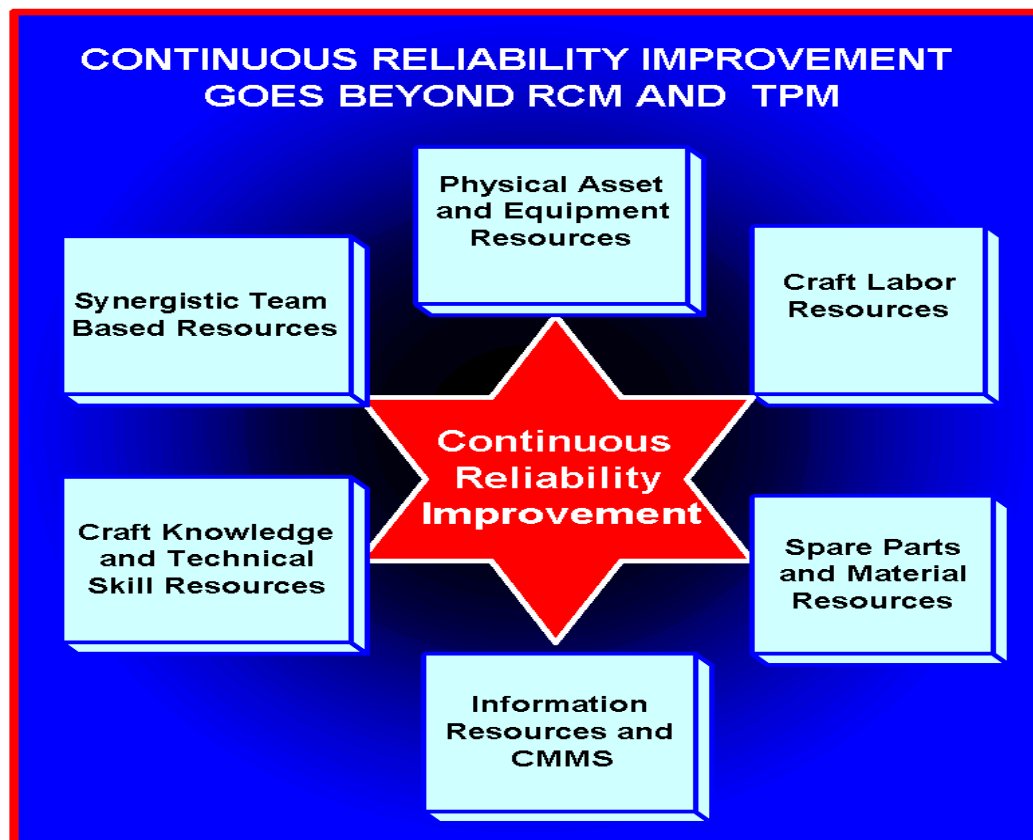
Consumables - Supplies such as fuel, lubricants, paper, printer ribbons, cleaning materials, and forms that are exhausted during use in operation and maintenance.

Contingency - Alternate actions that can be taken if the main actions do not work.

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Continuous Reliability Improvement- A process developed and used by staff from The Maintenance Excellence Institute that goes beyond current reliability-centered maintenance (RCM) approaches to outline a continuous, integrated process for improving total reliability of the following resources:

- Equipment/Facility Resources (Asset Care/Management and Maximum Uptime via RCM Techniques)
- Craft and Operator Resources (Recognizing the most important resource: Crafts People and Equipment/Process Operators)
- Maintenance Repair Operations (MRO) Resources (Establishing Effective Materials Management Processes)
- Maintenance Information Resources (Effective Information Technology Applications for Maintenance)
- Maintenance Technical Knowledge/Craft Skills Base (Closing the Technical Knowledge Resource Gap)
- Synergistic Team Processes (Topping the Value-Added Resource of Effective Leadership-Driven Teams to Support Total Operations Success)



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Contract Acceptance Sheet - A document that is completed by the appropriate Contract Supervisor and Contractor to indicate job completion and acceptance. It also forms part of the appraisal of the contractor's performance.

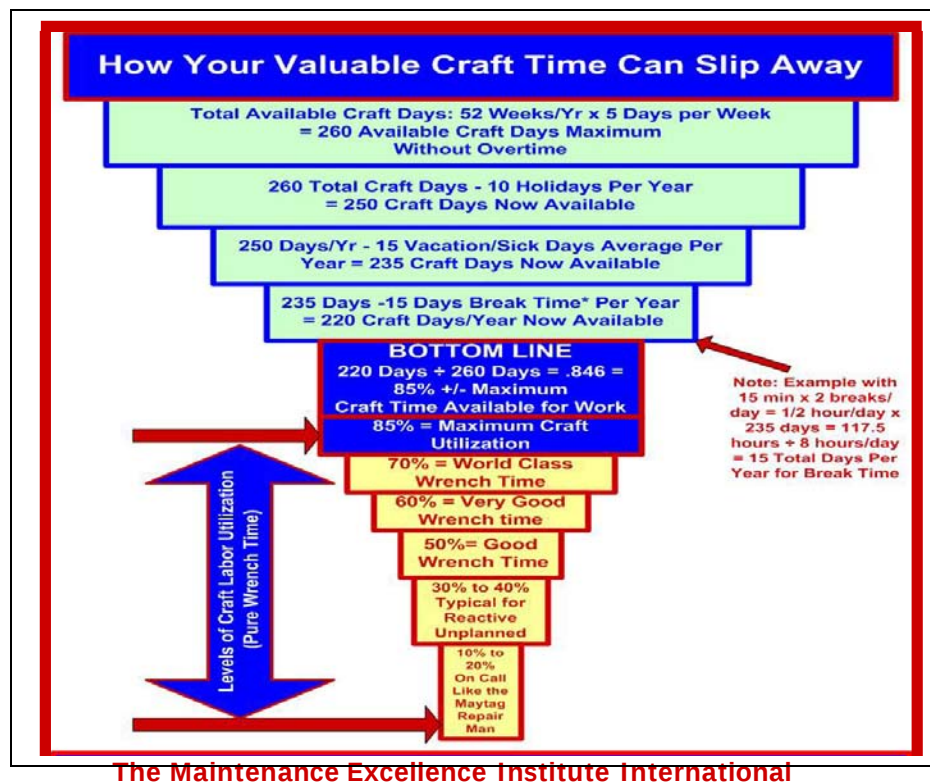
Coordination - Daily adjustment of maintenance activities to achieve the best short-term use of resources or to accommodate changes in needs for service.

Corrective Maintenance (CM) - Unscheduled maintenance or repair actions, performed as a result of failures or deficiencies, to restore items to a specific condition. Maintenance done to bring an asset back to its standard functional performance; Any maintenance activity which is required to correct a failure that has occurred or is in the process of occurring. This activity may consist of repair, restoration or replacement of components.

Craft Availability - Percentage of time that craft labor is free to perform productive work during a scheduled working period.

Craftsperson – (See MVP and Tradesperson) A skilled maintenance worker who has typically been formally trained through an apprenticeship program.

Craft Utilization - Percentage of time that craft labor is engaged in productive work, hands-on during a scheduled working period. The actual wrench time as compared to total time paid.



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Critical - Describes items especially important to product performance and more vital to operation than non-critical items.

Critical Equipment - Items especially important to performance, capacity and throughput and more vital to the operation than non-critical items.

Criticality - The priority rank of a failure mode based on some assessment criteria.

Critical Path Method (CPM) - A logical method of planning and control that analyzes events, the time required, and the interactions of the considered activities.

Critical Spare - Parts and materials that are not used often enough to meet detailed stock accounting criteria but are stocked as “insurance items” because of their essentially or the lead time involved in procuring replacements; similar to safety stocks, except on low-use parts.

Crossdocking -Term for the function capability of an inventory management module to track high priority inbound orders into receiving, to initiate immediate delivery and to receive/process issue transactions with minimal manual effort. Crossdocking provides quick turnaround at receiving without putting items into storage locations and then having to pick for issue later.

Cycle Count- An inventory accountability strategy where counting and verification of stock item quantities is done continuously based on a predetermined schedule and frequency based on the ABC classification of the item. As opposed to an annual physical inventory, cycle counting allows for continuous counting and reconciliation of inventory discrepancies.

D



Dead Stocks-Items for which no demand has occurred over a specific period of time.

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Defect - A condition that causes deviation from design or expected performance; A term typically used in the maintenance of mobile equipment. A defect is typically a potential failure or other condition that will require maintenance attention at some time in the future, but which is not currently preventing the equipment from fulfilling its functions.

Deferred Maintenance - Maintenance that can be or has been postponed from a schedule.

Deterioration Rate - The rate at which an item approaches a departure from its functional standard.

Demand - Requests and orders for an item. Demands become issues only when a requested part is given from stock.

Direct Costs - Any expenses that can be associated with a specific product, operation or service.

Discard task - The removal and disposal of items or parts.

Disposal - The act of getting rid of excess or surplus property under proper authorization. Such processes as transfer, donation, sale, abandonment, destruction or recycling may accomplish disposal.

Down - Out of service, usually due to breakdown, unsatisfactory condition, or production scheduling.

Downtime (DT) - the time that an item of equipment is out of service, as a result of equipment failure. The time that an item of equipment is available, but not utilized is generally not included in the calculation of downtime.

E



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Economic Life - the total length of time that an asset is expected to remain actively in service before it is expected that it would be cheaper to replace the equipment rather than continuing to maintain it. In practice, equipment is more often replaced for other reasons, including: because it no longer meets operational requirements for efficiency, product quality, comfort etc., or because newer equipment can provide the same quality and quantity of output more efficiently.

Economic Order Quantity (EOQ) - Amount of an item that should be ordered at one time to get the lowest possible combination of inventory carrying costs and ordering costs.

Economic Repair - A repair that will restore the item to a sound condition at a cost less than the value of its estimated remaining useful life.

Emergency Maintenance - A condition requiring immediate corrective action for safety, environmental, or economic risk, caused by equipment breakdown.

Emergency Maintenance Task - A maintenance task carried out in order to avert an immediate safety or environmental hazard, or to correct a failure with significant economic impact.

Engineering Change-Any design change that will require revision to specifications, drawings, documents or configurations.

Engineering Change Notice (ECN)-A control document from engineering authorizing changes or modifications to a previous design or configuration.

Engineering Work Order - the prime document used to initiate an engineering investigation, engineering design activity or engineering modifications to an item of equipment

Environmental Consequences - a failure has environmental consequences if it could cause a breach of any known environmental standard or regulation.

Equipment Configuration-List of assets usually arranged to simulate the process, or functional or sequential flow.

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Equipment Maintenance Strategies - the choice of routine maintenance tasks and the timing of those tasks, designed to ensure that an item of equipment continues to fulfill its intended functions.

Equipment Repair History-A chronological list of defaults, repairs, and costs on key assets so that chronic problems can be identified and corrected and economic decisions made.

Equipment Use-Accumulated hours, cycles, distance, throughput, etc., or performance.

Estimated Plant Replacement Value - the estimated cost of capital required to replace all the existing assets with new assets capable of producing the same quantity and quality of output.

Estimating Index - the ratio of Estimated Labor Hours required completing the work specified on Work Orders to the Actual Labor Hours required to complete the work specified on those Work Orders, commonly expressed as a percentage. This is also a measure of Craft Performance, one element of craft labor productivity, particularly when there are well-defined Estimating standards.

EWO- See Engineering Work Order

Examination - A comprehensive inspection with measurement and physical testing to determine the condition of an item.

Expediting - Special efforts to accelerate a process. An expeditor coordinates and assures adequate supplies of parts, materials and equipment.

Expense - Those items that are directly charged as a cost of doing business. They generally have a short, nondurable life. Most non repairable repair parts are expensed when installed on equipment.

Expensed Inventory-Parts written off as a “cost of sales.” Material transferred from ledger inventory to expensed inventory is to be used within 12 months.

Expert System-Decision support software with some ability to make or evaluate decisions based on rules or experience parameters incorporated in the database; a software based system which makes or evaluates decisions based on rules established within the software. Typically used for fault diagnosis.

F



THE PERFORMANCE MATERIALS COMPANY

Fail-safe - An item is fail-safe if, when the item itself incurs a failure, that failure becomes apparent to the operating workforce in the normal course of events.

Failure - Termination of the ability of an item to perform its required function to a standard; an item of equipment has suffered a failure when it is no longer capable of fulfilling one or more of its intended functions. Note that an item does not need to be completely unable to function to have suffered a failure. For example, a pump that is still operating, but is not capable of pumping the required flow rate, has failed. In Reliability Centered Maintenance terminology, a failure is often called a Functional Failure.

Failure Analysis-The logical, systematic examination of an item or its design, to identify and analyze the probability, causes, and consequences of real or potential malfunction. A study of failures to analyze the root causes, to develop improvements, to eliminate or reduce the occurrence of failures. (See **FMECA**: Failure Modes, Effects and Criticality Analysis)

Failure Cause - See Failure Mode

Failure Coding - Identifying and indexing the causes of equipment failure on which corrective action can be based, for example, lack of lubrication, operator abuse, material fatigue, etc.; a code typically entered against a Work Order in a CMMS which indicates the cause of failure (e.g. lack of lubrication, metal fatigue etc.)

Failure Consequences - A term used in Reliability Centered Maintenance. The consequences of all failures can be classified as being either: Hidden, Safety, Environmental, Operational, or Non-Operational.

Failure Effect - A description of the events that occur after a failure has occurred as a result of a specific Failure Mode. Used in Reliability Centered Maintenance, FMEA and FMECA analyses.

Failure Finding Interval - the frequency with which a Failure Finding Task is performed. Is determined by the frequency of failure of the Protective Device, and the desired availability required of that Protective Device.

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Failure Finding Task - Used in Reliability Centered Maintenance terminology. A routine maintenance task, normally an inspection or a testing task, designed to determine, for Hidden Failures, whether an item or component has failed. A failure finding task should not be confused with an On-Condition Task, which is intended to determine whether an item is about to fail. Failure Finding tasks are sometimes referred to as Functional Tests.

Failure Mode - Any event which causes a failure.

Failure Modes, Effects and Criticality Analysis - A structured method of assessing the causes of failures and their effect on production, safety, cost, quality etc.

Failure Modes and Effects Analysis - A structured method of determining equipment functions, functional failures, assessing the causes of failures and their failure effects. The first part of a Reliability Centered Maintenance analysis is a Failure Modes and Effects Analysis.

Failure Pattern - The relationship between the Conditional Probability of Failure of an item, and its age. Failure patterns are generally applied to Failure Modes. Research in the airline industry established that there are six distinct failure patterns. The type of failure pattern that applies to any given failure mode is of vital importance in determining the most appropriate equipment maintenance strategy. This fact is one of the key principles underlying Reliability Centered Maintenance.

FMECA - See Failure Modes, Effects and Criticality Analysis

FMEA - See Failure Modes and Effects Analysis

Forward Workload - All known backlog work and work which is due or predicted to become backlog work within a pre-specified future time period.

Failure Rate - The number of failures per unit measure of life (cycles, time, miles, events, and the like) as applicable for the item.

Fault Tree Analysis (FTA) - A review of failures, faults, defects, and shortcomings based on a hierarchy or relationship to find the root cause.

FMECA-Failure mode, effect, and criticality analysis, a logical, progressive method used to understand the root causes of failures and their subsequent effect on production, safety, cost, quality, etc.

Maintenance Excellence Glossary

Fill Rate - Service level of a specific stock point. An 85 percent fill rate means that if 100 parts are requested, then 85 of them are available and issued.

First In-First Out (FIFO) - Use the oldest item in inventory next. FIFO accounting values each item used at the cost of the oldest item in inventory. Contrasts with LIFO (last in-first out).

Forecast - To calculate or predict some future event or condition, usually as a result of rational study and analysis of pertinent data. The projection of the most probable: as in forecasting failures and maintenance activities.

Frequency - Count of occurrences during each time period or event. A typical frequency chart for inventory plots demand versus days.

Function-A separate and distinct action required to achieve a given objective, to be accomplished by the use of hardware, computer programs, personnel, facilities, procedural data, or a combination thereof; or an operation a system must perform to fulfill its mission or reach its objective; the definition of what we want an item of equipment to do, and the level of performance which the users of the equipment require when it does it. An item of equipment can have many functions, commonly split into Primary and Secondary Functions.

Functional Failure - Used in Reliability Centered Maintenance terminology. The inability of an item of equipment to fulfill one or more of its functions. Interchangeably used with Failure.

Functional Levels - Rankings of the physical hierarchy of a product. Typical levels of significance from the smallest to the largest are part, subassembly, assembly, subsystem and system.

Functional Maintenance Structure-A method for organizing the maintenance operation where the first-line maintenance leader is responsible for conduction a specific kind of maintenance, for example, electrical maintenance, pump maintenance, HVAC maintenance, etc.

Maintenance Excellence Glossary

G

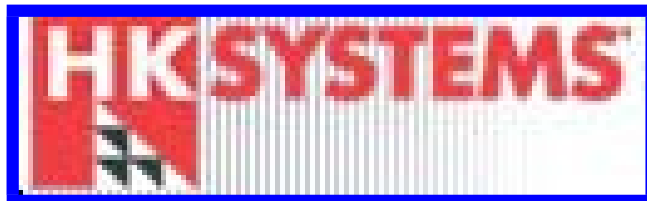


Gantt Chart - A bar chart format of scheduled activities showing the duration and sequencing of activities.

General Support Equipment (GSE) - Equipment that has maintenance application to more than a single model or type of equipment.

Go-line - Used in relation to mobile equipment. Equipment which is available, but not being utilized is typically parked on the Go-line. This term is used interchangeably with Ready Line

H



Hardware - A physical object or physical objects, as distinguished from capability or function. A generic term dealing with physical items of equipment-tools instruments, components, parts-as opposed to funds, personnel, services, programs, and plans, which are termed "software."

Hidden Failure - a failure which, on its own, does not become evident to the operating crew under normal circumstances. Typically, protective devices which are not fail-safe (examples could include standby plant and equipment, emergency systems etc.)

Hold for Disposition Stock-Defective material held at a stock location pending removal for repair or for scrap.

Maintenance Excellence Glossary

Hot Work: Work too hot to handle safely at Siderar Steel Argentina!



Identification - Means by which items are named or numbered to indicate that they have a given set of characteristics. Identification may be in terms of name, part number, drawing number, code, stock number, or catalog number. Items may also be identified as part of an assembly, a piece of equipment, or a system.

Indirect Costs-Expenses not directly associated with specific products, operations, or services; usually considered overhead.

Infant Mortality - The relatively high conditional probability of failure during the period immediately after an item returns to service.

Inherent Reliability - A measure of the reliability of an item, in its present operating context, assuming adherence to ideal equipment maintenance strategies.

Inspection-A review to determine maintenance needs and priority on equipment; Any task undertaken to determine the condition of equipment, and/or to determine the tools, labor, materials, and equipment required to repair the item.

Maintenance Excellence Glossary

Insurance Items - Parts and materials that are considered as critical spares but not used often enough to meet detailed stock accounting criteria. Insurance items are stocked because of their essentially or the lead time involved in procuring replacements. May be of high dollar value to classify them as capital spares.

Interchangeable - Parts with different configurations and numbers that may be substituted for another part, usually without any modification or different performance, since they have the same form, fit and function.

Interface - A common boundary between two or more items, characteristics, systems, functions, activities, departments, or objectives. That portion impinges upon or directly affects something else.

Interval-Based - Periodic preventive maintenance based on calendar time.

Inventory Turnover - Ratio of the value of materials and parts issues annually to the value of materials and parts on-hand, expressed as percentage.

Inventory - Physical count of all items on hand by number, weight, length, or other measurement; also any items held in anticipation of future use.

Inventory Control - That phase or function of logistics that includes management, cataloging, requirements, determination, procurement, inspection, storage, distribution, overhaul, and disposal of material. Managing the acquisition, receipt, storing and issuance of materials and spare parts; managing the investment efficiently of the store's inventory.

Issues - Stock consumed through stores.

Item-Generic term used to identify a specific entity. Items may be parts, components, assemblies, subassemblies, accessories, groups, parents, components, equipment's, or attachments.

Item of Supply - An article or material that is recurrently purchased, stocked, distributed, used and is identified by one distinctive set of numbers or letters throughout the organization concerned. It consists of any number of pieces or objects that can be treated as a unit.

Maintenance Excellence Glossary

J



JIT - Just-In-Time, buzzword term for proactive planning of many processes such as JIT inventory service, JIT maintenance services, etc.

K



King- Big Fricken Fighting Frightful Fish! (BF)

Keep Full - Term used for maintaining set levels of shop stock inventory of Class C items. (See also Shop Stock)

Maintenance Excellence Glossary

Key Performance Indicators - A select number of key measures that enable performance against targets to be monitored.

Knuckle Buster- A poor quality, imitation, adjustable wrench but the true Crescent Wrench from Cooper Tools, Division of Cooper Industries.



**Knuckle Buster:
Not The World Famous
The Crescent Wrench**

KPI - see Key Performance Indicators. (See The Maintenance Excellence Index)

L



Like to Eat Hushpuppies, Maintenance People Like Larry Here

The Maintenance Excellence Institute International

Maintenance Excellence Glossary

Last In-First Out (LIFO) - Use newest inventory next. LIFO accounting values each item used at the cost of the last item added to inventory. Contrasts with FIFO (First In-First Out).

LCC - see Life Cycle Costing

Lead time - Allowance made for that amount of time estimated or actually required to accomplish a specific task such as acquiring a part.

Ledger Inventory - Items carried on the corporate financial balance sheet as material valued at cost.

Level of Repair (LOR) - Locations and facilities at which items are to be repaired. Typical levels are operator, field technician, bench, and factory.

Level of Services (stores) - Usually measured as the ratio of stock outs to all stores issues.

Life - That strange experience you have all day, every day. In a maintenance context, you may want to look at Equipment Life.

Life Cycle - The series of phases or events that constitute the total existence of anything. The entire “womb to tomb” scenario of a product from the time concept planning is started until the product is finally discarded.

Life Cycle Cost - All costs associated with the items of life cycle including design, manufacture, operation maintenance and disposal; a process of estimating and assessing the total costs of ownership, operation and maintenance of an item of equipment during its projected equipment life. Typically used in comparing alternative equipment design or purchase options in order to select the most appropriate option.

Logistics Engineering - The professional art of applying science to the optimum planning, handling, and implementation of personnel, materials, and facilities, including life-cycle designs, procurements, production, maintenance and supply.

Logistic support analysis (LSA) - A methodology for determining the type and quantity of logistic support required for a system over its entire lifecycle. Used to determine the cost effectiveness of asset based solutions.

LSA - see Logistic Support Analysis

M



Maintainability - The inherent characteristic of a design or installation that determines the ease, economy, safety, and accuracy with which maintenance actions can be performed. Also, the ability to restore a product to service or to perform preventive maintenance within required limits. The rapidity and ease with which maintenance operations can be performed to help prevent malfunctions or correct them if they occur, usually measures as mean time to repair; the ease and speed with which any maintenance activity can be carried out on an item of equipment. May be measured by Mean Time to Repair; a function of equipment design, and maintenance task design (including use of appropriate tools, jigs, work platforms etc.)

Maintainability Engineering - The application of applied scientific knowledge, methods, and management skills to the development of equipment, systems, projects, or operations that have the inherent ability of being effectively and efficiently maintained; the set of technical processes that apply maintainability theory to establish system maintainability requirements, allocate these requirements down to system elements and predict and verify system maintainability performance.

Maintenance - The function of keeping items or equipment in, or restoring them to, serviceable condition. It includes servicing, test, inspection, adjustment/alignment, removal, replacement, reinstallation, troubleshooting, calibration, condition determination, repair, modification, overhaul, rebuilding and reclamation. Maintenance includes both corrective and preventive activities. Any activity carried out to retain an item in, or restore it to, an acceptable condition for use or to meet its functional standard.

Maintenance Excellence Glossary



Maintenance Engineering - Developing concepts, criteria, and technical requirements for maintenance during the conceptual and acquisition phases of a project. Providing policy guidance for maintenance activities, and exercising technical and management direction and review of maintenance programs. A staff function intended to ensure that maintenance techniques are effective, equipment is designed for optimum maintainability persistent and chronic problems are analyzed, and corrective actions or modifications are made

The Maintenance Excellence Index (TMEI) - An essential component to The Maintenance Excellence Institute International's implementation of profit and customer-centered maintenance. It is a progressive approach to managing the business of maintenance with performance measurement of maintenance operations achieved by integrating multiple metrics into a composite Total MEI Value. It includes the comparison of current performance to both the performance goal and baseline value for each metric selected. Ideally suited to measure progress across multiple sites within a large organization.

Maintenance Excellence Glossary

Maintenance Excellence Index Example: 13 Performance Measures														
A. Performance Measures	1. Actual Maintenance Cost Per Unit of Production	2. % Major Work Completed within 5% of Cost Estimate	3. % Overall Maintenance Budget Compliance	4. % Overall Schedule Compliance	5. % Overall PM Compliance	6. % Planned Work	7. % Craft Time for Customer Charge Back	8. % Work Orders With Reliable Planned Time	9. % Critical Asset Availability	10. % Wrench Time (Craft Utilization)	11. % Craft Performance	12. % Inventory Accuracy	13. Number of Stock Outs of Inventoried Stock Items	F. Performance Level Scores
B. Current Month	1.30	90	94	90	94	68	75	50	90	34	90	90	15	Perf Level
C. Performance Goal	1.00	95	98	95	100	80	85	60	95	50	95	98	10	10
D. Baseline Performance Levels↕	1.05	94	96	94	98	78	83	58	94	48	94	97	11	9
	1.10	93	94	93	96	76	81	56	93	46	93	96	12	8
	1.15	92	92	92	94	74	78	54	92	44	92	95	13	7
	1.20	91	90	91	92	72	75	52	91	42	91	94	14	6
	1.25	90	88	90	90	70	72	50	90	40	90	93	15	5
	1.30	89	86	89	88	68	69	48	89	38	89	92	16	4
	1.35	88	84	88	86	66	66	46	88	36	88	91	17	3
	1.40	87	82	87	84	64	63	44	87	34	87	90	18	2
	1.45	86	80	86	82	62	60	42	86	32	86	88	19	1
	1.50	85	78	85	80	60	57	40	85	30	85	87	20	0
E. Performance Level Score	4	5	8	5	7	4	6	5	5	2	5	2	5	Perf Level Scores X Weight
G. Weighted Value of Metric	10	6	6	7	11	7	6	7	13	8	8	6	5	
H. Performance Level Score (E) x Weight (G)	40	30	48	35	77	28	36	35	45	16	40	12	25	
														I. Total MEI Value

Maintenance Policy - a statement of principle used to guide Maintenance Management decision making

Maintenance Requirements - There are two foundational needs for an effective facility management or plant maintenance operation;

1. **Maintenance business process improvement:** Business process improvement is what this book strives to help and promote with a profit and customer-centered strategy and related attitudes. If this is truly present, then the plant maintenance leader or facilities management leader in governmental operations at least, has a chance to survive. However, regardless of the type of maintenance operation, they must be able to show top leaders they really are maximizing all available maintenance resources and there is a true need for resources to address the next item, the basic maintenance requirements.

Maintenance Excellence Glossary

2. **Knowing Your Total Maintenance requirements:** Achieving the total maintenance requirement is the primary mission. It is executing the required maintenance while providing, maintaining and improving the asset or facilities and related services for production operation and the tenants/customers. This is what Maintenance Leaders must achieve in addition to many other activities that compete for engineering, craft and administrative resources. Defining true maintenance requirement to top leaders is extremely important when all resources are maxed out and basic preventive maintenance is being neglected.

Very Important Note: If you do not know and cannot convince Top Leaders what your total true maintenance requirements are, then you will experience (RMTBF) really mean times between failures with your boss and you bosses boss!

- **Inspection**, is a maintenance requirement when the basic objective is to assure that a requisite condition or quality exists. In order to inspect for the desired condition, it may be necessary to remove the item, to gain access by removing other items, or to disassemble partially the item for inspection purposes. In such cases, these associated actions necessary to accomplish the required inspection would be specific tasks.
- **Troubleshooting**, is a maintenance operation that involves the logical process (series of tasks) that leads to positive identification, location, and isolation of the cause of a malfunction.
- **Remove**, is a maintenance requirement when the basic objective is to separate the item from the next higher assembly. This requirement is usually applied for a configuration change.
- **Remove and Replace**, this requirement constitutes the removal of one item and replacement of it with another like item. Such action can result from a failure or from a scheduled action.
- **Remove and Reinstall**, is a maintenance requirement when an item is removed for any reason, and the same items reinstalled.
- **Adjustment/Alignment**, is a maintenance requirement when the primary cause of the maintenance action is to adjust or align, or to verify adjustment/alignment of specific equipment. Adjustment - Alignment accomplished subsequent to repair of a given item is not considered a separate requirement and is included as a task in the repair requirement.
- **Functional Test**, constitutes a system or subsystem operational checkout either as a condition verification after the accomplishment of corrective maintenance action or as a scheduled requirement on a periodic basis.

- **Conditioning**, is a maintenance requirement whenever an item is completely disassembled, refurbished, tested and returned to a serviceable condition, meeting all requirements set forth in applicable specifications. It may result from either a scheduled or unscheduled requirement and is generally accomplished at the depot/factory level of maintenance

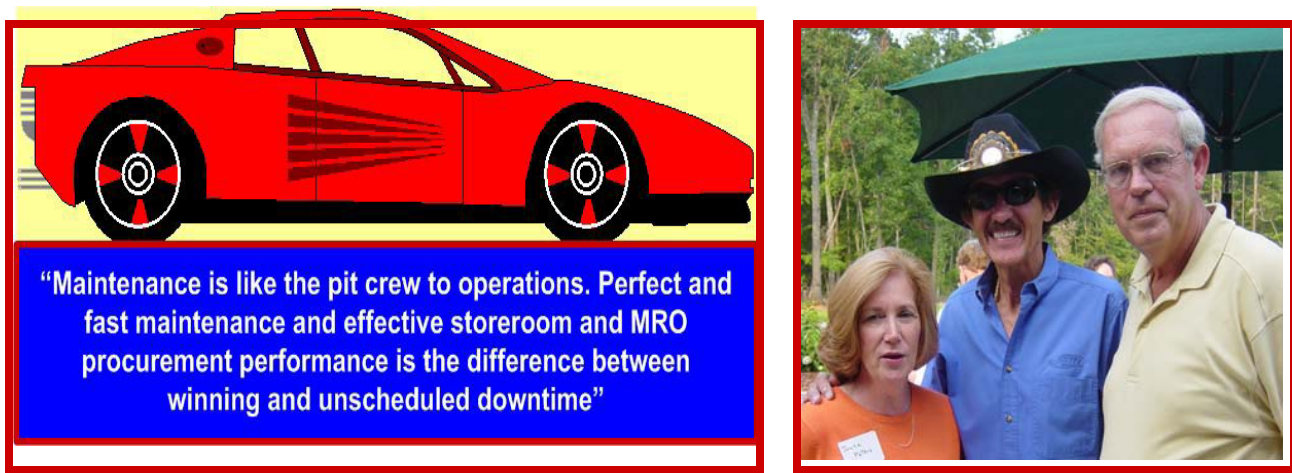
Maintenance Schedule - A comprehensive list of planned maintenance and its sequence of occurrence based on priority in a designated period of time; a list of planned maintenance tasks to be performed during a given time period, together with the expected start times and durations of each of these tasks. Schedules can apply to different time periods (e.g. Daily Schedule, Weekly Schedule etc.)

Maintenance Strategy - Principles and strategies for guiding decisions for maintenance management; a long-term plan, covering all aspects of maintenance management which sets the direction for maintenance management, and contains firm action plans for achieving a desired future state for the maintenance function.

Maintenance Shut-Down - A period of time during which a plant, department, process, or asset is removed from service specifically for maintenance.

Maintenance Task Routing File - A computer file containing skills, hours, and descriptions to perform standard maintenance tasks.

Maintenance, Winning - Maintenance that wins most than it loses; maintenance that plays well as part of the Total Operations Team; maintenance that never, never, never gives up on trying to get better; maintenance that performs like Richard Petty's pit crew





Mean Time Between Failures - a measure of equipment reliability. Equal to the number of failures in a given time period, divided by the total equipment uptime in that period.

Mean Time To Repair - a measure of maintainability. Equal to the total equipment downtime in a given time period, divided by the number of failures in that period.

MIL-STD- United States Military Standard

Model Work Order - A Work Order stored in the CMMS which contains all the necessary information required to perform a maintenance task. (see also Standard Job)

Modification-Change in configuration; any activity carried out on an asset which increases the capability of that asset to perform its required functions.

Modularization - Separation of components of a product or equipment into physically and functionally distinct entities to facilitate identification, removal and replacement unitization.

MRO- Term for maintenance repair operations and generally used as MRO items referring to parts, materials, tools and equipment used in the maintenance process.

MRO Materials Management- The overall management of the process for requisitioning, storage/warehousing, purchasing, inventory management and issue of MRO type items used in the maintenance process.

MTBF - see Mean Time Between Failures

MTTR - see Mean Time To Repair

Maintenance Excellence Glossary

MVP-Most Valuable People-Your Crafts People and Your Storeroom staff



N



NDT- Non-destructive testing of equipment to detect abnormalities in physical, chemical or electrical characteristics, using such technologies as ultrasonic (thickness), liquid dye penetrates (cracks), x-ray (weld discontinuities), and voltage generators (resistance).

Non-Operational Consequences - A failure has non-operational consequences if the only impact of the failure is the direct cost of the repair (plus any secondary damage caused to other equipment as a result of the failure)

Non-Repairable - Parts or items that are discarded upon failure for technical or economic reasons.

Non-Routine Maintenance - Maintenance performed at irregular intervals, with each job unique, and based on inspection, failure, or condition; Any maintenance task which is not performed at a regular, pre-determined frequency.

Maintenance Excellence Glossary

No Scheduled Maintenance - an Equipment Maintenance Strategy, where no routine maintenance tasks are performed on the equipment. The only maintenance performed on the equipment is Corrective Maintenance, and then only after the equipment has suffered a failure. Also described as a Run-to-Failure strategy.

O



Over the Sea of Data, Maintenance Leaders Must Sometimes Work

Obsolescence - Decrease in value or use of items that have been superseded by superior items.

Obsolete - Designation of an item for which there is no replacement. The part has probably become unnecessary as a result of design change.

OBM - Operator-Based Maintenance, a maintenance excellence strategy where equipment or process operators are trained and accountable for selected maintenance tasks. Also autonomous maintenance

Oil Analysis - see Teratology

On-Condition Maintenance - see Condition Based Maintenance

Maintenance Excellence Glossary

Operating Context - The operational situation within which an asset operates. For example, is it a stand-alone piece of plant, or is it one of a duty-standby pair? Is it part of a batch manufacturing process or a continuous production process? What is the impact of failure of this item of equipment on the remainder of the production process? The operating context has enormous influence over the choice of appropriate equipment maintenance strategies for any asset.

Operating Hours - The length of time that an item of equipment is actually operating.

Operational Consequences - A failure has operational consequences if it has a direct adverse impact on operational capability (lost production, increased production costs, loss of product quality, or reduced customer service)

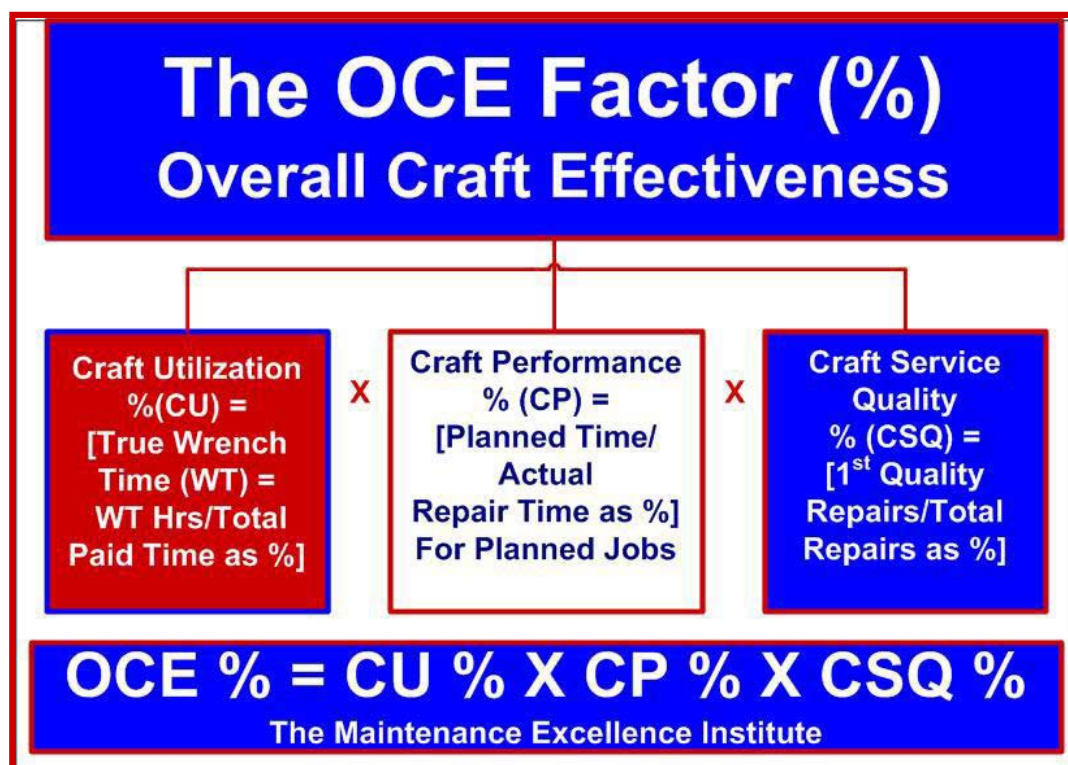
Operational Efficiency - Used in the calculation of Overall Equipment Effectiveness. The actual output produced from an asset in a given time period divided by the output that would have been produced from that asset in that period, had it produced at its rated capacity. Normally expressed as a percentage.

Order Point - Quantity of parts at which an order will be placed when usage reduces stock to that level; also called reorder point (ROP).

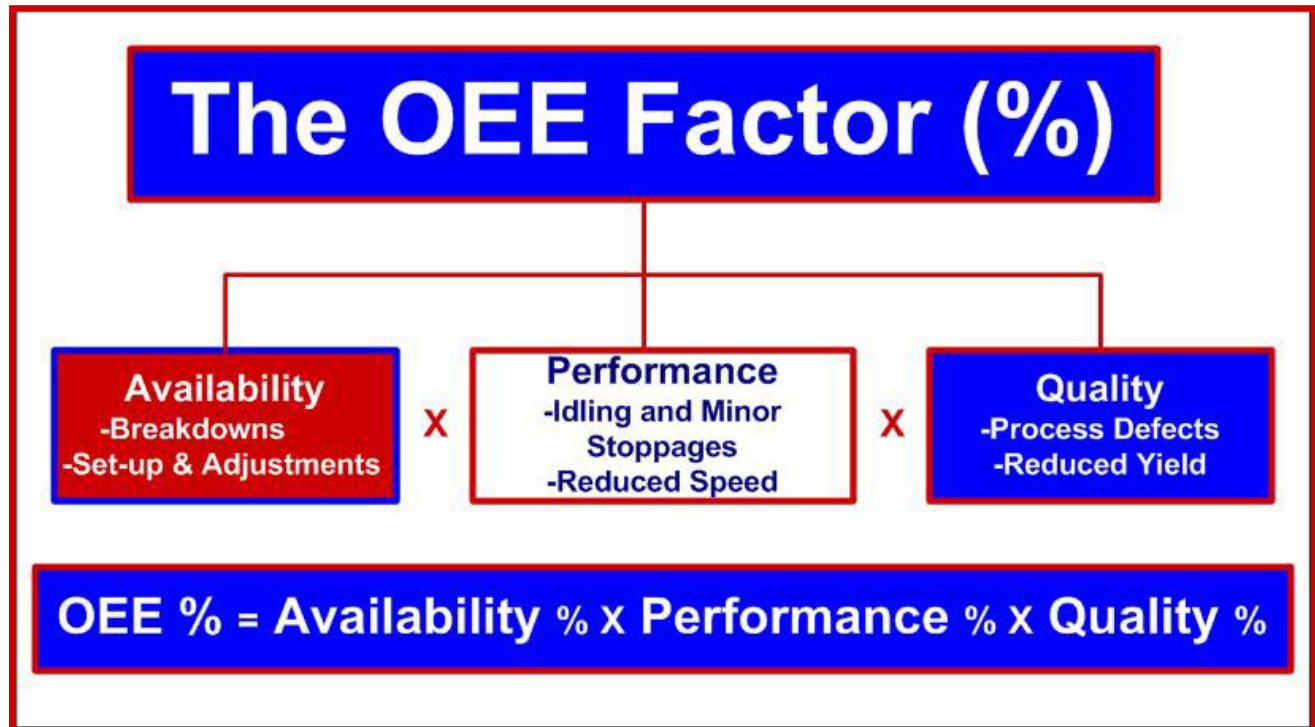
Order Quantity-Number of items demanded. The economic order quantity (EOQ), also called minimum cost quantity, is a specific number; but the actual order quantity may vary as a result of cost, transportation, discounts, or extraordinary demand.

Outage - A term used in some industries, for example, electrical power distribution, to denote when an item or system is not in use.

Overall Craft Effectiveness (OCE) - The OCE Factor is a method developed by MEI Founder, Ralph "Pete" Peters to measure craft labor productivity that combines three key elements; craft utilization, craft performance and craft methods and quality. Typically, the OCE Factor is determined by only the two elements; % Craft Utilization x Craft Performance. Compares to OEE in basic concepts but applies directly to productivity of craft labor assets.



Overall Equipment Effectiveness (OEE) - The OEE Factor is a method to measure overall equipment effectiveness that originated with Japan's Total Productive Maintenance (TPM) strategy for maintenance improvement. The OEE Factor combines three key elements; equipment availability, performance and quality measurement into a common metric that reflects key elements of the manufacturing environment. The OEE Factor equals % Availability x % Performance x % Quality. Compares to OCE in basic concept but applies directly to the productivity of physical assets.



Overhaul - A comprehensive examination and restoration of an item to an acceptable condition.

P



Pareto's Principle - Named for Alfredo Parato, a very smart Italian whose principle applies to about anything! Critical few, often about 20 percent, of parts or people or users that should receive attention before the insignificant many, which are usually about 80 percent.

Maintenance Excellence Glossary

Part Numbers - Unique identifying numbers and letters that denote each specific part configuration; also called stock numbers or item numbers.

PCM - See Profit-Centered Maintenance

PdM - See Predictive Maintenance

Periodic Maintenance - Cyclic maintenance actions carried out at regular intervals, based on repair history data, use or elapsed time.

Percent Planned Work - The percentage of total work (in labor hours) performed in a given time period which has been planned in advance.

PERT Chart - See Project Evaluation & Review Technique (PERT) Chart

P-F Interval - A term used in Reliability Centered Maintenance. The time from when a Potential Failure can first be detected on an asset or component using a selected Predictive Maintenance task, until the asset or component has failed. Reliability Centered Maintenance principles state that the frequency with which a Predictive Maintenance task should be performed is determined solely by the P-F Interval.

Pick List - A selection of required stores items for a work order or task.

Planned Maintenance - Maintenance carried out according to a documented plan of tasks, skills, and resources; any maintenance activity for which a pre-determined job procedure has been documented, for which all labor, materials, tools, and equipment required to carry out the task have been estimated, and their availability assured before commencement of the task.

Plant Engineering - A staff function whose prime responsibility is to ensure that maintenance techniques are effective, that equipment is designed and modified to improve maintainability, that ongoing maintenance technical problems are investigated, and appropriate corrective and improvement actions are taken. Used interchangeably with Maintenance Engineering and Reliability Engineering.

PM - see Preventive Maintenance

Potential Failure - a term used in Reliability Centered Maintenance. An identifiable condition which indicates that a functional failure is either about to occur, or in the process of occurring.

Maintenance Excellence Glossary

PRA - See Probabilistic Risk Assessment

Predictive Maintenance (PdM) - Use of measured physical parameters against known engineering limits for detecting, analyzing, and correcting equipment problems before a failure occurs; examples include vibration analysis, sonic testing, dye testing, infrared testing, thermal testing, coolant analysis, teratology, and equipment history analysis. Subset of preventive maintenance that uses nondestructive testing such as spectral oil analysis, vibration evaluation, and ultrasonic with statistics and probabilities to predict when and what maintenance should be done to prevent failures; an equipment maintenance strategy based on measuring the condition of equipment in order to assess whether it will fail during some future period, and then taking appropriate action to avoid the consequences of that failure. The terms Condition Based Maintenance, On- Condition Maintenance and Predictive Maintenance can be used interchangeably.

Preventive Maintenance (PM) - Maintenance carried out at predetermined intervals, or to other prescribed criteria, and intended to reduce the likelihood of a functional failure. Actions performed in an attempt to keep an item in a specific operating condition by means of systematic inspection, detection, and prevention of incipient failure; an equipment maintenance strategy based on replacing, overhauling or remanufacturing an item at a fixed interval, regardless of its condition at the time. Scheduled Restoration tasks and Scheduled Discard tasks are both examples of Preventive Maintenance tasks. See also Scheduled Maintenance.

PRIDE-in-Maintenance - Coined originally in 1981 as the theme for a presentation to the craft work force at a manufacturing plant in Greenville, Mississippi. It is about changing the hearts, minds and attitudes about the profession and practice of maintenance. It is about **PRIDE** and **People Really Interested in Developing Excellence** in maintenance operations of all types. Its foundation starts with the most important maintenance resource, the crafts work force. The goal is to achieve PRIDE-in-Maintenance from within the crafts work force and among their maintenance leaders and to have top leaders realize the true value of their total maintenance operation and take positive action.



Maintenance Excellence Glossary

Priority - The relative importance of a single job in relationship to other jobs, operational needs, safety, etc., and the time within which the job should be done; used for scheduling work orders.

Proactive Maintenance - A maintenance strategy that is anticipatory and includes a level of planning; any tasks used to predict or prevent equipment failures.

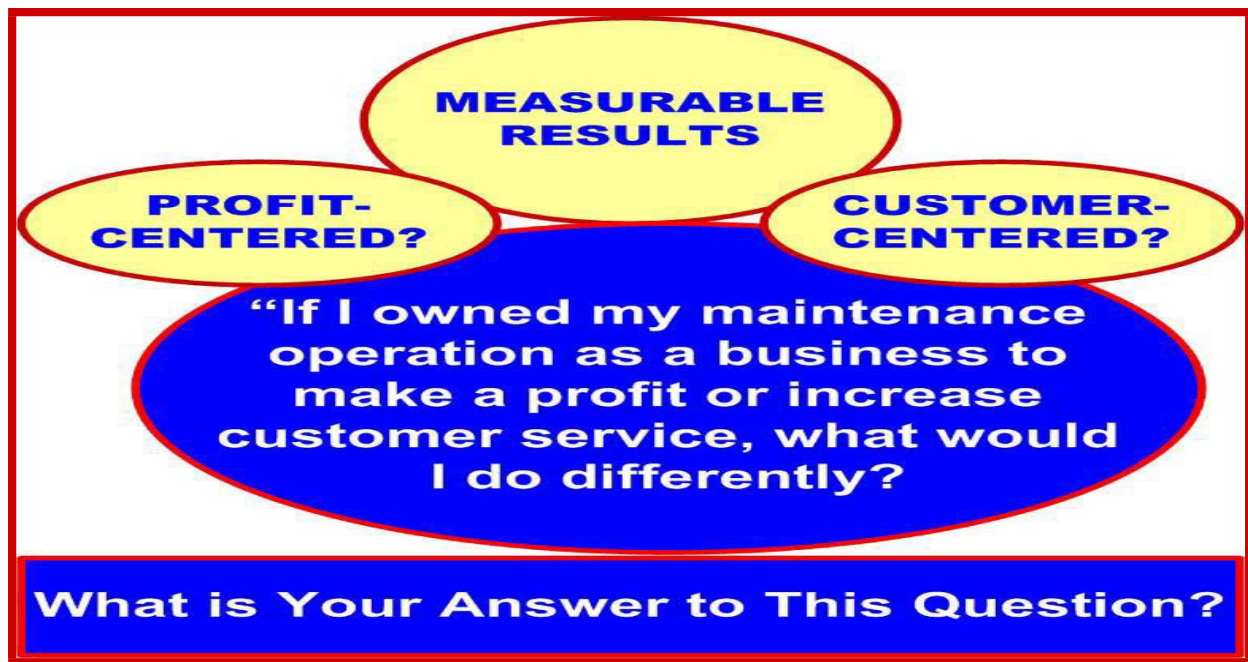
Probabilistic Risk Assessment - A "top-down" approach used to apportion risk to individual areas of plant and equipment, and possibly to individual assets so as to achieve an overall target level of risk for a plant, site or organization. These levels of risk are then used in risk-based techniques, such as Reliability Centered Maintenance to assist in the development of appropriate equipment maintenance strategies, and to identify required equipment modifications.

Probabilistic Safety Assessment - Similar to Probabilistic Risk Assessment, except focused solely on Safety related risks.

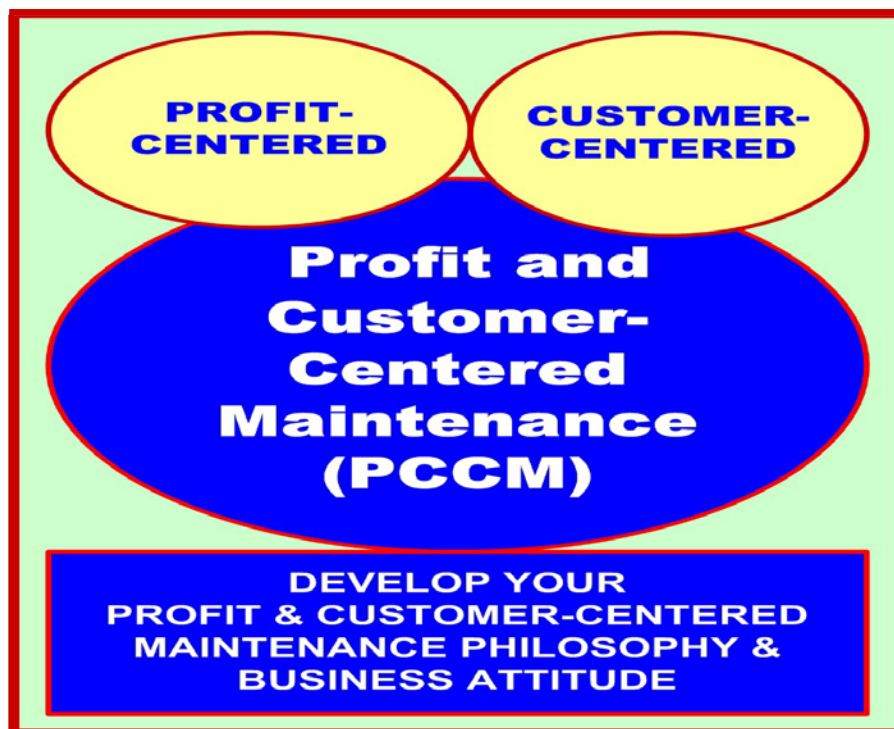
Procurement - Process of obtaining persons, services, supplies, facilities, materials, or equipment. It may include the function of design, standards determination, specification development, and selection of suppliers, financing, contract administration, and other related functions.

Project Evaluation & Review Technique (PERT) Chart - Scheduling tool which shows in flow chart format the interdependencies between project activities.

Profit-Centered Maintenance (PCM): A value adding, business approach to the leadership and management of maintenance and physical asset management Simply stated it asks the question; "If I owned this maintenance operation as a business to make a profit, what would I do differently?" On a broader scope it is the application of world class maintenance practices, attitudes and leadership principles. When applied, it makes an in-house maintenance operation equivalent to a profit center with both a financial system and performance measurement process in place to validate results.



Profit and Customer-Centered Maintenance (PCCM): On a broader scope it combines the philosophies of profit-centered with customer-centered into management and leadership of all types of maintenance processes. It is the application of maintenance best practices, attitudes and leadership principles to both profit and maintenance customer service. When applied, it makes an in-house maintenance operation equivalent to a profit center when both a financial system and performance measurement process in place to validate results.



Maintenance Excellence Glossary

Protective Device - Devices and assets intended to eliminate or reduce the consequences of equipment failure. Some examples include standby plant and equipment, emergency systems, safety valves, alarms, trip devices, and guards.

Provisioning - Process of determining and selecting the varieties and quantities of repair parts, spares, special tools, and test and support equipment that should be procured and stocked to sustain and maintain equipment for specified periods of time. It includes identification of items of supply; establishing data for catalogs, technical manuals, and allowance lists; and providing instructions and schedules for delivery of provisioned items.

PSA - see Probabilistic Safety Assessment

Purchase Requisition - The prime document raised by user departments authorizing the purchase of specific materials, parts, supplies, equipment or services from external suppliers.

Purchase Order - The prime document created by an organization, and issued to an external supplier, ordering specific materials, parts, supplies, equipment or services.

Q

Questions for Jack?



Jack Not To Actual Scale-He Was Elongated to Fit the Margins

Maintenance Excellence Glossary

Quality Rate - Used in the calculation of Overall Equipment Effectiveness(OEE) and Overall Craft Effectiveness(OCE). For OEE, the proportion of the output from a machine or process which meets required product quality standards. For OCE, the proportion of repairs completed right the first time. Normally specified as a percentage.

R

Ralph's of the World Unite!



RCM - See Reliability Centered Maintenance

Reaction Time/Response Time - The time required between the receipt of an order or impulse triggering some action and the initiation of the action.

Ready Line - Used in relation to mobile equipment. Equipment which is available, but not being utilized is typically parked on the Ready Line. This term is used interchangeably with Go-Line.

Rebuild - Restore an item to an acceptable condition in accordance with the original design specifications.

Rebuild/Recondition - Total teardown and reassembly of a product, usually to the latest configuration.

Maintenance Excellence Glossary

Redesign - A term which, in Reliability Centered Maintenance, means any one-off intervention to enhance the capability of a piece of equipment, a job procedure, a management system or people's skills

Redundancy - Two or more parts, components, or systems joined functionally so that if one fails, some or all of the remaining components are capable of continuing with function accomplishment; fail-safe; backup.

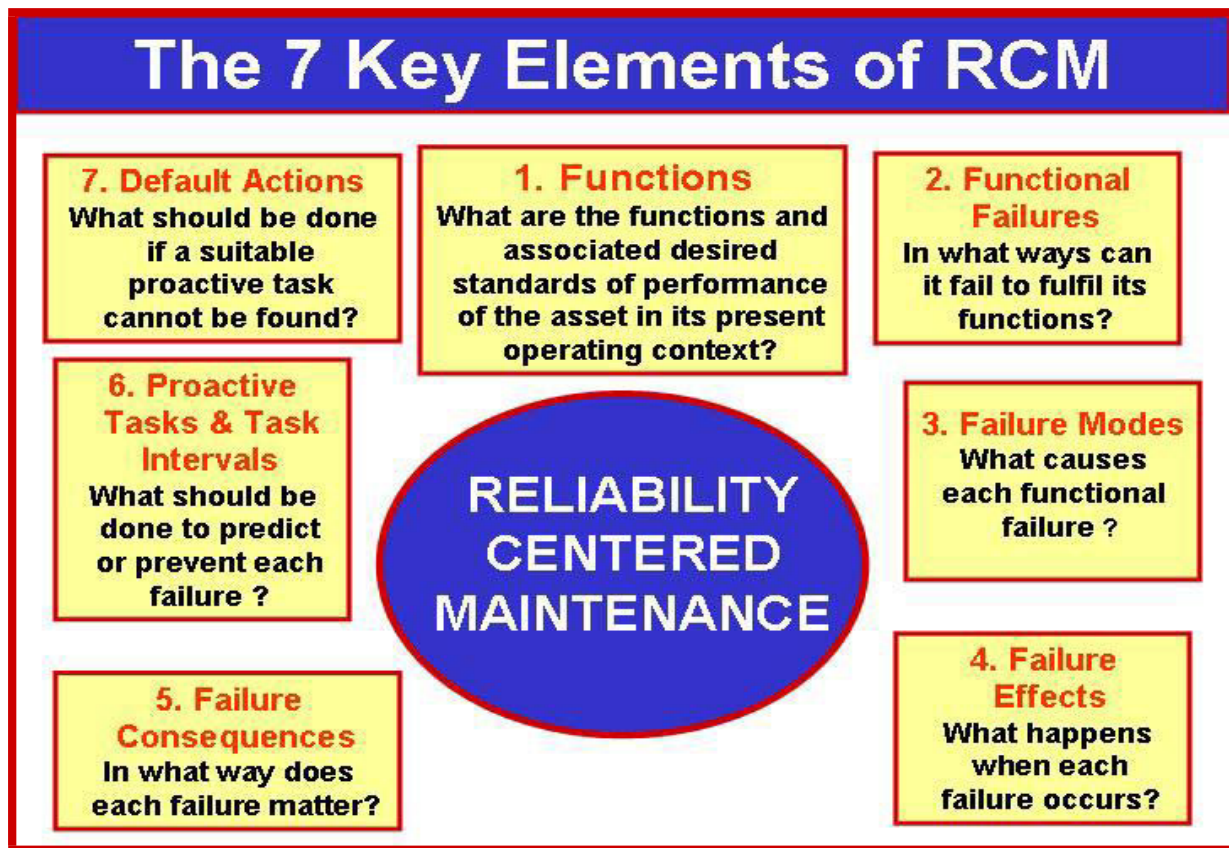
Refurbish - Clean and replace worn parts on a selective basis to make the product usable to a customer. Less involved than rebuild.

Reliability - The probability that an item will perform its intended function without failure for a specified time period under specified conditions. The ability of an item to perform a required function under stated conditions for a stated period of time; is usually expressed as the mean time between failures. Normally measured by Mean Time Between Failures.

Reliability Analysis - The process of identifying maintenance of significant items and classifying them with respect to malfunction on safety environmental, operational, and economic consequences. Possible failure mode of an item is identified and an appropriate maintenance policy is assigned to counter it. Subsets are failure mode, effect, and criticality analysis (FMECA), fault tree analysis (FTA), risk analysis, and HAZOP (hazardous operations) analysis.

Reliability Centered Maintenance (RCM)-Optimizing maintenance intervention and tactics to meet predetermined reliability goals; A structured process, originally developed in the airline industry, but now commonly used in all industries to determine the equipment maintenance strategies required for any physical asset to ensure that it continues to fulfill its intended functions in its present operating context. A number of books have been written on the subject. The 7 key elements of RCM are as follows:

The 7 Key Elements of RCM



Reliability Engineering - a staff function whose prime responsibility is to ensure that maintenance techniques are effective, that equipment is designed and modified to improve maintainability, that ongoing maintenance technical problems are investigated, and appropriate corrective and improvement actions are taken. Used interchangeably with Plant Engineering and Maintenance Engineering.

Reorder Point (ROP) - Minimum quantity, established by economic calculation and management direction, which triggers the ordering of more items.

Repair - To restore an item to an acceptable condition by the renewal, replacement, or mending of worn or damaged parts. Restoration or replacement of parts or components as necessitated by wear, tear, damage, or failure; to return the facility, equipment, or part to efficient operating condition; any activity which returns the capability of an asset that has failed to a level of performance equal to, or greater than, that specified by its Functions, but not greater than its original maximum capability. An activity which increases the maximum capability of an asset is a modification.

Repair Parts - Individual parts or assemblies required for the maintenance or repair of equipment, systems, or spares. Such repair parts may also be repairable or non-repairable assemblies, or one-piece items. Consumable supplies used in maintenance or repair, such as wiping rags, solvents, and lubricants, are not considered repair parts. Repair parts are also service parts.

Maintenance Excellence Glossary

Repairable - Parts or items that are technically and economically repairable. A repairable part, upon becoming defective, is subject to return to the repair point for repair action.

Replaceable Item - Hardware that is functionally interchangeable with another item but differs physically from the original part to the extent that installation of the replacement requires such operations as drilling, reaming, cutting, filling, or shimming in addition to normal attachment or installation operations.

Restoration - any activity which returns the capability of an asset that has **not** failed to a level of performance equal to, or greater than, that specified by its Functions, but not greater than its original maximum capability. Not to be confused with a modification or a repair.

Return on Assets - an accounting term. Let's not get into a lengthy discussion of the relative merits of various accounting standards, how assets should be valued (book value, replacement value, depreciation rates and methods etc.), and differences between tangible and intangible assets. This is the stuff that accountants have wet dreams over, but not maintenance engineers. In practical terms, as it impacts on maintenance, Return on Assets is the profit attributable to a particular plant or factory, divided by the amount of money invested in plant and equipment at that plant or factory. It is normally expressed as a percentage. As such, it is roughly equivalent (in principle - please excuse the pun!) to the interest rate that you get on money invested in the bank, except that in this case the money is invested in plant and equipment.

RIME - A maintenance priority methodology entitled the "Ranking Index for Maintenance Expenditures." Provides method to include a ranking of equipment/asset criticality combined with the repair work classification ranking to produce a priority index value.

Risk - The potential for the realization of the unwanted, negative consequences of an event. The product of conditional probability of an event, and the event outcomes.

Rotable - Term often used in the maintenance of heavy mobile equipment. A rotable component is one which, when it has failed, or is about to fail, is removed from the asset and a replacement component is installed in its place. The component that has been removed is then repaired or restored, and placed back in the maintenance store or warehouse, ready for re-issue.

Maintenance Excellence Glossary

RPI - Reliability Performance Indicators or key metrics that relate to the measurement of asset reliability. Examples include:

- Maximum Corrective Time (MCT) and Maximum Preventive Time (MPT). The most time expected for maintenance, usually specified at 95 percent confidence level.
- Mean Active Maintenance Time (MAMT). Weighed average of Mean Corrective Time and Mean Preventive Time but excluding administrative and logistics support time.
- Mean Downtime (MDT). Average time a system cannot perform its mission; including response time, active maintenance, supply time and administrative and logistics support time.
- Mean Time Between Failure (MTBF). The average time/distance/events a product or equipment process delivers between breakdowns.
- Mean Time Between Maintenance (MTBM). The average time between corrective and preventive actions.
- Mean Time To Repair (MTTR). The average time it takes to fix a failed item.

Routine Maintenance Task - any maintenance task that is performed at a regular, predefined interval.

Running Maintenance - Maintenance that can be done while the asset is in service.

Run-to-Failure - No Scheduled Maintenance - an Equipment Maintenance Strategy, where no routine maintenance tasks are performed on the equipment. The only maintenance performed on the equipment is Corrective Maintenance, and then only after the equipment has suffered a failure. Also described as a No Scheduled Maintenance strategy.

Maintenance Excellence Glossary

S



Sunrises and Sunsets at Oak Island Are Priceless

Safety Consequences - a failure has safety consequences if it causes a loss of function or other damage that could hurt or kill someone.



Safety Stock - Quantity of an item, in addition to the normal level of supply, required to be on hand to permit continuing operation with a specific level of confidence if the supply is late or demand suddenly increases.

Salvage-The saving of reuse of condemned, discarded, or abandoned property, and of materials contained therein for reuse or scrapping. As a noun, it refers to property that has some value in excess of its basic material content, but is in such condition that it has no reasonable prospect of original use, and its repair or rehabilitation is clearly not practical.

Maintenance Excellence Glossary

Schedule Compliance - The number of scheduled jobs actually accomplished during the period covered by an approved schedule; also the number of scheduled labor hours actually worked against a planned number of scheduled labor hours, expressed as percentage; one of the Key Performance Indicators often used to monitor and control maintenance. It is defined as the number of Scheduled Work Orders completed in a given time period (normally one week), divided by the total number of Scheduled Work Orders that should have been completed during that period, according to the approved Maintenance Schedule for that period. It is normally expressed as a percentage, and will always be less than or equal to 100%. The closer to 100%, the better the performance for that time period.

Scheduled Discard Task - Replacement of an item at a fixed, predetermined interval, regardless of its current condition; a maintenance task to replace a component with a new component at a specified, pre-determined frequency, regardless of the condition of the component at the time of its replacement. An example would be the routine replacement of the oil filter on a motor vehicle every 6,000 miles. The frequency with which a Scheduled Discard task should be performed is determined by the Useful Life of the component.

Scheduled Maintenance (SM) - Preplanned actions performed to keep an item in specified operating condition by means of systematic inspection, detection, and prevention of incipient failure. Sometimes called preventive maintenance, but actually a subset of PM.

Scheduled Operating Time - The time during which an asset is scheduled to be operating, according to a long-term production schedule.

Maintenance Excellence Glossary

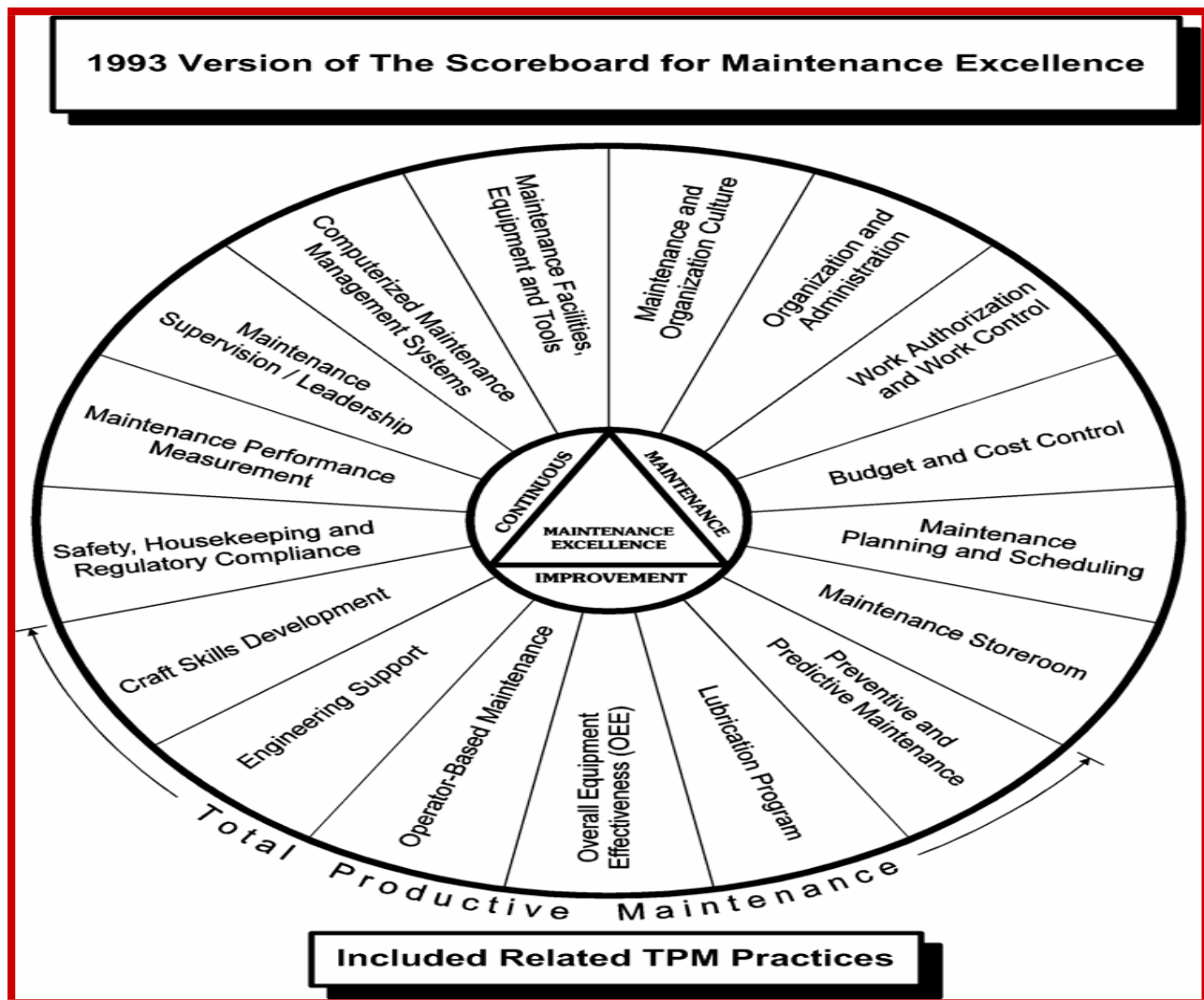
Scheduled Restoration Task - A maintenance task to restore a component at a specified, pre-determined frequency, regardless of the condition of the component at the time of its replacement. An example would be the routine overhaul of a slurry pump every 1,000 operating hours. The frequency with which a Scheduled Restoration task should be performed is determined by the Useful Life of the component.



Scheduled Work Order - a Work Order that has been planned and included on an approved Maintenance Schedule.

Scoping - A planning activity which outlines the extent/scope and detail of work to be done and defines the resources needed.

Scoreboard for Excellence - Baseline for today's most comprehensive benchmarking guides for maintenance operations. Developed initially in 1981 and enhanced into its present format of five different **Scoreboard for Excellence** versions. See **Scoreboard for Facilities Management Excellence** and **Scoreboard for Maintenance Excellence**.



Scoreboard for Facilities Management Excellence - Today's most comprehensive benchmarking guide for pure facilities maintenance operations. Developed along the same format as the Scoreboard for Maintenance Excellence, the New Millennium version includes 27 evaluation (best practice) categories and 300 evaluation categories. An excellence benchmarking guide for operations within large physical plant and facilities complexes such as universities, state and municipal building complexes, healthcare facilities, secondary school complexes and retail organizations with nation- wide system of sites. Provides an essential benchmarking guide where results become an important external benchmark against recognized best practices and also the user's baseline for Continuous Reliability Improvement.

Maintenance Excellence Glossary

The Scoreboard for Facilities Management Excellence

CATEGORY	The Scoreboard for Facilities Management Excellence Category Descriptions (Part 1)	Evaluation Items	Total Points in Category
A.	The Organizational Culture and PRIDE in Maintenance	5	50
B.	Facilities Organization, Administration and Human Resources	10	100
C.	Craft Skills Development	10	100
D.	Facilities Management Supervision/Leadership	10	100
E.	Business Operations, Budget and Cost Control	15	150
F.	Work Management and Control: Maintenance and Repair (M/R)	10	100
G.	Work Management and Control: Construction and Renovation (C/R)	5	50
H.	Facilities Maintenance and Repair Planning and Scheduling	15	150
I.	Facilities Construction and Renovation Planning /Scheduling and Project Management	10	100
J.	Facilities Planning and Property Management	10	100
K.	Facilities Condition Evaluation Program	5	50
L.	Facilities Storeroom Operations and Internal MRO Customer Service	15	150
M.	MRO Materials Management and Procurement	10	100

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The Scoreboard for Facilities Management Excellence

CATEGORY	The Scoreboard for Facilities Management Excellence Category Descriptions (Part 2 Continued)	Evaluation Items	Total Points in Category
N.	Preventive Maintenance and Lubrication	20	200
O.	Predictive Maint. and Conditioning Monitoring Technologies	10	100
P.	Building Automation and Control Technology	5	50
Q.	Utilities Systems Management	10	100
R.	Energy Management and Control	10	100
S.	Facilities Engineering Support	10	100
T.	Safety and Regulatory Compliance	15	150
U.	Security Systems and Access Control	10	90
V.	Facilities Management Performance Measurement	15	150
W.	Facilities Maintenance Management System (FMMS) and Business System	15	150
X.	Shop Facilities, Equipment, and Tools	10	100
Y.	Continuous Reliability Improvement	10	100
Z.	Grounds and Landscape Maintenance	15	150
ZZ.	Housekeeping Service Operations	15	150
Total Evaluation Items and Points		300	3000

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Maintenance Excellence Glossary

Scoreboard for Maintenance Excellence- MEI has today's most comprehensive benchmarking guide for plant maintenance operations. Developed initially in 1982 and enhanced into its present New Millennium format of 27 evaluation (best practice) categories and 300 evaluation categories. Used by over 4,000 organizations and for benchmarking all types of maintenance operations. Provides an essential benchmarking guide where results become an important external benchmark against recognized best practices and also the user's baseline for Continuous Reliability Improvement.

The Scoreboard for Maintenance Excellence

CATEGORY	The Scoreboard for Maintenance Excellence Category Descriptions (Part I)	Evaluation Items	Total Points in Category
A.	The Organizational Culture and PRIDE in Maintenance	6	60
B.	Maintenance Organization, Administration & Human Resources	12	120
C.	Craft Skills Development and PRIDE in Maintenance	12	120
D.	Operator Based Maintenance and PRIDE in Ownership	6	60
E.	Maintenance Supervision/Leadership	9	90
F.	Maintenance Business Operations, Budget and Cost Control	12	120
G.	Work Management and Control: Maintenance and Repair (M/R)	12	120
H.	Work Management & Control: Shutdowns and Major Overhauls	6	60
I.	Shop Level Planning and Scheduling	18	180
J.	Shutdown-Major Planning/Scheduling & Project Management	9	90
K.	Manufacturing Facilities Planning and Property Management	9	90
L.	Production Asset and Facilities Condition Evaluation Program	6	60
M.	Storeroom Operations and Internal MRO Customer Service	12	120
N.	MRO Materials Management and Procurement	12	120

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Maintenance Excellence Glossary

The Scoreboard for Maintenance Excellence

CATEGORY	The Scoreboard for Maintenance Excellence Category Descriptions (Part 2 Continued)	Evaluation Items	Total Points in Category
O.	Preventive Maintenance and Lubrication	18	180
P.	Predictive Maint. & Condition Monitoring Tech. Applications	15	150
Q.	Process Control, Building Automation and Instrumentation Systems Technology	9	90
R.	Energy Management and Control	12	120
S.	Maintenance Engineering Support	9	90
T.	Safety and Regulatory Compliance	12	120
U.	Maintenance and Quality Control	9	90
V.	Maintenance Performance Measurement	12	120
W.	Computerized Maintenance Management System (CMMS/EAM) and Business System	18	180
X.	Shop Facilities, Equipment, and Tools	9	90
Y.	Continuous Reliability Improvement	15	150
Z.	Asset Facilitation and Overall Equipment Effectiveness (OEE)	15	150
ZZ.	Overall Craft Effectiveness (OCE)	6	60
	Total Evaluation Items and Points	300	3000

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Secondary Damage - Any additional damage to equipment, above and beyond the initial failure mode, that occurs as a direct consequence of the initial failure mode.

Secondary Failures - Malfunctions that are caused by the failure of another item.

Secondary Function - a term used in Reliability Centered Maintenance. The secondary functionality required of an asset - generally not associated with the reason for acquiring the asset, but now that the asset has been acquired, the asset is now required to provide this functionality. For example a secondary function of a pump may be to ensure that all of the liquid that is pumped is contained within the pump (i.e. the pump doesn't leak). An asset may have tens or hundreds of secondary functions associated with it.

Shutdown - That period of time when equipment is out of service.

Serial Number - Number or letters that uniquely identify an item.

Maintenance Excellence Glossary

Service Contract - Contract calling directly for a contractor's time and effort rather than for a specific end product.

Service Level - Frequency usually expressed as a percentage, with which a repair part demand can be filled through a particular service stock echelon. A 95 percent level of service means that 95 out of 100 demands are properly issued. If viewed from the end customer service technician perspective, the service level is the percent of parts received out of those requested, from all levels of the support system.

Serviceability - Characteristics of an item, equipment, or system that make it easy to maintain after it is put into operation; similar to maintainability.

Servicing - The replenishment of consumables needed to keep an item in operating condition.

Shelf Life - The period of time during which an item can remain unused in proper storage without significant deterioration.

Shop Stock - Self-service items such as Class C SKUs such as nuts, bolts, fitting, etc., that are stored directly in the shop work area. May be on consignment directly from the vendor or vendor may inventory and "keep full" as needed without significant paperwork requirement.

Shutdown - That period of time when equipment is out of service.

Shutdown Maintenance - Maintenance done while the asset is out of service, as in the annual plant shutdown.

SKU - Stock Keeping Unit, A warehouse inventory management term for individual stock items carried in inventory.

Specifications - Physical, chemical, or performance characteristics of equipment, parts, or work required to meet minimum acceptable standards.

Standard Item-Part, component, material, subassembly, assembly, or equipment that is identified or described accurately by a standard document or drawing.

Standardization - Process of establishing the greatest practical uniformity of items and of practices to assure the minimum feasible variety of such items and practices, and affect optimum interchangeability.

Maintenance Excellence Glossary

Standard Job - A Work Order stored in the CMMS which contains all the necessary information required to perform a maintenance task. (see also Model Work Order)

Standby - Assets installed or available but not in use.

Standing Work Order - a work order that is left open either indefinitely or for a pre-determined period of time for the purpose of collecting labor hours, costs and/or history for tasks for which it has been decided that individual work orders should not be raised. Examples would include Standing Work Orders raised to collect time spent at Safety Meetings, or in general housekeeping activities; a work order that remains open, usually for the annual budget cycle, to accommodate information small jobs or for specific tasks.

Stock Number - Number assigned by the stocking organization to each group of articles or material, which are then treated as if identical within the using supply system; also called part number, item number or part identifier.

Stock Out - Indicates that all quantities of a part normally on hand have been used, so that the items are not presently available. Demand for a non-stock part is usually treated as a separate situation.

Stores Issue - the issue and/or delivery of parts and materials from the store or warehouse.

Stores Requisition - The prime document raised by user departments authorizing the issue of specific materials, parts, supplies or equipment from the store or warehouse.

Supply-Procurement, storage, and distribution of items.

Support Equipment-Items required to maintain systems in effective operating condition under various environments. Support equipment includes general and special-purpose vehicles, power units, stands, test equipment, tools, or test benches needed to facilitate or sustain maintenance action, to detect or diagnose malfunctions, or to monitor the operational status of equipment and systems.

Maintenance Excellence Glossary

T

Teamwork Works! The proven practice of synergistic efforts by uncommon people working toward a common mutual goal. (Also See Winning Maintenance)



TEAMWORK WORKS! (20 & 0)

Technical Data and Information - Includes, but is not limited to, production and engineering data, prints and drawings, documents such as standards, specifications, technical manuals, changes in modifications, inspection and testing procedures, and performance and failure data.

Terotechnology - An integration of management, financial, engineering, operating maintenance, and other practices applied to physical assets in pursuit of an economical life cycle; the application of managerial, financial, engineering and other skills to extend the operational life of, and increase the efficiency of, equipment and machinery.

Test and Support Equipment - All special tools and checkout equipment, metrology and calibrations equipment, maintenance stands, and handling equipment required for maintenance. Includes external and built-in test equipment (BITE) considered part of the supported system or equipment.

Maintenance Excellence Glossary

The ACE System- Today's best methodology for establishing quality repair methods and team-based planning times.(See ACE Team Benchmarking Process)

Thermography - the process of monitoring the condition of equipment through the measurement and analysis of heat. Typically conducted through the use of infra-red cameras and associated software. Commonly used for monitoring the condition of high voltage insulators and electrical connections, as well as for monitoring the condition of refractory in furnaces and boilers, amongst other applications.



Throwaway Maintenance-Maintenance performed by discarding used parts rather than attempting to repair them.

Total Asset Management - an integrated approach (yet to be developed!) to Asset Management which incorporates elements such as Reliability Centered Maintenance, Total Productive Maintenance, Design for Maintainability, Design for Reliability, Value Engineering, Life Cycle Costing, Probabalistic Risk Assessment and others, to arrive at the optimum Cost-Benefit-Risk asset solution to meet any given production requirements.

Total Productive Maintenance (TPM)-A Japanese-based maintenance strategy for companywide equipment management program emphasizing operator involvement in equipment maintenance, continuous improvement in equipment effectiveness and measurement of overall equipment effectiveness (OEE).

Maintenance Excellence Glossary

Tradesperson - Alternative to Craftsperson. A skilled maintenance worker who has typically been formally trained through an apprenticeship program. MEI likes to think of our Crafts and Trades as MVP's; today's Most Valuable People for all types of maintenance operations around the world.



Teratology - the process of monitoring the condition of equipment through the analysis of properties of its lubricating and other oils. Typically conducted through the measurement of particulates in the oil, or the measurement of the chemical composition of the oil (Spectrographic Oil Analysis). Commonly used for monitoring the condition of large gearboxes, engines and transformers, amongst other applications.

ToSS - see Total System Support

Total System Support (ToSS) - The composite of all considerations needed to assure the effective and economical support of a system throughout its programmed life-cycle

Troubleshooting - Locating or isolating and identifying discrepancies or malfunctions of equipment and determine the corrective action required.

Turnaround Time - Interval between the time a repairable item is removed from use and the time it is again available if full serviceable condition.

Maintenance Excellence Glossary

Turnover-Measurement on either numbers of parts or on monetary value that evaluates how often a part is demanded versus the average number kept in inventory. For example, if two widgets are kept in inventory and eight are used each year, then the turnover is $8/2=4X$ per year. In monetary terms turnover is cost of inventory sold/average cost of inventory carried.

U



Unplanned Maintenance-Maintenance done without planning or scheduling; could be related to a breakdown, running repair, or corrective work; any maintenance activity for which a pre-determined job procedure has not been documented, or for which all labor, materials, tools, and equipment required to carry out the task have been not been estimated, and their availability assured before commencement of the task.

Unscheduled Maintenance (UM) - Emergency maintenance (EM) or corrective maintenance (CM) to restore a failed item to usable condition.

Up - In a condition suitable for use.

Uptime - It is defined as being the time that an item of equipment is in service and operating.

Usage - Quantity of items consumed or necessary for product support. Usage is generally greater than the technical failure rate.

Maintenance Excellence Glossary

Useful Life - The maximum length of time that a component can be left in service, before it will start to experience a rapidly increasing probability of failure. The Useful Life determines the frequency with which a Scheduled Restoration or a Scheduled Discard task should be performed.

Utilization - The proportion of available time that an item of equipment is operating. Calculated by dividing equipment operating hours by equipment available hours. Generally expressed as a percentage

V

Very Hot Storage (102⁰ F) for “Big Ass” Belts in Attic Mezzanine for Them Big Ass Fans



Value Engineering - a systematic approach to assessing and analyzing the user's requirements of a new asset, and ensuring that those requirements are met, but not exceeded. Consists primarily of eliminating perceived "non-value-adding" features of new equipment.

Variance Analysis - Interpretation of the causes for a difference between actual and some norm, budget, or estimate.

Maintenance Excellence Glossary

Vibration Analysis - The process of monitoring the condition of equipment, and the diagnosis of faults in equipment through the measurement and analysis of vibration within that equipment. Typically conducted through hand-held or permanently positioned accelerometers placed on key measurement points on the equipment. Commonly used on most large items of rotating equipment, such as turbines, centrifugal pumps, motors, gearboxes etc.

W



Wahoo! Aruba's Big Ass Fricken Fighting Fish! (ABAF)

Warranty - Guarantee that an item will perform as specified for at least a specified time, or will be repaired or replaced at no cost to the user.

Maintenance Excellence Glossary

Warranty Claims - **Sunken gold treasure within most maintenance storerooms where warranty claims never get back to the vendor OEM. For the most it is not the CMMS's fault!**

Wear Out - Deterioration as a result of age, corrosion, temperature or friction that generally increases the failure rate over time. **But It Is Better to Wear Out Than to Rust Out for People!**

Workload - The number of labor hours needed to carry out a maintenance program, including all scheduled and unscheduled work and maintenance support of project work.

Work Order (WO) - A unique control document that comprehensively describes the job to be done; may include formal requisition for maintenance, authorization, and charge codes, as well as what actually was done; The prime document used by the maintenance function to manage maintenance tasks. It may include such information as a description of the work required, the task priority, the job procedure to be followed, the parts, materials, tools and equipment required to complete the job, the labor hours, costs and materials consumed in completing the task, as well as key information on failure causes, what work was performed etc.

Work Request - The initial request for maintenance service or work usually as a statement of the problem. The work request provides the preliminary information for creation of the work order. Depending on the cost and scope of a work request an approval process may be required before the work order is created, planned and scheduled; The prime document raised by user departments requesting the initiation of a maintenance task. This is usually converted to a work order after the work request has been authorized for completion.

Worldly Cow - **A well traveled bovine**



Maintenance Excellence Glossary

X

X-Maintenance - Extreme Maintenance Challenges



Y

Yard Art, “See You Later Alligator”



Maintenance Excellence Glossary

Z

Z's on Beautiful Oak Island, Getting Ready For Some



William Cameron Peters Born 5/28/03 at 1.3Lbs

Just Look at Me Now!

Your Comments and Recommended Additions Welcomed:

We hope you have enjoyed the serious and the fun graphics. We welcome your suggested additions to this glossary; fun stuff about maintenance and serious matters as well. Remember that Maintenance is Forever and Maintenance Matters! Please contact me directly at: