THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

TOMPKINS
ASSOCIATES

M-15

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Executive Summary

The journey toward maintenance excellence must have a starting point. The Scoreboard for Maintenance Excellence provides that starting point for organizations that desire to evaluate maintenance and determine opportunities for improvement. It is designed to provide the framework for developing a strategic maintenance plan based on a strategy of continuous maintenance improvement.

This monograph is a two-part, working document that includes a Maintenance Evaluation Guide and a Scoreboard for Maintenance Excellence. The Maintenance Evaluation Guide evaluates where you are in terms of 18 major functional areas in maintenance. This guide provides evaluation criteria for assessing 200 improvement areas. A total evaluation of your maintenance operation with this guide provides the baseline for establishing priorities for action.

The Scoreboard for Maintenance Excellence provides the base for your strategic maintenance plan. It serves as a means to highlight priorities, assign responsibilities, develop schedules, monitor progress, and measure results. It can also be tailored by adding specific goals for each type of maintenance operation.

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1.0 Introduction

The Scoreboard for Maintenance Excellence (Section 3.0) along with the accompanying Maintenance Evaluation Guide (Section 2.0) is for organizations that have committed to developing a strategy for continuous maintenance improvement. It is for the organization that desires to evaluate every opportunity for:

- Increasing equipment uptime
- Reducing total maintenance cost
- Increasing maintenance labor productivity
- Reducing excess and obsolete parts
- Increasing planned maintenance work
- Reducing emergency repair
- Improving equipment life
- Improving equipment effectiveness
- Improving productivity of overall operation
- Improving product quality

Organizations that view maintenance as a top priority for success will invest in applying today's best maintenance practices, principles, and leadership philosophies. Maintenance improvements will be viewed as contributing directly to the bottom line. The investments to improve maintenance will be based on valid priorities that have been identified through a complete maintenance evaluation. Traditional return on investment methods will be used to evaluate costs and to measure benefits. The organization will maintain a clear vision of maintenance excellence based on a well-planned strategy of continuous maintenance improvement.

1.1 Maintenance Evaluation Guide

The Maintenance Evaluation Guide (Section 2.0) provides a comprehensive guide for evaluating your maintenance operation and determining where you are in terms of today's best maintenance practices. It includes an evaluation of 18 major functional areas within maintenance operations and a total of 200 evaluation items.

The key principles and practices of Total Productive Maintenance (TPM) are included as part of the evaluation. However, TPM principles and practices only address a portion of what is required for a comprehensive maintenance evaluation and improvement process.

The Maintenance Evaluation Guide serves as a means to evaluate each functional area as well as to develop an overall assessment of the maintenance operation. It provides a framework for organizations to systematically review, analyze, and identify opportunities for improvement. It is very important to note that results from the Maintenance Evaluation Guide should also be combined with existing maintenance performance measures and indicators to provide the baseline for establishing valid priorities.

1.2 The Scoreboard for Maintenance Excellence

The Scoreboard for Maintenance Excellence (Section 3.0) provides a convenient working document for developing a strategic plan for continuous maintenance improvement. It includes the 18 functional areas and the 200 items from the Maintenance Evaluation Guide. The "current ratings" developed during the evaluation process are entered on The Scoreboard for Maintenance Excellence. This document then becomes a means to:

- Establish and highlight priority areas
- Designate leader roles and responsibilities
- Track progress in each functional area
- Track progress in each improvement area
- Highlight the overall strategic plan
- Highlight planned and actual costs and benefits
- Include specific goals tailored to each maintenance operation

As progress is made, The Scoreboard for Maintenance Excellence provides a look at:

- Where you were
- Where you are and
- Where you want to go

in terms of your path forward to MAINTENANCE EXCELLENCE!

2.0 Maintenance Evaluation Guide

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE
MAINTENANCE EVALUATION GUIDE

Organization Name: _____ **Location:** _____ **Date:** _____

Evaluation Conducted By: 1. _____ **2.** _____ **3.** _____ **4.** _____

Purpose: This maintenance evaluation guide is designed to support a total evaluation of your maintenance operation. This guide will assist you in determining your "current rating" for each evaluation item on "The Scoreboard for Maintenance Excellence."

Scope: A total of 18 major evaluation sections and 200 evaluation items are included. They represent the key principles, best practices, and leadership philosophies that form the foundation for an effective maintenance operation.

Objective: To identify the current status of your maintenance operation and opportunities for improvement so that priorities can be established for a strategy of continuous maintenance improvement.

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
A.	**MAINTENANCE AND ORGANIZATION CULTURE**													
1.	The organization's vision, mission, and requirements for success include maintenance as a top priority.	The organization has written mission statement/ goals which include maintenance and/or Preventive Maintenance as a top priority and key goal. Yes – 10, No – 0	0	-	-	-	-	-	-	-	-	-	10	
2.	Senior management is visible and actively involved in continuous maintenance improvement and obviously committed to achieving maintenance excellence.	Percentage of senior management that is involved and actively supporting continuous maintenance improvement.	0	1	2	3	4	5	6	7	8	9	10	
3.	Senior management is accessible to maintenance staff and has routine contact with maintenance employees and customers of maintenance.	Percentage of senior management that is accessible and has routine contact with maintenance employees.	0	1	2	3	4	5	6	7	8	9	10	
4.	The organization's strategy and plan for success is known to all in maintenance and includes a strategy for continuous improvement.	The organization is pursuing an overall strategy of continuous improvement and maintenance is well informed and understands the plan.	0	-	-	-	-	-	-	-	-	-	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
5.	Maintenance is kept well informed of changing business conditions, strategies, and long-range plans.	Relative percentage of time maintenance is kept informed about or involved with key business conditions/strategies/plans, etc.	0	1	2	3	4	5	6	7	8	9	10	
6.	Maintenance priorities for short- and long-term continuous improvements have been established and are supported by all in maintenance.	Short- and long-term priorities have been established based on a total assessment of maintenance operations. Scope of current priorities include what percentage of total maintenance operation.	0	1	2	3	4	5	6	7	8	9	10	
7.	Senior management is providing sufficient current and future resources (time, staffing, dollars, etc.) to support continuous maintenance improvement.	The percentage of improvement opportunities that have been provided resources (time, staffing, dollars, etc.) for implementation.	0	1	2	3	4	5	6	7	8	9	10	
8.	Long-term commitments have been made to continuous maintenance improvement rather than short-term compromises.	Management actions and philosophy demonstrates long-term commitment to be: Excellent–10, Very Good–9, Good–8, Average–7, Below Average –6, or Poor –5 or less.	0	1	2	3	4	5	6	7	8	9	10	
9.	The organization's culture and the maintenance environment results in innovation, PRIDE in Maintenance, trust, and an obvious spirit of continuous improvement.	The environment for continuous maintenance improvement is : Excellent–10, Very Good–9, Good–8, Average–7, Below Average –6, or Poor –5 or less.	0	1	2	3	4	5	6	7	8	9	10	
10.	Open communication exists within maintenance and the overall organization to ensure inter-departmental cooperation, idea sharing and basic teamwork.	Communication, cooperation, teamwork, etc., internal and external to maintenance is: Excellent–10, Very Good–9, Good–8, Average–7, Below Average –6, or Poor –5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													A. SUBTOTAL	
B.	**ORGANIZATION AND ADMINISTRATION**													
1.	The maintenance organization chart is current and complete with fully defined areas of responsibility.	• Current and complete – 10 • Incomplete or not reviewed in past year – 7 • Not current and incomplete – 5 • None – 0	0	-	-	-	-	5	-	7	-	-	10	
2.	Clear cut job descriptions have been developed that completely define job responsibilities and skill levels required for each craft.	• Job descriptions current and complete – 10 • Not current – 7 • None – 0	0	-	-	-	-	-	-	7	-	-	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
3.	Employees are provided copies of their job descriptions and counseled periodically on job performance, job responsibilities, and skill development needs.	• Copies provided to employees and regular counseling on performance and skills development – 10 • No job description, informal counseling on performance – 7 • No job descriptions or supervisor counseling – 0	0	-	-	-	-	-	-	7	-	-	10	
4.	One single head of maintenance operations is supported by adequate clerical and technical staff of planners, first-line supervisors, stores personnel, maintenance engineering, and training support.	• Supported by all six – 10 • Supported by four or five and no planner – 7 • Supported by one to three – 5 • None – 0	0	-	-	-	-	5	-	7	-	-	10	
5.	The maintenance department head has high visibility within the organization and reports to a level such as the plant manager.	• Reports directly to Operations Manager/Plant Manager – 10 • Reports at a level below Operations ManAger – 7	0	-	-	-	-	-	-	7	-	-	10	
6.	The first-line supervisors are responsible for the performance of 12 to 15 craftsmen.	Responsible for 12 to 15 – 10 eight to 11 – 8 16 to 20 – 8 less than eight – 5 over 20 – 5	0	-	-	-	-	5	-	-	8	-	10	
7.	A time keeping system is in place to charge craft time to each job.	• Time charged to each job and data used – 10 • Time charged to each job and data not used – 7 • Craft time is not charged to each job – 0	0	-	-	-	-	-	-	7	-	-	10	
8.	Monthly or weekly reports are available to show distribution of maintenance labor in critical categories: breakdown repairs, corrective work, PM work, etc.	• Reports available – 10 • Not available – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	Monthly or weekly reports are available to monitor backlog status and priority of planned or project work, etc.	• Reports available – 10 • Not available – 0	0	-	-	-	-	-	-	-	-	-	10	
10.	Backlog trend data is available to highlight need for craft increases, scheduled overtime, or subcontracting.	• Backlog data is available and used – 10 • Backlog data is available and not used – 7 • Backlog data not available – 0	0	-	-	-	-	-	-	7	-	-	10	
11.	Guidelines on the level of accepted backlog are established to determine need for overtime or sub-contracting as well as to identify potential problem areas.	• Guidelines on backlog level are established – 10 • Guidelines on backlog level not available – 0	0	-	-	-	-	-	-	-	-	-	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
12.	Sufficient man-hour data is available that allows valid decisions on which jobs must be delayed if new jobs or projects are added to the schedule.	• Information is available for valid decisions on schedule changes – 10 • Schedule changes made without regard to current schedules – 6 • No schedule available; jobs scheduled without valid priority system – 0	0	-	-	-	-	-	6	-	-	-	10	
													B. SUBTOTAL	
C.	**WORK AUTHORIZATION AND WORK CONTROL**													
1.	A work control function is established within the maintenance operation	• Well-established with adequate clerical and planner staff – 10 • Performed by supervisor and some clerical – 6 • Performed by supervisor – 4 • No work control – 0	0	-	-	-	4	-	6	-	-	-	10	
2.	A written, formal system which governs the preparation of work orders is available.	• Procedures available – 10 • Not available – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	A printed, multi-copy work order form is used to capture key planning, cost, performance, and job priority information.	• Work order (W.O.) form is available – 10 • W. O. form not used – 0	0	-	-	-	-	-	-	-	-	-	10	
4.	A written procedure which governs the origination, authorization, and processing of all work orders is available and understood by all in maintenance and operations.	• W. O. procedures are available – 10 • W. O. procedures available not followed – 7 • W. O. procedures not available – 0	0	-	-	-	-	-	-	7	-	-	10	
5.	The responsibility for screening and processing of work orders is assigned to one person or unit.	• Responsibilities for W. O.s clearly defined – 10 • Responsibilities for W. O.s not defined – 7 • W. O. not used – 0	0	-	-	-	-	-	-	7	-	-	10	
6.	Work orders are classified by type, e.g. emergency, planned equipment repairs, building systems, PM, project work, etc.	Percentage of W. O.s classified by type of work.	0	1	2	3	4	5	6	7	8	9	10	
7.	Reasonable "date-required" is included on each work order with restrictions against "ASAP," etc.	Percentage of W.O.s with reasonable or valid "date wanted" included.	0	1	2	3	4	5	6	7	8	9	10	
8.	The originating departments are required to indicate equipment location and number, work center number, and other applicable information on the work orders.	Percentage of W.O.s with accurate and complete information from originators.	0	1	2	3	4	5	6	7	8	9	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
9.	A well-defined procedure for determining the priority of repair work is established based on the criticality of equipment, safety factors, cost of downtime, etc.	• A valid priority system is used which incorporates the relative equipment ranking (criticality) with type of repair/work done – 10 • Priority system based only on ranking of equipment or type of work – 7 • Priority system not used – 0	0	-	-	-	-	-	-	7	-	-	10	
10.	Work orders are given a priority classification based on an established priority system.	Percentage of W.O.s assigned priority.	0	1	2	3	4	5	6	7	8	9	10	
													C. SUBTOTAL	
D.	**BUDGET AND COST CONTROL**													
1.	The maintenance budget is based on a realistic projection of actual needs rather than past budget levels.	Percentage of <u>actual</u> needs normally budgeted each year. Zero if based on past budget levels.	0	1	2	3	4	5	6	7	8	9	10	
2.	Maintenance expenditures are charged to work centers or operating departments and budget variances monitored to highlight problem areas.	• Maintenance costs charged back to operations with system to monitor variances – 10 • Costs not charged back but information available to manually evaluate – 6 • No system to evaluate costs by work center or operating department – 0	0	-	-	-	-	-	6	-	-	-	10	
3.	During the budgeting process, all unfunded maintenance repairs to operating and facilities-related equipment are identified and presented to management with an evaluation as to the negative future impact of deferring maintenance.	Percentage of all unfunded repairs that are identified and adequately evaluated during budgeting process, i.e., percentage of deferred maintenance that is clearly identified to management.	0	1	2	3	4	5	6	7	8	9	10	
4.	Maintenance provides key input and support to long-range budget planning for new equipment, equipment overhaul and retrofit, facility expansions, rearrangements, and repairs.	Level of input provided by maintenance: Excellent – 10, Very Good – 9, Good – 8, Average –7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
5.	Labor and material costs are established for all work orders accumulated to the equipment history file and charged back to respective work centers by accounting if applicable.	• Labor and material costs established on W.O.s and charged to work center – 10 • Labor and material costs established on W.O.s and accumulated in history file – 8 • W.O.s do not include labor and material costs – 6 • W.O. not used – 0	0	-	-	-	-	-	6	-	-	-	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
6.	An equipment history file is maintained for major pieces of equipment to track life-cycle cost, types of repairs, and trends.	Equipment history file is maintained on what percentage of major equipment.	0	1	2	3	4	5	6	7	8	9	10	
7.	The equipment history file is reviewed periodically to analyze repair trends and to evaluate and resolve critical problem areas.	The effective use of the equipment history file is: Excellent –10, Very Good –9, Good –8, Average –7, Below Average –6, Poor – 5 to 1, Not available – 0.	0	1	2	3	4	5	6	7	8	9	10	
8.	Labor and material costs are estimated prior to the start of all repair work except emergencies.	The percentage of W.O.s with labor and materials estimated prior to start of job.	0	1	2	3	4	5	6	7	8	9	10	
9.	Major work order cost variances are investigated and explained to person authorizing the work.	Percentage of major repair cost variances that are investigated.	0	1	2	3	4	5	6	7	8	9	10	
10.	Cost approval guidelines are established for large or special repair jobs as compared to normal repair.	• Guidelines for approving and authorizing large or special repair jobs are available – 10 • Informal system used – 7 • No system used – 0	0	-	-	-	-	-	-	7	-	-	10	
11.	The cost of downtime is known and published for each piece of equipment and is used in determining priorities for repair.	Percentage of major equipment where downtime cost is available.	0	1	2	3	4	5	6	7	8	9	10	
													D. SUBTOTAL	
E.	**MAINTENANCE PLANNING AND SCHEDULING**													
1.	A formal maintenance planning function has been established and staffed with qualified planners in an approximate ratio of one to 30 craftsmen.	Planning function is established and the effectiveness is: Excellent – 10, Very Good –9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
2.	The screening, estimating, coordinating of repair parts, and planning of repair work is done by the planner as a support service to the supervisor.	Percentage of planning related work done by planner for supervisor.	0	1	2	3	4	5	6	7	8	9	10	
3.	The planner uses the priority system in combination with parts and craft time availability to develop a start date for each planned job.	Percentage of planned jobs that have reliable start dates.	0	1	2	3	4	5	6	7	8	9	10	
4.	A daily or weekly maintenance work schedule is available to the supervisor who schedules and assigns work to craft personnel.	• Daily or weekly schedule is developed for supervisor – 10 • Supervisor plans and schedules (no planner) – 0	0	-	-	-	-	-	-	-	-	-	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
5.	The maintenance planner develops planning times for all work except emergency repairs and includes on W.O. for each craft.	Planning times are developed for what percentage of W.O.s that are not emergencies.	0	1	2	3	4	5	6	7	8	9	10	
6.	A day's planned work is available for each craftsman at least a half of a working day in advance.	Percentage of time that planned work is available for each craftsman.	0	1	2	3	4	5	6	7	8	9	10	
7.	A master plan for all major repairs is available indicating planned start date, duration, completion date, and type crafts required.	• Master plan for major repair is available – 10 • Not available – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	The master plan is reviewed and updated by maintenance, operations, and engineering as required.	• Master plan is available and reviewed/ updated – 10 • Master plan is available but outdated – 6 • Master plan not available – 0	0	-	-	-	-	-	6	-	-	-	10	
9.	Scheduling/progress meetings are held periodically with operations to ensure understanding, agreement and coordination of planned work, backlogs, and problem areas.	Communication with "customer" on schedule, backlog, priorities are Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
10.	Operations cooperates with and supports maintenance to develop repair schedules.	Cooperation and support to maintenance scheduling by the "customer" is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
11.	Set-ups and changeovers are coordinated with maintenance to allow scheduling of selected maintenance repairs, PM inspections, and lubrication services during scheduled downtime.	Scheduled downtime is utilized for scheduled repair or PM what percentage of time.	0	1	2	3	4	5	6	7	8	9	10	
12.	Planned repairs are completed on time and in line with dates scheduled within ±10 percent.	Work completed within ± 5% – 10 ± 10% – 9 ± 15% – 8 ± 20% – 6 ± 30% – 4 No planned work – 0	0	-	-	-	4	-	6	-	8	9	10	
													E. SUBTOTAL	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
F.	**MAINTENANCE STOREROOM**													
1.	The inventory system provides an accurate and complete record of information for each stock item.	Relative effectiveness of current inventory system (manual or computerized) is providing accurate and complete record of each item: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
2.	The "ABC" classification of stock items is known and proper storage methods and accountability is established for each.	Percentage of stock items where "ABC" classification is known.	0	1	2	3	4	5	6	7	8	9	10	
3.	"A" and "B" items have valid reorder points, EOQ, and safety stock levels established.	Percentage of "A" and "B" items with EOQ, ROP, and safety stock levels.	0	1	2	3	4	5	6	7	8	9	10	
4.	"C" items (50% of stock items with 5% of total inventory value) are identified and use two-bin system or floor issue.	Percentage of "C" items where floor issue or two-bin system is used.	0	1	2	3	4	5	6	7	8	9	10	
5.	Inventory accuracy is determined by an effective cycle counting program.	• Cycle counting used – 10 • Count once per year – 7 • Count occasionally – 5 • Do no inventory counts – 0	0	-	-	-	-	5	-	7	-	-	10	
6.	Inventory accuracy is regularly measured and is 95% or above.	Inventory accuracy 95% or above – 10 90% – 95% 9 80% – 89% 8 70% – 79% 7 < 70% – 5	0	-	-	-	-	5	-	7	8	9	10	
7.	An up-to-date storeroom catalogue is available and includes all stock items, storage locations, stock numbers, etc.	Storeroom catalog is available and its overall effectiveness is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
8.	Parts usage history is continually reviewed to determine proper stock levels, excess inventory items, and obsolete items.	Overall effectiveness of parts review: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less, If not done – 0.	0	1	2	3	4	5	6	7	8	9	10	
9.	Procedures and evaluation criteria for adding new maintenance materials to stores are used.	Effectiveness of current procedures for adding stock to inventory: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6 to 1, No procedures – 0.	0	1	2	3	4	5	6	7	8	9	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
10.	Stores requisitions and issues are tied to the maintenance work order and changed directly to the repair job.	• Yes via computer – 10 • Done manually – 7 • Not done – 0	0	-	-	-	-	-	-	7	-	-	10	
11.	Maintenance planners and the storeroom personnel coordinate to reserve repair parts and material for planned work. "Kitting" and direct delivery to the job site is done whenever possible.	Effectiveness of current method to reserve parts, 'kitting" and delivery to job site: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
12.	Purchasing has an effective program to evaluate vendor performance and quality.	Rating of current program to evaluate vendor: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
13.	Purchasing has developed partnerships with selected vendors and suppliers and has committed to purchase based on fast delivery, quality parts, and service.	Effectiveness of developing partnerships with selected vendors: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor or not done – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
14.	Maintenance storeroom staff are well-trained, customer-oriented, and provide a high level of customer service to maintenance.	Overall rating of training and customer service level of storeroom staff: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
15.	Maintenance storeroom performance indicators have been established and are evaluated and reported on a monthly basis.	• Key indicators have been developed and are being used to monitor storeroom performance – 10 • Performance measurement is not being used – 0	0	-	-	-	-	-	-	-	-	-	10	
16.	An operations assessment has been conducted for the storeroom to provide overall evaluation of facilities, storage and handling equipment, staffing levels, inventory levels, systems, and procedures.	• Operations assessment has been conducted within past six months – 10 • Operations assessment has not been done – 0	0	-	-	-	-	-	-	-	-	-	10	
													F. SUBTOTAL	
G.	**PREVENTIVE AND PREDICTIVE MAINTENANCE**													
1.	The scope and frequency of Preventive Maintenance (PM) services has been established on all equipment.	PM inspection procedures have been developed for what percentage of equipment.	0	1	2	3	4	5	6	7	8	9	10	
2.	Operations staff supports and agrees with the frequency and scope of the PM program.	Level of support to PM by operations: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
3.	Equipment has been evaluated for the application of current predictive (PdM) maintenance technology.	Percentage of equipment that has been thoroughly evaluated for predictive maintenance applications.	0	1	2	3	4	5	6	7	8	9	10	
4.	Maintenance, engineering, and others have technical knowledge and necessary skills for using PdM techniques.	Overall level of technical knowledge and skills available for predictive maintenance: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
5.	A plan for using current PdM technology is being developed or is now being put in action.	• Predictive maintenance techniques used on all applicable equipment – 10 • Application of PdM in progress based on plan – 9 • PdM plan developed, no progress – 6 • No plan for PdM – 0	0	-	-	-	-	-	6	-	-	9	10	
6.	Optimum routes for PM inspections are established.	• YES – 10 • NO – 0 to 9 based on level of effectiveness of current routing of PM inspections.	0	1	2	3	4	5	6	7	8	9	10	
7.	PM checklists with clear, concise instructions have been developed for each piece of equipment.	Effectiveness of current PM checklist and instructions: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less, 0 if no PM.	0	1	2	3	4	5	6	7	8	9	10	
8.	Inspection intervals and procedures are periodically reviewed for changes/improvements and updated as required.	Degree that PM procedures are updated or reviewed: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less, 0 if not reviewed.	0	1	2	3	4	5	6	7	8	9	10	
9.	Planned times are established for all PM inspections.	Percentage of PM inspection with planned times established.	0	1	2	3	4	5	6	7	8	9	10	
10.	The total manpower requirement by craft to accomplish the overall PM program has been established.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
11.	The required level of manpower is being committed to achieve the total scope of PM services needed.	Percentage of craft time committed to PM based on total time needed for PM.	0	1	2	3	4	5	6	7	8	9	10	
12.	Actual craft time devoted to PM is known and evaluated as a percentage of total craft time available.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
13.	Goals for PM compliance are established and overall compliance and results are measured against the company benchmark.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
14.	All non-compliance to scheduled PM services is aggressively evaluated and corrected.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
15.	Maintenance and operations work with close communication, coordination, and cooperation to schedule PM services.	PM scheduling with customer is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
16.	The success of PM is measured based on multiple factors: reduced breakdown/emergency repairs, increased planned maintenance work, reduced downtime costs, the elimination of the root cause of problems, and improved product quality, etc.	The PM program effectiveness measures are considered to be: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less, 0 – PM Program is not measured.	0	1	2	3	4	5	6	7	8	9	10	
17.	Preventive/Predictive Maintenance is a highly visible function within maintenance, is well received as a company strategy and continues to create awareness of its continuing need.	The relative level of PM program's importance, visibility, and continuing need: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
18.	The PM inspectors are well qualified craftsmen and serve as good maintenance ambassadors and "customer service representatives."	Overall qualification of PM Inspectors/staff: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
19.	A PM master schedule is developed to evaluate the weekly or monthly plan.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
20.	Corrective repair work orders are generated as a result of PM inspections and monitored as a measure of PM success.	Level of success in finding corrective type work during PM inspections: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
21.	PM manpower needs are adjusted to satisfy changing PM inspection requirements.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
22.	Equipment operators provide direct support to the PM program and have the training and clear guidelines for their areas of responsibility in operation-based maintenance.	Percentage of operators who have been trained and are responsible for performing selected PM tasks.	0	1	2	3	4	5	6	7	8	9	10	
													G. SUBTOTAL	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
H.	**LUBRICATION PROGRAM**													
1.	Lubrication services are accomplished according to equipment supplier, guidelines, historical experience, and focused surveys.	Percentage of equipment covered under formal lubrication program.	0	1	2	3	4	5	6	7	8	9	10	
2.	Lubrication surveys by suppliers are used to evaluate proper types of lubricants, frequencies, and problem areas.	YES –10 NO – 0	0	1	2	3	4	5	6	7	8	9	10	
3.	Optimum service routes have been established and effective methods and service equipment are being used.	Relative effectiveness of lube service equipment, methods, and routing: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
4.	Lubrication checklists and charts are available for each machine.	Percentage of equipment with lube charts and checklist.	0	1	2	3	4	5	6	7	8	9	10	
5.	Standard times for lubrication services have been established.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
6.	Manpower to provide a complete lubrication program has been allocated.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	Operators have been trained to complete selected types of lubrication services as part of operator-based maintenance.	Percentage of operators who have been trained and are responsible for performing selected lubrication tasks.	0	1	2	3	4	5	6	7	8	9	10	
8.	Equipment failures or problems due to lubrication are reported and analyzed for causes.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	Lubrication services staff are at a trades classification level and not a laborer classification.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
10.	Compliance in meeting lubrication service schedules is evaluated on a regular basis.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
11.	Lubrication services are viewed as a key part of preventive maintenance and are not neglected or overlooked.	The relative effectiveness and importance of lubrication services: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													H. SUBTOTAL	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
I.	**OVERALL EQUIPMENT EFFECTIVENESS (OEE)**													
1.	Overall Equipment Effectiveness (OEE) ratings have been established for major equipment to provide a baseline measurement of equipment availability, performance, and quality.	OEE ratings are being established for what percentage of major equipment.	0	1	2	3	4	5	6	7	8	9	10	
2.	Priorities have been established with a plan of action for improving OEE.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	Equipment improvement teams have been established to focus on improving equipment effectiveness based on established priorities.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
4.	Improvements in OEE are evaluated against baseline (OEE) measurements to determine progress.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	Documentation of all equipment conditions, factors, and settings that contribute to quality performance is available.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
6.	Optimum machine speeds have been established and included in set-up procedures and operator training.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	All machine-related quality defects are aggressively evaluated and corrected.	Level of response and action to correct machine related defects: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
8.	Losses due to minor stoppages, idling, and minor equipment failures are addressed by operations and maintenance for corrections.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	Chronic equipment breakdowns and problems are aggressively investigated as to cause.	Level of response and action in determining the root cause of chronic breakdowns: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													I. SUBTOTAL	
J.	**OPERATOR-BASED MAINTENANCE**													
1.	Operators are responsible for cleaning their equipment and performing selected levels of operator-based maintenance.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
2.	Operators have been trained and have the proper tools/equipment to safely clean their equipment.	Percentage of operators trained and with proper tools/equipment.	0	1	2	3	4	5	6	7	8	9	10	
3.	The initial cleaning to bring all equipment to an optimal or "as new" status has been planned to include adequate maintenance support for removing covers, etc. and noting repairs that are needed.	• Has been completed – 10 • Percentage of completion – 9 to 1 • No plan – 0	0	1	2	3	4	5	6	7	8	9	10	
4.	Operators have been trained to perform daily and periodic inspections on their equipment.	Percentage of operators trained to perform periodic inspections.	0	1	2	3	4	5	6	7	8	9	10	
5.	Operators have been trained and have proper tools and equipment to do selected lubrication, tighten bolts and fasteners, and to detect symptoms of deterioration.	Percentage of operators trained to do related lubes, detection, tightening, etc.	0	1	2	3	4	5	6	7	8	9	10	
6.	Operators have been trained to perform minor repairs and adjustments on their equipment.	Percentage of operators trained to do minor repairs and adjustments.	0	1	2	3	4	5	6	7	8	9	10	
7.	The process of transferring maintenance tasks and skills to operators has been well coordinated between maintenance, operations, engineering, and human resource staff.	Effectiveness of task and skills transfer to operators has been: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
8.	Operators have developed greater pride in ownership and understand their expanded role in detecting and preventing maintenance problems.	Current level of success with operator-based maintenance: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													J. SUBTOTAL	
K.	**ENGINEERING SUPPORT**													
1.	Engineering and maintenance work closely during the design and specification stages to improve equipment reliability and maintainability.	Level of engineering and maintenance coordination during design/specification stage: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
2.	Purchase of new equipment and modifications to existing equipment is subject to maintenance review prior to final approval.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	Engineering provides key support to maintenance and operations for improving equipment effectiveness.	Engineering's level of support to improving overall equipment effectiveness is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
4.	Engineering provides key support to maintenance during installation and start-up of new equipment to ensure that operating specifications are achieved.	Engineering's level of support during start-up is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
5.	Engineering supports maintenance as required to evaluate and resolve chronic equipment breakdowns and problems.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
6.	Engineering and maintenance work closely to develop an effective equipment and spare parts standardization program.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	Capital additions, building systems changes, and facility layout changes are subject to maintenance review before final approval.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	Up-to-date prints and records for equipment and facility are available to maintenance.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	Engineering coordinates material requisitioning with maintenance for project work, major overhauls, and machine building.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
													K. SUBTOTAL	
L.	**SAFTEY, HOUSEKEEPING AND REGULARTORY COMPLIANCE**													
1.	Maintenance leaders have created a broad-based awareness and appreciation for achieving a safe maintenance operation.	Overall level of commitment to providing a safe working environment within the maintenance operation: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
2.	Maintenance employees attend at least one safety meeting per month.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	Maintenance has shown a continual improvement in its safety record over the past five years.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
4.	All safety equipment is available and is prescribed for each job that it is required.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	All cranes, hoists, lift trucks, and lifting equipment are inspected as part of the preventive maintenance program.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
6.	Good housekeeping within maintenance shops and storerooms is a top priority.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	Maintenance tools, equipment, and left-over materials are always removed from the job site after work completion.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	Maintenance continually evaluates areas throughout the operation where safety conditions can be improved.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	The total scope of regulatory compliance issues within the organization has been defined and a prioritized plan of action established.	• Scope known/plan in Action – 10 • Scope known and no action on plan – 5 • Scope known and no plan – 4 • Scope unknown – 0	0	-	-	-	4	5	-	-	-	-	10	
10.	Maintenance responsibilities related to regulatory compliance have been well-defined.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
11.	Maintenance has the technical knowledge and experience to support the organization's regulatory compliance action.	Current knowledge to effectively support regulatory compliance is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
12.	Maintenance works closely with other staff groups in the organization for a totally integrated approach to regulatory compliance.	The overall approach to regulatory compliance is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													L. SUBTOTAL	
M.	**CRAFT SKILLS DEVELOPMENT**													
1.	The types and levels of craft skills required for an effective maintenance operation have been identified (current and future).	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
2.	Job descriptions include well-defined standards for job knowledge and skill levels required with each craft area.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	An assessment of the current job knowledge and skill level of each craftsman has been made to determine individual training needs.	Percentage of craftsmen evaluated as to individual training needs.	0	1	2	3	4	5	6	7	8	9	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
4.	The overall training needs for the maintenance staff have been developed with a plan of action and cost.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	The organization has committed to providing the necessary resources for maintenance training and skills development.	The organization's commitment to craft skills development is rated as: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
6.	A program for craft skills development has been designed to address priority training needs and is being implemented.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	Results of training are determined by a competency-based approach which ensures demonstrated capability to perform on newly trained craft tasks.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	A policy to pay-for-skills gained is available or is being developed as part of the craft skills development program.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	The benefits of developing multi-craft capabilities within maintenance have been evaluated and incorporated into the craft skills training program as applicable.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
													M. SUBTOTAL	
N.	**MAINTENANCE PERFORMANCE MEASUREMENT**													
1.	Maintenance performance measurement includes a wide range of performance indicators in order to evaluate the total effectiveness and impact of maintenance service throughout the operation.	The process for measuring overall maintenance performance (craft labor, planning/scheduling, PM, downtime, equipment effectiveness, and cost, etc.) is rated as: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less, Do not measure performance – 0.	0	1	2	3	4	5	6	7	8	9	10	
2.	Maintenance labor and material costs are reported monthly and reviewed against previous costs or budgeted costs to evaluate current trends.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	Equipment downtime attributable to maintenance is monitored. The cost of downtime for each piece of equipment is known and used to measure value of increased equipment up-time.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
4.	Realistic labor performance standards have been developed and used for all planned work and recurring tasks.	Performance standards are applied to what percentage of planned work/recurring tasks.	0	1	2	3	4	5	6	7	8	9	10	
5.	Maintenance labor performance is reported monthly or weekly to evaluate actual performance against established performance standards.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
6.	The measurement of craft utilization is available from the labor reporting system to evaluate productive trades time vs. non-trades time.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	Work sampling studies are used periodically to evaluate the maintenance operation by determining overall utilization and the nature of delays and non-productive time such as waiting for parts, instructions, unbalanced crew, or waiting for equipment, etc.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	The effectiveness of maintenance planning is evaluated by factors such as percent work orders planned vs. total work orders, percent work orders completed as planned vs. total planned work orders and percent work orders with estimates vs. total work orders completed.	The process for measuring the effectiveness of maintenance planning is rated as: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
9.	Baseline performance factors and information is available to evaluate all ongoing improvements against past performance. Periodic reports to summarize and highlight the tangible benefits from continuous maintenance improvement are provided.	The process for evaluating continuous maintenance improvements against past practice/ performance is rated as: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													N. SUBTOTAL	
O.	**MAINTENANCE SUPERVISION/LEADERSHIP**													
1.	Non-supervisory work is minimized as a result of adequate clerical, storeroom, and planner support to the maintenance supervision.	• Adequate support staff with planner – 10 • Adequate clerical and storeroom – 7 • Additional support needed – 5 • No support – 0	0	-	-	-	-	5	-	7	-	-	10	
2.	Supervisors perform primarily direct supervision of maintenance to include scheduling work assignments, verifying quality of completed work, evaluating performance, and identifying training needs, etc.	Percentage of time doing direct supervision.	0	1	2	3	4	5	6	7	8	9	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
3.	Supervisors actively support good housekeeping and the safety program by conducting/attending meetings, providing ideas, and having an attitude that creates greater safety awareness.	Supervisor support to safety and good housekeeping is: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
4.	An effective supervisory development program is available to increase leadership and technical skills.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	Supervisors are team players and are able to gain cooperation and support from operators and other supervisors in operating departments.	Overall effectiveness in gaining cooperation and working as team player: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
6.	Supervisors actively support continuous maintenance improvement with ideas and suggestions, and in turn promote and encourage ideas from their employees.	Overall level of support to continuous maintenance improvement: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
													O. SUBTOTAL	
P.	**COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEMS (CMMS)**													
1.	Potential savings have been identified and quantified to provide justification for starting the CMMS acquisition process.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
2.	The identification of specific CMMS needs have been clearly described and quantified to include the projected cost of buying, implementing, and using the systems.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	Potential CMMS savings compared to projected costs of purchase, implementing, and running the system provides a pay-back within company guidelines.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
4.	A complete definition of system capabilities has been determined based on the size and type of maintenance operation.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	System selection is based on a thorough process of evaluating candidate systems in operations that meet previously defined capabilities.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	

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Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
6.	System suppliers are evaluated as to level and quality of support services and become a factor in making final decisions.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
7.	Final CMMS selection is based on evaluating each candidate on a wide range of criteria such as ease of implementation, support reliability, quality of documentation, vendor reputation, full integration of modules, networking ability, price, etc.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	A CMMS implementation plan has been developed which includes needed organization, procedures, operator/user training, hardware/ software installation, initial data loading, and well-defined support requirements from internal and external sources.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	Adequate support from supplier and consultants is budgeted to ensure successful start-up.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
10.	Customization of the CMMS is planned to accommodate specific needs for part numbers, equipment numbers, work order and management report formats, etc.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
11.	Training for CMMS is a top priority and will be established as an ongoing process for new and existing users of the system.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
12.	System outputs have been developed into a maintenance information system that provides management reports to monitor a wide range of factors related to labor, material, equipment costs, etc.	The maintenance information system is rated as: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
13.	During implementation periodic evaluations of system performance, database development, user training, and customization efforts are made.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
													P. SUBTOTAL	
Q.	**MAINTENANCE FACILITIES, EQUIPMENT AND TOOLS**													
1.	Maintenance shop facilities are located in an ideal location with adequate space, lighting, and ventilation.	Overall rating of shop facilities/location: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
2.	Standard tools are provided to craftsmen and accounted for by a method that ensures good accountability and control.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	An adequate number of specialty tools and equipment are available and easily checked out through a tool control procedure.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
4.	All personal safety equipment necessary within the operation is provided and used by maintenance employees.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	Safety equipment for special jobs such as confined space entry, electrical system lock-out, etc. is available and used.	YES –10 Some additional needed – 7	0	-	-	-	-	-	-	7	-	-	10	
6.	Maintenance achieves a high level of housekeeping in its shop areas.	Overall rating of maintenance housekeeping level: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
7.	Maintenance maintains a broad awareness of new tools and equipment to improve methods and continually upgrades tools and equipment to increase craft safety and performance.	Overall success in getting new tools and equipment: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
										Q. SUBTOTAL				
R.	**CONTINUOUS MAINTENANCE IMPROVEMENT** Note: This section allows for a total review of the previous evaluations in Sections A - Q to assess whether or not a strategy of continuous maintenance improvement is being pursued within your organization. Section R provides a general evaluation outline for using the team-based approach for continuous maintenance improvement.													
1.	Continuous maintenance improvement is recognized as an important strategy as evidenced by the current status of maintenance and the ongoing activities (per results of evaluation in Sections A - Q).	Current maintenance practice and ongoing activities rate progress toward a strategy of continuous maintenance improvement as: Excellent – 10, Very Good – 9, Good – 8, Average – 7, Below Average – 6, Poor – 5 or less.	0	1	2	3	4	5	6	7	8	9	10	
2.	Increased commitment to continuous maintenance improvement is required based on results of evaluation in Sections A - Q.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
3.	Maintenance improvement opportunities from Sections A - Q have been identified with potential costs and savings established.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	

MAINTENANCE EVALUATION GUIDE

Goal Number	Description of Maintenance Goal	Evaluation Criteria	Degree of Coverage (%)											Current Rating
			No	10	20	30	40	50	60	70	80	90	100	
4.	Improvement priorities have been established based on projected benefits and valid economic justifications.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
5.	Top management has reviewed, modified, and/or approved maintenance improvement priorities and has made a commitment to action.	Firm commitment has been made to what percentage of improvement priorities.	0	1	2	3	4	5	6	7	8	9	10	
6.	Sufficient resources (time, dollars, and staff) have been established to address priority areas.	Percentage of resources established to address priority areas.	0	1	2	3	4	5	6	7	8	9	10	
7.	Implementation plans and leaders for each priority area are established.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
8.	A team-based approach is used to identify and implement practical solutions to maintenance improvement opportunities identified in Sections A - Q.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
9.	A leadership team comprised of management and key staff is established to define teams, charter teams, and support, motivate, and empower teams as appropriate.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
10.	Maintenance employees participate on functional teams within maintenance and on cross-functional teams with other department employees to develop maintenance improvements.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
11.	Team leaders and team members have voluntarily accepted their respective roles and responsibilities.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
12.	Written charters are established for each team to outline reasons for the team, process to be used, resources available, constraints, expectations, and results expected.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
13.	Maintenance employees provide active participation and support to Equipment Improvement Teams noted in Section I to improve equipment effectiveness.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
14.	A communication team is established to publicize and recognize team performance and new ideas and to promote the philosophy and process for team-based continuous improvement.	YES –10 NO – 0	0	-	-	-	-	-	-	-	-	-	10	
													R. SUBTOTAL	

2.1 The Next Steps

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE
MAINTENANCE EVALUATION GUIDE

What are the Next Steps?

STEP 1. Develop a general assessment of your overall "current rating" by entering subtotals from each of the major sections (A-R) onto the Maintenance Evaluation Summary. Although total points and your overall "current rating" is important, the process you begin in Steps 2 and 3 is the most critical.

STEP 2. Enter "current ratings" from the Maintenance Evaluation Guide onto The Scoreboard for Maintenance Excellence in Section 3.0. This provides a baseline of where you are in terms of today's best maintenance practices, principles, and leadership philosophies.

STEP 3. Develop priorities, gain commitment to a strategic plan of action, and begin your pursuit of maintenance excellence with a strategy of continuous maintenance improvement.

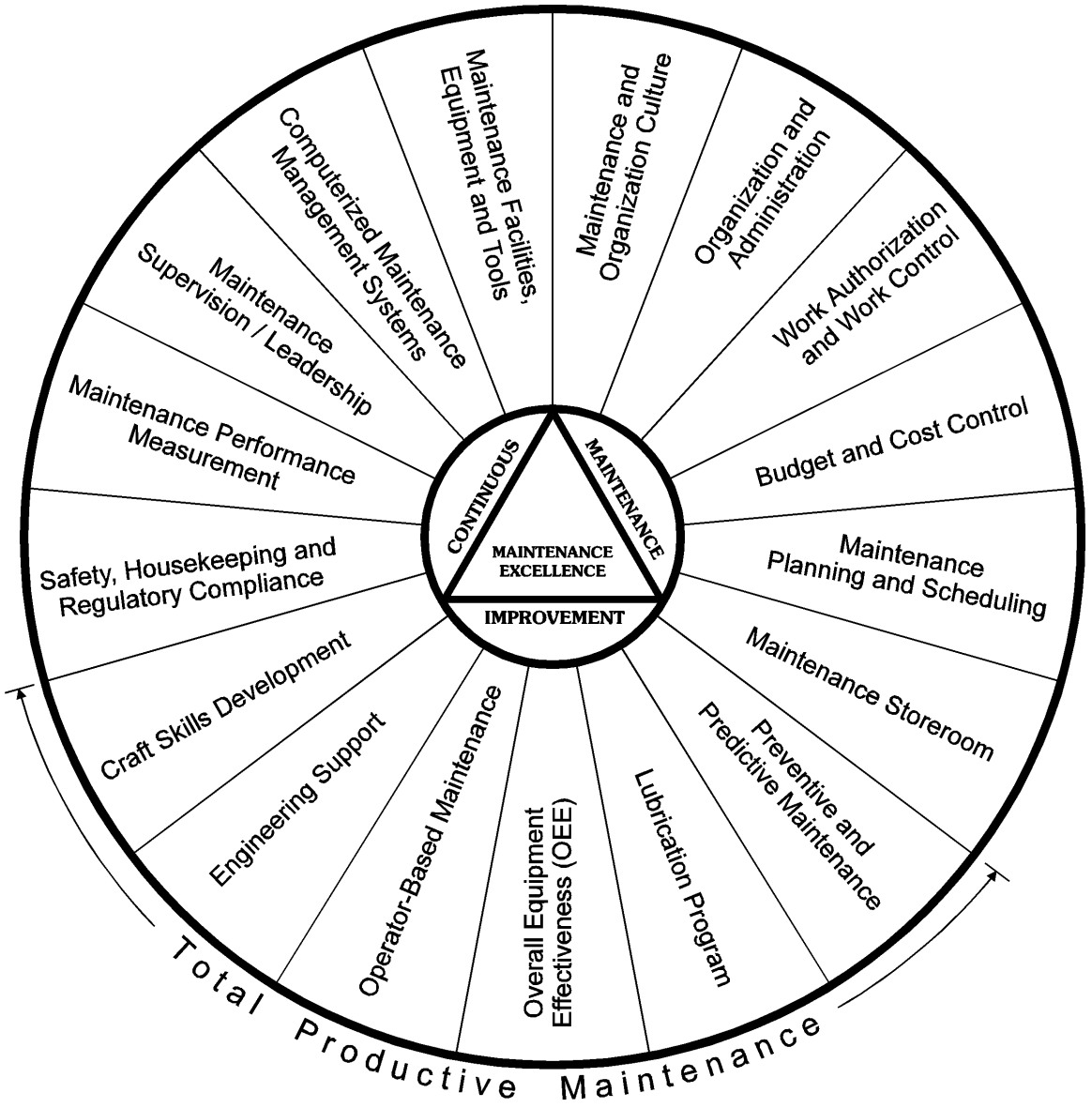
2.2 Maintenance Evaluation Summary

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE
MAINTENANCE EVALUATION GUIDE

GENERAL ASSESSMENT OF OVERALL CURRENT RATING	
Total Point Range	**Overall Rating Summary**
1800 to 2000 (90 - 100%)	**Excellent:** Practices and principles in place for achieving effective maintenance and world class performance based on actual results. Reconfirm overall maintenance performance measures. Maintain strategy of continuous maintenance improvement. Set higher standards for maintenance excellence and measure results.
1600 to 1799 (80 - 89%)	**Very Good:** Fine tune existing operation and current practices. Reassess progress on planned or ongoing improvement activities. Redefine priorities and renew commitment to continuous maintenance improvement.
1400 to 1599 (70 - 79%)	**Good:** Reassess priorities and reconfirm commitments at all levels to maintenance improvement. Evaluate maintenance practices and develop and implement plans for priority improvements. Ensure that measures to evaluate maintenance performance and results are in place. Initiate strategy of continuous maintenance improvement.
1200 to 1399 (60 - 69%)	**Average:** Conduct a complete assessment of the maintenance operation and current practices. Determine total costs/benefits of potential improvements. Develop and initiate strategy of continuous maintenance improvement.
Less than 1200 (<60%)	**Below Average:** Same as for average, plus, depending on the level of the rating and major area that is below average, immediate attention may be needed to correct conditions having an adverse effect on life, health, safety, and regulatory compliance. Priority to key issues, major equipment or increasing costs that are having a direct impact on the immediate survival of the business.

SECTION	EVALUATION CATEGORY	EVALUATION ITEMS	CURRENT RATING POINTS BY SECTION
A.	Maintenance and Organization Culture	10	
B.	Organization and Administration	12	
C.	Work Authorization and Work Control	10	
D.	Budget and Cost Control	11	
E.	Maintenance Planning and Scheduling	12	
F.	Maintenance Storeroom	16	
G.	Preventive and Predictive Maintenance	22	
H.	Lubrication Program	11	
I.	Overall Equipment Effectiveness (OEE)	9	
J.	Operator-Based Maintenance	8	
K.	Engineering Support	9	
L.	Safety, Housekeeping, and Regulatory Compliance	12	
M.	Craft Skills Assessment	9	
N.	Maintenance Performance Measurement	9	
O.	Maintenance Supervision/Leadership	6	
P.	Computerized Maintenance Management Systems (CMMS)	13	
Q.	Maintenance Facilities, Equipment and Tools	7	
R.	Continuous Maintenance Improvement	14	
	TOTAL EVALUATION POINTS		

3.0 The Scoreboard for Maintenance Excellence



THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Organization Name: _____ Location: _____ Date: _____

Developed By: 1. _____ 2. _____ 3. _____ 4. _____

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
A.	**MAINTENANCE AND ORGANIZATION CULTURE**									
1.	The organization's vision, mission, and requirements for success include maintenance as a top priority.						1 2 3 4 5 6 7 8 9 10			
2.	Senior management is visible and actively involved in promoting continuous maintenance improvement and is obviously committed to achieving maintenance excellence.						1 2 3 4 5 6 7 8 9 10			
3.	Senior management is accessible to maintenance staff and has routine contact with maintenance employees and maintenance customers.						1 2 3 4 5 6 7 8 9 10			
4.	The organization's strategy and plan for success is known to all in maintenance and includes a strategy for continuous improvement.						1 2 3 4 5 6 7 8 9 10			
5.	Maintenance is kept well informed of changing business conditions, strategies, and long-range plans.						1 2 3 4 5 6 7 8 9 10			
6.	Maintenance priorities for short- and long-term continuous improvements have been established and are supported by all in maintenance.						1 2 3 4 5 6 7 8 9 10			
7.	Senior management is providing sufficient current and future resources (time, staffing, dollars, etc.) to support continuous maintenance improvement.						1 2 3 4 5 6 7 8 9 10			
8.	Long-term commitments have been made to continuous maintenance improvement rather than short-term compromises.						1 2 3 4 5 6 7 8 9 10			
9.	The organization's culture and the maintenance environment results in innovation, PRIDE in maintenance, trust, and an obvious spirit of continuous improvement.						1 2 3 4 5 6 7 8 9 10			
10.	Open communication exists within maintenance and the overall organization to ensure inter-departmental cooperation, idea sharing, and basic teamwork.						1 2 3 4 5 6 7 8 9 10			
B.	**ORGANIZATION AND ADMINISTRATION**									
1.	The maintenance organization chart is current and complete with fully defined areas of responsibility.						1 2 3 4 5 6 7 8 9 10			
2.	Clear-cut job descriptions have been developed that completely define job responsibilities and skill levels required for each craft.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
3.	Employees are provided copies of their job descriptions and counseled periodically on job performance, job responsibilities, and skill development needs.						1 2 3 4 5 6 7 8 9 10			
4.	One single head of maintenance operations is supported by an adequate clerical and technical staff of planners, first-line supervisors, stores personnel, maintenance engineering, and training support.						1 2 3 4 5 6 7 8 9 10			
5.	The maintenance department head has high visibility within the organization and reports to a level such as the plant manager.						1 2 3 4 5 6 7 8 9 10			
6.	The first-line supervisors are responsible for the performance of 12 to 15 craftsmen.						1 2 3 4 5 6 7 8 9 10			
7.	A time keeping system is in place to charge craft time to each job.						1 2 3 4 5 6 7 8 9 10			
8.	Monthly or weekly reports are available to show distribution of maintenance labor in critical categories: breakdown repairs, corrective work, PM work, etc.						1 2 3 4 5 6 7 8 9 10			
9.	Monthly or weekly reports are available to monitor backlog status and priority of planned or project work, etc.						1 2 3 4 5 6 7 8 9 10			
10.	Backlog trend data is available to highlight need for craft increases, scheduled overtime, or subcontracting.						1 2 3 4 5 6 7 8 9 10			
11.	Guidelines on the level of accepted backlog are established to determine need for overtime or subcontracting as well as to identify potential problem areas.						1 2 3 4 5 6 7 8 9 10			
12.	Sufficient man-hour data is available that allows valid decisions on which jobs must be delayed if new jobs or projects are added to the schedule.						1 2 3 4 5 6 7 8 9 10			
C.	**WORK AUTHORIZATION AND WORK CONTROL**									
1.	A work control function is established within the maintenance operation.						1 2 3 4 5 6 7 8 9 10			
2.	A written, formal system which governs the preparation of work orders is available.						1 2 3 4 5 6 7 8 9 10			
3.	A printed, multi-copy work order form is used to capture key planning, cost, performance, and job priority information.						1 2 3 4 5 6 7 8 9 10			
4.	A written procedure which governs the origination, authorization, and processing of all work orders is available and understood by all in maintenance and operations.						1 2 3 4 5 6 7 8 9 10			
5.	The responsibility for screening and processing work orders is assigned to one person or unit.						1 2 3 4 5 6 7 8 9 10			
6.	Work orders are classified by type, e.g. emergency, planned equipment repairs, building systems, PM, project work, etc.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
7.	Reasonable "date-required" is included on each work order with restrictions against "ASAP," etc.						1 2 3 4 5 6 7 8 9 10			
8.	The originating departments are required to indicate equipment location and number, work center number, and other applicable information on the work orders.						1 2 3 4 5 6 7 8 9 10			
9.	A well-defined procedure for determining the priority of repair work is established based on the criticality of equipment, safety factors, cost of downtime, etc.						1 2 3 4 5 6 7 8 9 10			
10.	Work orders are given a priority classification based on an established priority system.						1 2 3 4 5 6 7 8 9 10			
D.	**BUDGET AND COST CONTROL**									
1.	The maintenance budget is based on a realistic projection of actual needs rather than past budget levels.						1 2 3 4 5 6 7 8 9 10			
2.	Maintenance expenditures are charged to work centers or operating departments and budget variances monitored to highlight problem areas.						1 2 3 4 5 6 7 8 9 10			
3.	During the budgeting process, all unfunded maintenance repairs to operating and facilities-related equipment are identified and presented to management with an evaluation as to the negative future impact of deferring maintenance.						1 2 3 4 5 6 7 8 9 10			
4.	Maintenance provides key input and support to long-range budget planning for new equipment, equipment overhaul and retrofit, facility expansions, rearrangements, and repairs.						1 2 3 4 5 6 7 8 9 10			
5.	Labor and material costs are established for all work orders accumulated to the equipment history file and charged back to respective work centers by accounting if applicable.						1 2 3 4 5 6 7 8 9 10			
6.	An equipment history file is maintained for major pieces of equipment to track life-cycle cost, types of repairs, and trends.						1 2 3 4 5 6 7 8 9 10			
7.	The equipment history file is reviewed periodically to analyze repair trends and to evaluate and resolve critical problem areas.						1 2 3 4 5 6 7 8 9 10			
8.	Labor and material costs are estimated prior to the start of all repair work except emergencies.						1 2 3 4 5 6 7 8 9 10			
9.	Major work order cost variances are investigated and explained to the person authorizing the work.						1 2 3 4 5 6 7 8 9 10			
10.	Cost approval guidelines are established for large or special repair jobs as compared to normal repair.						1 2 3 4 5 6 7 8 9 10			
11.	The cost of downtime is known and published for each piece of equipment and is used in determining priorities for repair.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
E.	**MAINTENANCE PLANNING AND SCHEDULING**									
1.	A formal maintenance planning function has been established and staffed with qualified planners in an approximate ratio of one to 30 craftsmen.						1 2 3 4 5 6 7 8 9 10			
2.	The screening, estimating, coordinating of repair parts, and planning of repair work is done by the planner as a support service to the supervisor.						1 2 3 4 5 6 7 8 9 10			
3.	The planner uses the priority system in combination with parts and craft time availability to develop a start date for each planned job.						1 2 3 4 5 6 7 8 9 10			
4.	A daily or weekly maintenance work schedule is available to the supervisor who schedules and assigns work to craft personnel.						1 2 3 4 5 6 7 8 9 10			
5.	The maintenance planner develops planning times for all work except emergency repairs and includes on work order for each craft.						1 2 3 4 5 6 7 8 9 10			
6.	A day's planned work is available for each craftsman with at least half of a working day in advance.						1 2 3 4 5 6 7 8 9 10			
7.	A master plan for all major repair is available indicating planned start date, duration, completion date, and type crafts required.						1 2 3 4 5 6 7 8 9 10			
8.	The master plan is reviewed and updated by maintenance, operations, and engineering as required.						1 2 3 4 5 6 7 8 9 10			
9.	Scheduling/progress meetings are held periodically with operations to ensure understanding, agreement and coordination of planned work, backlogs, and problem areas.						1 2 3 4 5 6 7 8 9 10			
10.	Operations cooperates with and supports maintenance to develop repair schedules.						1 2 3 4 5 6 7 8 9 10			
11.	Set-ups and changeovers are coordinated with maintenance to allow scheduling of selected maintenance repairs, PM inspections, and lubrication services during scheduled downtime.						1 2 3 4 5 6 7 8 9 10			
12.	Planned repairs are completed on time and in line with dates scheduled within ±10%.						1 2 3 4 5 6 7 8 9 10			
F.	**MAINTENANCE STOREROOM**									
1.	The inventory system provides an accurate and complete record of information for each stock item.						1 2 3 4 5 6 7 8 9 10			
2.	The "ABC" classification of stock items is known and proper storage methods and accountability is established for each.						1 2 3 4 5 6 7 8 9 10			
3.	"A" and "B" items have valid reorder points, EOQ, and safety stock levels established.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
4.	"C" items (50% of stock items with 5% of total inventory value) are identified and use two-bin system or floor issue.						1 2 3 4 5 6 7 8 9 10			
5.	Inventory accuracy is determined by an effective cycle counting program.						1 2 3 4 5 6 7 8 9 10			
6.	Inventory accuracy is regularly measured and is 95% or above.						1 2 3 4 5 6 7 8 9 10			
7.	An up-to-date storeroom catalogue is available and includes all stock items, storage locations, stock numbers, etc.						1 2 3 4 5 6 7 8 9 10			
8.	Parts usage history is continually reviewed to determine proper stock levels, excess inventory items, and obsolete items.						1 2 3 4 5 6 7 8 9 10			
9.	Procedures and evaluation criteria for adding new maintenance materials to stores are used.						1 2 3 4 5 6 7 8 9 10			
10.	Stores requisitions and issues are tied to the maintenance work order and changed directly to the repair job.						1 2 3 4 5 6 7 8 9 10			
11.	Maintenance planners and the storeroom personnel coordinate to reserve repair parts and material for planned work. "Kitting" and direct delivery to the job site is done whenever possible.						1 2 3 4 5 6 7 8 9 10			
12.	Purchasing has an effective program to evaluate vendor performance and quality.						1 2 3 4 5 6 7 8 9 10			
13.	Purchasing has developed partnerships with selected vendors and suppliers and has committed to purchase based on fast delivery, quality parts, and service.						1 2 3 4 5 6 7 8 9 10			
14.	Maintenance storeroom staff are well-trained, customer-oriented, and provide a high level of customer service to maintenance.						1 2 3 4 5 6 7 8 9 10			
15.	Maintenance storeroom performance indicators have been established and are evaluated and reported on a monthly basis.						1 2 3 4 5 6 7 8 9 10			
16.	An operations assessment has been conducted for the storeroom to provide overall evaluation of facilities, storage and handling equipment, staffing levels, inventory levels, systems, and procedures.						1 2 3 4 5 6 7 8 9 10			
G.	**PREVENTIVE AND PREDICTIVE MAINTENANCE**									
1.	The scope and frequency of PM services has been established on all equipment.						1 2 3 4 5 6 7 8 9 10			
2.	Operations staff supports and agrees with the frequency and scope of the PM program.						1 2 3 4 5 6 7 8 9 10			
3.	Equipment has been evaluated for the application of current predictive maintenance technology.						1 2 3 4 5 6 7 8 9 10			
4.	Maintenance, engineering, and others have technical knowledge and necessary skills for using predictive maintenance techniques.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
5.	A plan for using current predictive maintenance technology is being developed or is now being put in action.						1 2 3 4 5 6 7 8 9 10			
6.	Optimum routes for PM inspections are established.						1 2 3 4 5 6 7 8 9 10			
7.	PM checklists with clear, concise instructions have been developed for each piece of equipment.						1 2 3 4 5 6 7 8 9 10			
8.	Inspection intervals and procedures are periodically reviewed for changes/improvements and updated as required.						1 2 3 4 5 6 7 8 9 10			
9.	Planned times are established for all PM inspections.						1 2 3 4 5 6 7 8 9 10			
10.	The total manpower requirement by craft to accomplish the overall PM program has been established.						1 2 3 4 5 6 7 8 9 10			
11.	The required level of manpower is being committed to achieve the total scope of PM services needed.						1 2 3 4 5 6 7 8 9 10			
12.	Actual craft time devoted to PM is known and evaluated as a percentage of total craft time available.						1 2 3 4 5 6 7 8 9 10			
13.	Goals for PM compliance are established and overall compliance and results are measured against the company benchmark.						1 2 3 4 5 6 7 8 9 10			
14.	All non-compliance to scheduled PM services is aggressively evaluated and corrected.						1 2 3 4 5 6 7 8 9 10			
15.	Maintenance and operations work with close communication, coordination, and cooperation to schedule PM services.						1 2 3 4 5 6 7 8 9 10			
16.	The success of PM is measured based on multiple factors: reduced breakdown/ emergency repairs, increased planned maintenance work, reduced downtime costs, the elimination of root cause of problems, improved product quality, etc.						1 2 3 4 5 6 7 8 9 10			
17.	Preventive/Predictive Maintenance is a highly visible function within maintenance, is well received as a company strategy, and continues to create awareness of its continuing need.						1 2 3 4 5 6 7 8 9 10			
18.	The PM inspectors are well-qualified craftsmen and serve as good maintenance ambassadors and “customer service representatives.”						1 2 3 4 5 6 7 8 9 10			
19.	A PM master schedule is developed to evaluate the weekly or monthly plan.						1 2 3 4 5 6 7 8 9 10			
20.	Corrective repair work orders are generated as a result of PM inspections and monitored as a measure of PM success.						1 2 3 4 5 6 7 8 9 10			
21.	PM manpower needs are adjusted to satisfy changing PM inspection requirements.						1 2 3 4 5 6 7 8 9 10			
22.	Equipment operators provide direct support to the PM program and have the training and clear guidelines for their areas of responsibility.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
H.	**LUBRICATION PROGRAM**									
1.	Lubrication services are accomplished according to equipment supplier, guidelines, historical experience, and focused surveys.						1 2 3 4 5 6 7 8 9 10			
2.	Lubrication surveys by suppliers are used to evaluate proper types of lubricants, frequencies, and problem areas.						1 2 3 4 5 6 7 8 9 10			
3.	Optimum service routes have been established and effective methods and service equipment are being used.						1 2 3 4 5 6 7 8 9 10			
4.	Lubrication checklists and charts are available for each machine.						1 2 3 4 5 6 7 8 9 10			
5.	Standard times for lubrication services have been established.						1 2 3 4 5 6 7 8 9 10			
6.	Manpower to provide a complete lubrication program has been allocated.						1 2 3 4 5 6 7 8 9 10			
7.	Operators have been trained to complete selected types of lubrication services as part of operator-based maintenance.						1 2 3 4 5 6 7 8 9 10			
8.	Equipment failures or problems due to lubrication are reported and analyzed for causes.						1 2 3 4 5 6 7 8 9 10			
9.	Lube services staff are at a trades classification level and not a laborer classification.						1 2 3 4 5 6 7 8 9 10			
10.	Compliance in meeting lubrication service schedules is evaluated on a regular basis.						1 2 3 4 5 6 7 8 9 10			
11.	Lubrication services is viewed as a key part of preventive maintenance and is not neglected or overlooked.						1 2 3 4 5 6 7 8 9 10			
I.	**OVERALL EQUIPMENT EFFECTIVENESS (OEE)**									
1.	Overall Equipment Effectiveness (OEE) ratings have been established for major equipment to provide a baseline measurement of equipment availability, performance, and quality.						1 2 3 4 5 6 7 8 9 10			
2.	Priorities have been established with a plan of action for improving OEE.						1 2 3 4 5 6 7 8 9 10			
3.	Equipment improvement teams have been established to focus on improving equipment effectiveness based on established priorities.						1 2 3 4 5 6 7 8 9 10			
4.	Improvements in OEE are evaluated against baseline OEE measurements to determine progress.						1 2 3 4 5 6 7 8 9 10			
5.	Documentation of all equipment conditions, factors, and settings that contribute to quality performance is available.						1 2 3 4 5 6 7 8 9 10			
6.	Optimum machine speeds have been established and included in set-up procedures and operator training.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
7.	All machines related quality defects are aggressively evaluated and corrected.						1 2 3 4 5 6 7 8 9 10			
8.	Losses due to minor stoppages, idling, and minor equipment failures are addressed by operations and maintenance for corrections.						1 2 3 4 5 6 7 8 9 10			
9.	Chronic equipment breakdowns and problems are aggressively investigated as to cause.						1 2 3 4 5 6 7 8 9 10			
J.	**OPERATOR-BASED MAINTENANCE**									
1.	Operators are responsible for cleaning their equipment and performing selected levels of operator-based maintenance.						1 2 3 4 5 6 7 8 9 10			
2.	Operators have been trained and have the proper tools/equipment to safely clean their equipment.						1 2 3 4 5 6 7 8 9 10			
3.	The initial cleaning to bring all equipment to an optimal or "as new" status has been planned to include adequate maintenance support for removing covers, etc., and noting repairs that are needed.						1 2 3 4 5 6 7 8 9 10			
4.	Operators have been trained to perform daily and periodic inspections on their equipment.						1 2 3 4 5 6 7 8 9 10			
5.	Operators have been trained and have proper tools and equipment to do selected lubrication, tighten bolts and fasteners, and to detect symptoms of deterioration.						1 2 3 4 5 6 7 8 9 10			
6.	Operators have been trained to perform minor repairs and adjustments on their equipment.						1 2 3 4 5 6 7 8 9 10			
7.	The process of transferring maintenance tasks and skills to operators has been well-coordinated between maintenance, operations, engineering, and human resource staff.						1 2 3 4 5 6 7 8 9 10			
8.	Operators have developed greater pride in ownership and understand their expanded role in detecting and preventing maintenance problems.						1 2 3 4 5 6 7 8 9 10			
K.	**ENGINEERING SUPPORT**									
1.	Engineering and maintenance work closely during the design and specification stages to improve equipment reliability and maintainability.						1 2 3 4 5 6 7 8 9 10			
2.	Purchase of new equipment and modifications to existing equipment is subject to maintenance review prior to final approval.						1 2 3 4 5 6 7 8 9 10			
3.	Engineering provides key support to maintenance and operations for improving equipment effectiveness.						1 2 3 4 5 6 7 8 9 10			
4.	Engineering provides key support to maintenance during installation and start-up of new equipment to ensure that operating specifications are achieved.						1 2 3 4 5 6 7 8 9 10			
5.	Engineering supports maintenance as required to evaluate and resolve chronic equipment breakdowns and problems.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
6.	Engineering and maintenance work closely to develop an effective equipment and spare parts standardization program.						1 2 3 4 5 6 7 8 9 10			
7.	Capital additions, building systems changes, and facility layout changes are subject to maintenance review before final approval.						1 2 3 4 5 6 7 8 9 10			
8.	Up-to-date prints and records for equipment and facility are available to maintenance.						1 2 3 4 5 6 7 8 9 10			
9.	Engineering coordinates material requisitioning with maintenance for project work, major overhauls, and machine building.						1 2 3 4 5 6 7 8 9 10			
L.	**SAFETY, HOUSEKEEPING, AND REGULATORY COMPLIANCE**									
1.	Maintenance leaders have created a broad-based awareness and appreciation for achieving a safe maintenance operation.						1 2 3 4 5 6 7 8 9 10			
2.	Maintenance employees attend at least one safety meeting per month.						1 2 3 4 5 6 7 8 9 10			
3.	Maintenance has shown a continual improvement in its safety record over the past five years.						1 2 3 4 5 6 7 8 9 10			
4.	All safety equipment is available and is prescribed for each job that it is required.						1 2 3 4 5 6 7 8 9 10			
5.	All cranes, hoists, lift trucks, and lifting equipment are inspected as part of the preventive maintenance program.						1 2 3 4 5 6 7 8 9 10			
6.	Good housekeeping within maintenance shops and storerooms is a top priority.						1 2 3 4 5 6 7 8 9 10			
7.	Maintenance tools, equipment, and left-over materials are always removed from the job site after work completion.						1 2 3 4 5 6 7 8 9 10			
8.	Maintenance continually evaluates areas throughout the operation where safety conditions can be improved.						1 2 3 4 5 6 7 8 9 10			
9.	The total scope of regulatory compliance issues within the organization has been defined and a prioritized plan of action established.						1 2 3 4 5 6 7 8 9 10			
10.	Maintenance responsibilities related to regulatory compliance have been well-defined.						1 2 3 4 5 6 7 8 9 10			
11.	Maintenance has the technical knowledge and experience to support the organization's regulatory compliance action.						1 2 3 4 5 6 7 8 9 10			
12.	Maintenance works closely with other staff groups in the organization for a totally integrated approach to regulatory compliance.						1 2 3 4 5 6 7 8 9 10			
M.	**CRAFT SKILLS DEVELOPMENT**									
1.	The types and levels of craft skills required for an effective maintenance operation have been identified (current and future).						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
2.	Job descriptions include well-defined standards for job knowledge and skill levels required with each craft area.						1 2 3 4 5 6 7 8 9 10			
3.	An assessment of the current job knowledge and skill level of each craftsman has been made to determine individual training needs.						1 2 3 4 5 6 7 8 9 10			
4.	The overall training needs for the maintenance have been developed with a plan of action and cost.						1 2 3 4 5 6 7 8 9 10			
5.	The organization has committed to providing the necessary resources for maintenance training and skills development.						1 2 3 4 5 6 7 8 9 10			
6.	A program for craft skills development has been designed to address priority training needs and is being implemented.						1 2 3 4 5 6 7 8 9 10			
7.	Results of training are determined by a competency-based approach which ensures demonstrated capability to perform on newly trained craft tasks.						1 2 3 4 5 6 7 8 9 10			
8.	A policy to pay-for-skills gained is available or is being developed as part of the craft skills development program.						1 2 3 4 5 6 7 8 9 10			
9.	The benefits of developing multi-craft capabilities within maintenance have been evaluated and incorporated into the craft skills training program as applicable.						1 2 3 4 5 6 7 8 9 10			
N.	**MAINTENANCE PERFORMANCE MEASUREMENT**									
1.	Maintenance performance measurement includes a wide range of performance indicators in order to evaluate the total effectiveness and impact of maintenance service throughout the operation.						1 2 3 4 5 6 7 8 9 10			
2.	Maintenance labor and material costs are reported monthly and reviewed against previous costs or budgeted costs to evaluate current trends.						1 2 3 4 5 6 7 8 9 10			
3.	Equipment downtime attributable to maintenance is monitored. The cost of downtime for each piece of equipment is known and used to measure value of increased equipment uptime.						1 2 3 4 5 6 7 8 9 10			
4.	Realistic labor performance standards have been developed and used for all planned work and recurring tasks.						1 2 3 4 5 6 7 8 9 10			
5.	Maintenance labor performance is reported monthly or weekly to evaluate actual performance against established performance standards.						1 2 3 4 5 6 7 8 9 10			
6.	The measurement of craft utilization is available from the labor reporting system to evaluate productive trades time vs. non-trades time.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
7.	Work sampling studies are used periodically to evaluate the maintenance operation by determining overall utilization and the nature of delays and non-productive time such as waiting for parts, instructions, having an unbalanced crew, or waiting for equipment, etc.						1 2 3 4 5 6 7 8 9 10			
8.	The effectiveness of maintenance planning is evaluated by factors such as percent work orders planned vs. total work orders, percent work orders completed as planned vs. total planned work orders and percent work orders with estimates vs. total work orders completed.						1 2 3 4 5 6 7 8 9 10			
9.	Baseline performance factors and information is available to evaluate all ongoing improvements against past performance. Periodic reports to summarize and highlight the tangible benefits from continuous maintenance improvement are provided.						1 2 3 4 5 6 7 8 9 10			
O.	**MAINTENANCE SUPERVISION/LEADERSHIP**									
1.	Nonsupervisory work is minimized as a result of adequate clerical, storeroom and planner support to the maintenance supervision.						1 2 3 4 5 6 7 8 9 10			
2.	Supervisors perform primarily direct supervision of maintenance to include scheduling work assignments, verifying quality of completed work, evaluating performance, and identifying training needs, etc.						1 2 3 4 5 6 7 8 9 10			
3.	Supervisors actively support good housekeeping and the safety program by conducting/ attending meetings, providing ideas, and an attitude that creates greater safety awareness.						1 2 3 4 5 6 7 8 9 10			
4.	An effective supervisory development program is available to increase leadership and technical skills.						1 2 3 4 5 6 7 8 9 10			
5.	Supervisors are team players and are able to gain cooperation and support from operators and other supervisors in operating departments.						1 2 3 4 5 6 7 8 9 10			
6.	Supervisors actively support continuous maintenance improvement with ideas and suggestions and in turn promote and encourage ideas from their employees.						1 2 3 4 5 6 7 8 9 10			
P.	**COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEMS (CMMS)**									
1.	Potential savings have been identified and quantified to provide justification for starting the CMMS acquisition process.						1 2 3 4 5 6 7 8 9 10			
2.	The identification of specific CMMS needs have been clearly described and quantified to include the projected cost of buying, implementing, and using the systems.						1 2 3 4 5 6 7 8 9 10			
3.	Potential CMMS savings compared to projected costs of purchase, implementing, and running the system provides a payback within company guidelines.						1 2 3 4 5 6 7 8 9 10			
4.	A complete definition of system capabilities has been determined based on the size and type of maintenance operation.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
5.	System selection is based on a thorough process of evaluating candidate systems in operation that meet previously defined capabilities.						1 2 3 4 5 6 7 8 9 10			
6.	System suppliers are evaluated as to level and quality of support services and become a factor in making final decisions.						1 2 3 4 5 6 7 8 9 10			
7.	Final CMMS selection is based on evaluating each candidate on a wide range of criteria such as ease of implementation, support reliability, quality of documentation, vendor reputation, full integration of modules, networking ability, price, etc.						1 2 3 4 5 6 7 8 9 10			
8.	A CMMS implementation plan has been developed which includes needed organization, procedures, operator/user training, hardware/software installation, initial data loading, and well-defined support requirements from internal and external sources.						1 2 3 4 5 6 7 8 9 10			
9.	Adequate support from supplier and consultants is budgeted to ensure successful start-up.						1 2 3 4 5 6 7 8 9 10			
10.	Customization of the CMMS is planned to accommodate specific needs for part numbers, equipment numbers, work order, and management report formats, etc.						1 2 3 4 5 6 7 8 9 10			
11.	Training for CMMS is a top priority and will be established as an ongoing process for new and existing users of the system.						1 2 3 4 5 6 7 8 9 10			
12.	System outputs have been developed into a maintenance information system that provides management reports to monitor a wide range of factors related to labor, material, equipment costs, etc.						1 2 3 4 5 6 7 8 9 10			
13.	During implementation periodic evaluations of system performance, database development, user training and customization efforts are made.						1 2 3 4 5 6 7 8 9 10			
Q.	**MAINTENANCE FACILITIES, EQUIPMENT AND TOOLS**									
1.	Maintenance shop facilities are located in an ideal location with adequate space, lighting, and ventilation.						1 2 3 4 5 6 7 8 9 10			
2.	Standard tools are provided to craftsmen and accounted for by a method that ensures good accountability and control.						1 2 3 4 5 6 7 8 9 10			
3.	An adequate number of specialty tools and equipment are available and easily checked out through a tool control procedure.						1 2 3 4 5 6 7 8 9 10			
4.	All personal safety equipment necessary within the operation is provided and used by maintenance employees.						1 2 3 4 5 6 7 8 9 10			
5.	Safety equipment for special jobs such as confined space entry, electrical system lock-out, etc., is available and used.						1 2 3 4 5 6 7 8 9 10			
6.	Maintenance achieves a high level of housekeeping in its shop areas.						1 2 3 4 5 6 7 8 9 10			

THE SCOREBOARD FOR MAINTENANCE EXCELLENCE

Goal Number	Description of Maintenance Goal	Current Rating	Leader	Planned $ Cost	Planned $ Benefits	Date Started	Current Status 1 2 3 4 5 6 7 8 9 10	Date Completed	Actual $ Cost	Actual $ Benefits
7.	Maintenance maintains a broad awareness of new tools and equipment to improve methods and continually upgrades tools and equipment to increase craft safety and performance.						1 2 3 4 5 6 7 8 9 10			
R.	**CONTINUOUS MAINTENANCE IMPROVEMENT** Note: This section allows for a total review of the previous evaluations in Sections A - Q to assess whether or not a strategy of continuous maintenance improvement is being pursued within your organization. Section R provides a general evaluation outline for using the team-based approach for continuous maintenance improvement.									
1.	Continuous maintenance improvement is recognized as an important strategy as evidenced by the current status of maintenance and the ongoing activities (per results of evaluation in Sections A - Q).						1 2 3 4 5 6 7 8 9 10			
2.	Increased commitment to continuous maintenance improvement is required based on results of evaluation in Sections A - Q.						1 2 3 4 5 6 7 8 9 10			
3.	Maintenance improvement opportunities from Sections A - Q have been identified with potential costs and savings established.						1 2 3 4 5 6 7 8 9 10			
4.	Improvement priorities have been established based on projected benefits and valid economic justifications.						1 2 3 4 5 6 7 8 9 10			
5.	Top management has reviewed, modified, and/or approved maintenance improvement priorities and has made a commitment to action.						1 2 3 4 5 6 7 8 9 10			
6.	Sufficient resources (time, dollars, and staff) have been established to address priority areas.						1 2 3 4 5 6 7 8 9 10			
7.	Implementation plans and leaders for each priority area are established.						1 2 3 4 5 6 7 8 9 10			
8.	A team-based approach is used to identify and implement practical solutions to maintenance improvement opportunities identified in Sections A - Q.						1 2 3 4 5 6 7 8 9 10			
9.	A leadership team comprised of management and key staff is established to define teams, charter teams and support, motivate and empower teams as appropriate.						1 2 3 4 5 6 7 8 9 10			
10.	Maintenance employees participate on functional teams within maintenance and on cross-functional teams with other department employees to develop maintenance improvements.						1 2 3 4 5 6 7 8 9 10			
11.	Team leaders and team members have voluntarily accepted their respective roles and responsibilities.						1 2 3 4 5 6 7 8 9 10			
12.	Written charters are established for each team to outline reasons for team, process to be used, resources available, constraints, expectations, and results expected.						1 2 3 4 5 6 7 8 9 10			
13.	Maintenance employees provide active participation and support to equipment improvement teams noted in Section I to improve equipment effectiveness.						1 2 3 4 5 6 7 8 9 10			
14.	A communication team is established to publicize and recognize team performance and new ideas and to promote the philosophy and process for team-based continuous improvement.						1 2 3 4 5 6 7 8 9 10			

4.0 Conclusion

Tompkins Associates believes successful organizations must invest in maintenance improvement. They must view maintenance as a top priority for success. They must understand the requirements of success for dealing with today's challenges in maintenance. The Scoreboard for Maintenance Excellence provides the framework for taking the critical first step of evaluating all functional areas within maintenance. This is the most important step because it identifies opportunities to improve existing maintenance practices as well as opportunities to use today's best maintenance practices and principles. Organizations with a vision of long-term survival do not have to gamble with maintenance costs.

Maintenance excellence is not achieved by a quick-fix, a short-term project, or the latest fad. It is achieved by blending proven maintenance management techniques with new technology and new practices such as Total Productive Maintenance Management to develop a strategy of continuous maintenance improvement. It is based on valid priorities determined through a total evaluation. Maintenance excellence is achieved through total commitment by many people within an organization to a strategic plan of action.

Maintenance excellence begins with a very simple, positive affirmation statement: PRIDE in Maintenance. The real bottom line in this statement is **PRIDE** . . . **P**eople Really **I**nterested in **D**eveloping **E**xcellence . . . in Maintenance. If your organization has this kind of PRIDE, you must make an investment to evaluate your opportunities for maintenance improvement and develop your Scoreboard for Maintenance Excellence.

APPENDIX
Background Information

TOMPKINS ASSOCIATES: Supply Chain Excellence

Tompkins Associates is the global leader in Total Supply Chain Solutions for operations consulting, technology implementation, and integration. For nearly three decades, Tompkins has provided expertise in warehousing, logistics, procurement, inventory, manufacturing, organizational excellence, quality, and maintenance.

Tompkins Associates is headquartered in Raleigh, N.C., and has offices throughout the United States and in the UK, continental Europe, Mexico, and Australia. Worldwide, Tompkins helps clients succeed through a combination of focused knowledge of best practices and tailored solutions. Tompkins prepares businesses to harness the energy of continuous change to achieve Supply Chain Excellence.

Tompkins Associates understands your unique needs. Tompkins' supply chain expertise helps clients work seamlessly with their supply chain partners to provide the service they need to satisfy their customers. No other firm has the capability to melt the links in your supply chain-taking you from business as usual to collaboration to velocity.

Tompkins provides solutions that are faster than fast.

Our publishing arm, Tompkins Press, delivers the knowledge today's business leaders need. Tompkins consultants have written more than 500 industry articles and given more than 3,000 presentations worldwide. As a result, Tompkins Press has the inside track on the supply chain issues facing businesses today as well as the issues they'll deal with tomorrow. We're an aggressive publisher of leading edge, pro-technical, user-friendly books and audio products.

Tompkins focuses on delivering results–integration of your supply chain, a more profitable costs-to-revenue ratio, enhanced customer satisfaction, greater operations reliability, and the release of trapped capital. Our results speak for themselves, with over 70 percent of our business coming from past clients.

Begin your journey to Supply Chain Excellence. Tompkins Associates will make it all happen.

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