

COS-3-07

GUIDANCE FOR THE DEVELOPMENT OF AN EFFECTIVE CRANE MAINTENANCE TRACKER (CMT)

JUNE 2021



**SEMS AUDIT &
CERTIFICATES**



**DATA COLLECTION,
ANALYSIS & REPORTING**



**GOOD PRACTICE
DEVELOPMENT**



**SHARING INDUSTRY
KNOWLEDGE**

SPECIAL NOTES

API publications necessarily address issues of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed. The use of API publications is voluntary. In some cases, third parties or authorities having jurisdiction may choose to incorporate API publications by reference and may mandate compliance.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

Users of this standard should not rely exclusively on the information contained in this document. Work sites and equipment operations may differ. Users are solely responsible for assessing their specific equipment and premises in determining the appropriateness of applying the guidance. At all times users should employ sound business, scientific, engineering, and judgment safety when using this guidance.

API is not undertaking to meet the duties of employers, manufacturers, or suppliers to warn and properly train and equip their employees, and others exposed, concerning health and safety risks and precautions, nor undertaking their obligations to comply with authorities having jurisdiction.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to ensure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

TABLE OF CONTENTS

- 1. SCOPE/APPLICATION1**
- 2. INFORMATIVE REFERENCES1**
- 3. INTRODUCTION.....1**
- 4.KEY ELEMENTS OF A CRANE MAINTENANCE TRACKER (CMT) 3**
 - Identifying Information 3
 - Types of Maintenance 4
 - Timeline / Due Dates / Schedule 5
 - Accountability 5
 - Notes 5
 - Records and Documents 6

1. SCOPE/APPLICATION

This guidance provides companies engaged in offshore operations with a framework for the establishment, implementation, and maintenance of a Crane Maintenance Tracker (CMT) to manage and reduce risks associated with inspecting and maintaining offshore crane equipment.

This guidance applies, in part or whole, to companies engaged in offshore operations, from lease evaluation through decommissioning.

Although this guidance is written for offshore crane maintenance tracking operations, its principles can be applied to other offshore maintenance operations after performing an engineering and management analysis. This guidance is intended for general use and is not intended to serve as legal advice or satisfy any regulatory obligations to establish a maintenance program.

2. INFORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this document. For each document listed here and throughout this document, the most recent edition should be referenced (unless an earlier version is mandated by applicable regulations).

API Spec 2C, *Offshore Pedestal Mounted Cranes*

API RP 2D, *Operation and Maintenance of Offshore Pedestal Cranes*

3. INTRODUCTION

This document describes the elements of a Crane Maintenance Tracker (CMT) for offshore operations, focusing on the purpose and minimum expectations for each element. In reviewing this document, the focus should be on assuring that the applicable elements and their expectations are addressed, rather than on the formatting, organization, or order of the elements and expectations.

This document is not intended to be prescriptive or limiting on the expectations of each element; rather, it allows flexibility appropriate to the size, scope, and risk of a Company's pedestal mounted cranes and operations. It is advised that users of this document review and comply with applicable legal and regulatory requirements and conform with applicable industry codes and standards.

Once the CMT is established and implemented, it should be maintained and periodically reviewed to facilitate continual improvement. Consideration should be given to using this document to help systematically manage the maintenance of other aspects of operations beyond cranes.

Listed above in Informative References, API Recommended Practice (RP) 2D, *Operation and Maintenance of Offshore Cranes* is a detailed resource with information about inspection cycles, testing, critical components, etc. Therefore, this CMT guidance will not cover those topics, but will instead focus on the elements of a system to track identified crane maintenance needs and completions.

4. KEY ELEMENTS OF A CRANE MAINTENANCE TRACKER (CMT)

A CMT can vary greatly in terms of complexity, from a hand-written spreadsheet to elaborate, custom-designed software packages. The level of complexity is determined by a number of factors – number and types of cranes, scope of operations, etc. Despite these varying levels an effective CMT will, at a minimum, have many of the same elements:

- Identifying Information
- Type of Maintenance
- Timeline / Due dates / Schedule
- Accountability
- Notes / Commentary
- Records and Document Control System

IDENTIFYING INFORMATION

LOCATION

The location of each crane should be tracked: geographic location, facility / vessel name, location on the facility / vessel. This information should be detailed enough so that a crane professional new to the operation should be able to correctly locate and identify the crane.

SERIAL NUMBER

Serial numbers for each crane and all component parts, as appropriate, should be recorded on the CMT. This will allow for the tracking of specific equipment over the life of the crane. The CMT should be regularly updated to reflect replacement components / equipment.

COMPONENT LIST

The crane owner should understand the critical components for each crane and the CMT should track the condition, the expected lifespan, maintenance, and replacement schedules. The CMT should be based on procedures to identify, track, maintain, or replace critical components in accordance with the original equipment manufacturer (OEM) recommendations, API standards, or other regulatory requirements.

In addition to tracking critical components, the CMT should also track other necessary parts / equipment for the safe and successful use of the crane: lubricants, filters, belts, etc.

Consideration should be given to development of a risk-based ranking for determining the criticality of each component for spares inventory and preventative maintenance strategy. This risk-ranking should be based on one or more of the following:

- Impact on reliability / safety of the crane and overall operations if this component needed repair or replacement.
- Availability / Lead-time to get replacement component.
- Crane Manufacturer and other qualified-source recommendations, such as an API 2C-licensed crane manufacturer, or an engineer experienced in the design of the crane, as determined by the crane owner.

CRANE USAGE CATEGORY¹

The CMT can also track Crane Usage categories which can allow the crane owner to maintain and inspect the crane based on a duty cycle versus a strict time limit. Changes to usage category may result in changes to inspection and maintenance requirements.

If a crane owner chooses to not track crane usage, the crane should default to the heavy usage category.

- Infrequent Usage – used for ≤ 10 hours per month, based on 3-month average.
- Moderate Usage – used for > 10 hours but < 50 hours per month, based on 3-month average.
- Heavy Usage – used for ≥ 50 hours per month, based on 3-month average.

TYPES OF MAINTENANCE

PREVENTIVE MAINTENANCE

A Preventive Maintenance (PM) program should be established by the crane owner, taking into consideration crane type, frequency of usage, history of maintenance, and manufacturer's recommendations. For additional guidance, see API Recommended Practice 2D, *Operation and Maintenance of Offshore Cranes*.

CORRECTIVE MAINTENANCE / REPAIRS AND REPLACEMENTS

Corrective Maintenance (CM) should be centered on the testing and inspections performed as part of the PM program. The CMT should track the results of inspections along with any identified deficiencies.

Deficiencies refers to any conditions that in any way compromise the proper performance and / or safe operation of the crane. The CMT should include information on the risk level posed by deficiencies. The crane owner's risk appetite will determine these levels; based on likelihood of occurrence vs severity of consequence. Below is a generic example of using risk to determine the immediate course of action:

- Minor deficiency: Recommend deficiency be addressed before deficiency is likely to progress into a medium or major deficiency. Poses no safety and / or environmental risk. The crane can still be operated at full duty. Monitor crane deficiency while in operation to ensure it does not progress to a Medium deficiency.
- Medium deficiency: Recommend deficiency be addressed before deficiency is likely to progress into a major deficiency. Recognize that this deficiency has **potential** to impact the environment, crane operations and / or safety systems that may result in crane de-rating or damage to equipment, its surroundings and / or environment. The crane can still be operated at restricted duty. Monitor crane deficiency while in operation to ensure it does not progress to a Major deficiency.
- Major deficiency: Recommend the crane be removed from duty and / or locked / tagged out until the deficiency is mitigated.

CMT should track deficiencies, timelines for repair / replacement, and status of repair / replacement.

¹See also API RP 2D *Operation and Maintenance of Offshore Cranes* for additional information on Crane Usage Categories.

CMT should also track that the repairs/replacements have been inspected or otherwise verified, as applicable, before the crane is placed back in service.

TIMELINE / DUE DATES / SCHEDULE

As stated above, CMT should track timelines for repair/replacement. The timeline information should allow a viewer at-a-glance to ascertain the status of repairs including, but not limited to:

- Date maintenance ordered
- Anticipated date for receipt of replacement parts or components
- Anticipated downtime to complete required maintenance or repairs
- Whether Crane is in- or out-of-service while awaiting required maintenance or repairs
- Date maintenance completed

The CMT should also include a frequency schedule and record of completions for routine/preventive maintenance and inspections. Depending on the task or inspection, the frequency should comply with API RP 2D and regulatory requirements.

ACCOUNTABILITY

This element of a CMT should include the personnel/positions at all levels of a company who are responsible for the proper execution of preventive and corrective crane maintenance, including verification prior to return-to-service. Following required inspections and testing, for each maintenance task the CMT should track who is responsible for:

- Ordering maintenance tasks to be completed
- Ordering/supplying necessary parts/equipment
- Executing repairs or preventive maintenance
- Verifying repairs or preventive maintenance have been completed and the equipment is again fit-for-purpose.

Some CMT will track these responsibilities by job title, others will track by individual personnel. Whichever is appropriate for a company's scope of work, the key is that everyone knows who is accountable and who to contact/follow-up with if work is not complete or not sufficient.

NOTES

An effective CMT can be seen as a record of the life-cycle of a Crane allowing the viewer to understand its history. The CMT should include any notes or commentary necessary to allow a crane professional new to the location or equipment to understand the history, status, and condition of the Crane.

RECORDS AND DOCUMENTS

This element describes the process for managing necessary Crane Maintenance records and documentation, which may include:

- Procedures and/or processes for implementing, maintaining, and managing an effective Crane Maintenance program
- Procedures and/or processes for executing specific crane maintenance tasks – installation or replacement of equipment, testing requirements, etc.
- Inspection and Testing results
- Replacement component and parts lists.

The company's documentation control process should address the following:

- Location of records
- Format of records
- Retention requirements





