

## **Observations on Implementing A Planned Maintenance System**

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### **What Does Planned Maintenance Look Like?**

The thought of creating a planned maintenance system can be daunting. Many maintenance managers believe that they must develop an entire “master plan” before implementing planned maintenance at all. However, this is not the case. In a moment, you will see just how easy creating a planned maintenance plan can be.

The following steps outline the general process for creating a planned maintenance plan. We recognize that each organization has unique goals for their PM program. The process described here serves as a starting point for developing a PM plan, and can be adapted to fit an organization’s requirements.

### **Step 1: Refer to or Create an Asset List**

An effective preventive maintenance plan starts with a good idea of what needs to be maintained. As a first step, create a list of all assets for which you are responsible if one does not already exist. Capture key details about each asset such as:

- Manufacturer
- Name
- Internal asset code
- Description
- Location
- Make and/or model
- Serial number
- Acquisition date
- Current usage or age
- Current condition
- Original cost
- Criticality
- Last maintenance event
- Next maintenance event
- Other details as necessary

The asset list creates a point of reference for any preventive maintenance work completed on the asset, and should be updated throughout the asset’s life. We have moved from the use

spreadsheets to build the asset database, and use specialized asset management software, like a computerized maintenance management system (CMMS). We use the system known as SINEX.

### **Step 2: Identify Which Assets to Include in the Planned Maintenance Program**

With a full list of assets available, you must decide which ones are the best candidates for preventive maintenance. Not every asset benefits from planned maintenance though – sometimes PM costs outweigh the cost to replace the asset. The PM program typically includes an organization's critical assets, which can be identified in a few ways.

In most organizations, critical assets are well-known. Larger organizations with rigorous asset management practices identify critical assets through formal cost-benefit analyses, criticality analyses, or return-on-investment (ROI) calculations. Others use asset data stored in a CMMS or other system to identify assets with high downtime, high maintenance costs, or frequent repairs that would benefit most from planned maintenance.

A less formal way of determining which assets to include in the PM program is to consider each asset and ask questions like:

How important is this asset to the success of the organization?

How often is maintenance performed on this asset?

Is this asset performing to specification?

How much does it cost to repair this asset versus replace it?

The answers to these questions should make it clear whether preventive maintenance is required.

If you are starting to worry that you will not have time to create a PM plan for each critical asset, relax. You do not have to create a PM plan for every asset right from the get-go. Start with a subset of assets, like the one or two most critical assets from the list. Easing into a planned maintenance program in this way gives you and your team time to adjust to a proactive mindset. You can always expand the program later.

### **Step 3: Identify Preventive Maintenance Tasks**

Once you select the initial assets, you must define what planned maintenance needs to be done to them. Knowing the scope of work to be done helps with scheduling and resource allocation. There are multiple sources of information from which to draw preventive maintenance information:

Manufacturer recommendations, included in operation and maintenance manuals

Maintenance history

Operators, maintenance technicians, and regular asset users

Previous preventive maintenance schedules, if available

Recommendations of professional organizations such as:

Institute of Electrical and Electronics Engineers (IEEE)

Instrument Society of America (ISA)

American Society of Mechanical Engineers (ASME)

Planned maintenance activities to meet compliance and regulatory requirements

General familiarity with the assets or other cues, such as autumnal seasonal maintenance for facility maintenance

Be sure to determine the parts and materials, tools, skill level required, and best practices associated with each task. Safety considerations, such as lockout/tagout procedures, should also be included. A clear idea of the required resources helps you determine time estimates for each task.

### **Step 4: Determine Maintenance Frequency**

With planned maintenance, each asset needs to be serviced regularly. PM tasks follow time-based or usage-based intervals. Time-based PM tasks may occur daily, weekly, monthly, quarterly, semi-annually, or annually. Usage-based frequencies can be based on runtime hours, fuel burn, or other runtime measurements. Refer to the resources mentioned in the previous step for information regarding a task's frequency.

### **Step 5: Create the Planned Maintenance Schedule**

Now that you know what assets need to be maintained, how to maintain them, and how often they should be maintained, you can create a schedule. While you can use any system you like, it is best to enter PM program data into a maintenance planning tool like a CMMS. For our CMMS system we use SINEX.

A CMMS makes it easy to enter task information, including frequencies and time estimates. Then, you can create PM work orders that include details such as the assets and parts, appropriate labor resources, priority, and due date. One major benefit of using a CMMS is the ability for the system to automatically alert the maintenance team when preventive maintenance is needed on a machine, reducing the chances of work being missed, lost, or ignored.

### **Step 6: Train Your Maintenance Team**

A well-designed plan and maintenance management system alone cannot make your planned maintenance program a success. The “real” work is done by frontline technicians, who must know how to execute the plan. Train technicians on how to perform tasks, as well as how to use the tools, instruments, and technology needed to capture and document information.

In addition, create policies around what to do when a PM task reveals an issue. For example, should technicians contact a supervisor, submit a service request, or create a corrective maintenance work order? Do workers have the freedom to resolve small issues as part of an inspection? Also consider a policy for what to do if a PM task is not completed.

### **Step 7: Monitor and Adjust**

Your planned maintenance plan will not be perfect the first time. That is why it is crucial that your team logs their maintenance activities and asset performance in a CMMS. Use this data to track key performance indicators (KPIs) and generate maintenance reports that will help you optimize your plan.

An effective PM program brings visibility to assets that require more attention and leads to scheduling changes. Do not panic if, at first, maintenance costs go up. Planned maintenance activities are likely to reveal hidden issues, especially on assets that have been neglected. Also, you may pay more now to avoid larger, more costly unplanned maintenance events in the future.

### **Step 8: Expand the Planned Maintenance Program to Include More Assets**

After planned maintenance is off and running with your first set of assets, expand the program. Repeat the steps provided for each new asset until you cover all assets that will benefit from preventive maintenance.

### **Final Thoughts about Planned Maintenance Programs**

Creating a preventive maintenance program does not happen overnight. It takes time, money, effort, and in some cases, a change in maintenance culture to transition from a reactive to a proactive mindset. However, once in place, the advantages of a CMMS-supported PM program are well worth it.

CMMS software provides many benefits for PM activities. The system allows you to create and maintain a list of your assets and related information, making it easy to identify critical assets. PM task functionality allows you to define the steps that make up a preventive maintenance procedure, including how often the task should be completed, how long the task takes, and who should perform it. Automatic work order generation and notification ensures that employees are aware of upcoming planned maintenance work.

Since we have implemented the SINEX program with the ferries, we have seen reliability of the ferries increase. Yes, there was an increase in cost at first as well as a learning curve. However, we have seen our USCG annual inspections result in fewer discrepancies with some of the inspections noting less than 3 discrepancies. With the flexibility of the SINEX system we are able to tailor our maintenance program with not only manufacturers recommendations but with those inspections that are laid out in Sub-Chapter H. Our goal with the ferries is to be able to enroll in the USCG Streamline Inspection Program, thus limiting our down time.

**Remember if you allow your operations to drive your maintenance plan, your maintenance will drive your operations.**