Written by John Rasberry, Measured Maintenance Management Consultants, Inc
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A new equipment project that is properly designed, installed, and operated can be efficiently maintained post commissioning.

When a project installs new equipment in a plant, mill, or an oilfield, whose job is it to set up the preventive and predictive maintenance activities that ensure the post commissioning equipment life cycle reliability?

Whose job is it to set up the startup and sustaining repair parts inventory to ensure the availability of the equipment through short mean-time-to-repair?

Whose job is it to ensure the maintenance staff receives all of the technical information associated with the new equipment?

Whose job is it to identify and ensure fulfillment of maintenance training requirements needed to effectively support the new equipment?

These questions are asked repeatedly in all industrial environments. Following failure of recently installed equipment, management usually asks the questions. They want to know why the maintenance organization cannot quickly and effectively restore the equipment to operation.

Everyone has a different answer

The answer to the “whose job is it” question almost always depends upon whom you ask.

If you ask the project prime contractor, the response will be that the responsibility rests with the owner. Most construction/installation contracts only require the contractor to deliver copies (usually three) of drawings, equipment manuals, cut sheets, and other bits and bytes of technical information. The contractor deliverable, if any, is often a box containing technical data that is not indexed and may or may not contain all information needed to effectively maintain the equipment. Buried in the box may be equipment bills of materials but no recommendations for startup or sustaining repair parts.

Sometimes, the box marked for maintenance never arrives and is searched for only following an equipment failure. Many contracts are written for delivery of technical information several weeks post commissioning. So, not having technical information at equipment startup is not unusual.

Do not expect the project engineer to accept responsibility; he or she is focused on completing the project on time and within budget. His or her efforts are devoted to systems and equipment installations and commissioning. What happens post commissioning is not a concern.

Maintenance by default

The prime contractor is not responsible, the project engineer does not have responsibility, and therefore, by default, responsibility flows to the facility's maintenance organization. Its expectations are that someone else is taking care of the issues raised above. Maintenance staffers are waiting for the equipment care information to be provided in some fashion. Just give them a list of maintenance requirements and a schedule and they will respond.

Parts identification and stocking becomes a maintenance issue only when needed parts cannot be found. Personnel training on how to properly maintain the equipment is an unknown until the dedicated maintenance person is faced with an equipment failure at 2 a.m. on a holiday and has neither the technical information, training, or personal knowledge to effect repairs.

Getting all of the requisites in place for post commissioning equipment care has a cost. In management's view, this is new equipment and therefore should not be failing so why make an investment in preventive maintenance activities or stocking of expensive repair parts or acquiring technical training—at least not now.

This lack of ownership to provide technical data, preventive and predictive maintenance activities, parts or special tools, and training leaves maintenance between the proverbial rock and a hard place. When the first equipment failure occurs, the department is woefully prepared to respond but respond it will to the best of its ability.

The technical documentation needed to troubleshoot the problem is not available, the parts or special tools to correct the failure once identified are not available, and lastly, the expertise to

conduct the repair may not be available. If the organization is thinking straight, the right thing to do in this circumstance is to call in the factory technical representatives to make the repairs. But, too frequently, maintenance charges ahead with good intent and may cause more harm than good including voiding factory warranties.

Find the person in control

So, before we get ourselves into the situation described above, let us attempt to answer the question of "whose job is it." Some of you are not going to agree with the answer provided but here it is—the job belongs to the project engineer, project manager, project coordinator, or however you describe the position of ultimate responsibility to see the project through to completion. From this point forward that position will be identified as the project engineer.

Why the project engineer? The simple answer is this is the one individual in CONTROL. It is his ultimate responsibility to deliver a fully functional installation. How can an installation be described as fully functional if post-completion life cycle maintenance requirements have not been identified and properly provisioned?

To be fair to the project engineer, we must go back to the beginning of the project design and the writing of the contract. The contract should contain the requirements for the prime contractor to provide:

• All drawings and technical documentation (fully indexed and as much on disc as possible)
•Recommended post-installation routine maintenance requirements (preventive and predictive tasks)
•Recommended repair parts for both start up and sustaining operations
•Training for both operations and maintenance personnel

Granted, the focus of most contractors is not the business of meeting these requirements but there are many third party maintenance management-consulting companies offering this expertise. The cost and details of meeting these requirements should be part of the project bid and proposal.

Set up a project team

The project engineer should not be alone in ensuring the success of this endeavor. First and

foremost, a project team must be assembled to assist the project engineer in addressing all of the issues raised above.

The project team includes the project engineer (lead), prime contractor representatives (including any third party maintenance management subcontractor), company maintenance representatives, company operations representatives, company training representatives, and equipment manufacturer representative(s) for new technology introduction. The team-developed project plan identifies each participant's roles and accountabilities and sets the timeline for completion. See accompanying section " Summary of Roles and Accountabilities of Project Team ."

As an example of project team work, technical documentation that describes the manufacturer's recommended preventive and predictive maintenance activities and repair parts recommendations is directed to the maintenance representative for review as the equipment is being validated. The task for the maintenance representative is to evaluate the manufacturer's recommendations and meld them into the existing maintenance requirements and parts inventory, identify any gaps, and provide recommendations to the project engineer to fill the gaps. Identification of new maintenance requirements sets the baseline for determining if existing personnel resources are adequate for maintaining the new equipment.

The maintenance representative also will work with the training representatives and equipment manufacturer representatives to identify technical training requirements from new technology introduction. The edited manufacturer's recommendations and new training requirements are returned to the project engineer for final action. The company maintenance representative should expect to be fully engaged in final action activities.

New equipment installations that are properly provisioned for post commissioning care provide the opportunity to achieve the inherent equipment reliability and availability and the expected return on investment. Following the guidelines above will help ensure that a project that is properly designed, installed, and operated will be efficiently maintained post commissioning. **MT**

John Rasberry is an independent maintenance management consultant at Measured Maintenance Management Consultants, Inc., 3001 Waterway Blvd., Isle of Palms, SC

29451-2426; (843) 886-3468

Summary of Roles and Accountabilities of Project Team

Project engineer: Delivery of a fully functional system including:
- Operability (meets design specifications)
- Maintainability (PM, PdM, special tools, and test equipment)
- Logistically (parts and spares)
- Training and training materials for maintenance and operations

Prime contractor: Coordination, collection, and delivery of all technical data
- Drawings and technical manuals
- Recommendations for startup and sustaining parts and spares
- Recommendations for preventive and predictive maintenance activities
- Training and training materials for maintenance and operations

Operations representative: Provide operations input
- Provide operability input into project design and installation
- Evaluate the need for operations training, identify requirements to training group
- Ensure all operations information (procedures) is available and fully tested

Equipment manufacturer: Provide recommendations for
- Startup and sustaining parts and spares
- Preventive and predictive maintenance activities
- Operations and maintenance training

Maintenance group: Review and evaluate equipment manufacturer's recommendations for
- Startup and sustaining parts and spares
- Preventive and predictive maintenance activities

Evaluate the need for maintenance training, identify requirements to training group

Provide maintainability input into project design and installation

Contracts: Include in contract timely delivery of

- Drawings and technical manuals
- Recommendations for startup and sustaining parts and spares
- Recommendations for preventive and predictive maintenance activities
- Training and training materials

Training: Identify and coordinate delivery of all project training requirements

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