The Locomotive

Equipment Operator Activities –
Your Preventive Maintenance Program

By James F. Wainwright, Inspector, The Hartford Steam Boiler Inspection and Insurance Company

Introduction
Business and industry as well as large institutional facility managers are under continual budgetary pressures to minimize overhead cost that may include items such as staffing, training and preventive maintenance practices. The results of budget reduction items may severely impact the equipment operational reliability — to such an extent that the initial savings may result in a financial hardship not covered by insurance or emergency contingency funding, placing the entire enterprise at risk.

The purpose of this article is to offer a practical guide of how, what, where, and when provided by proactive human intervention that should be part of a comprehensive facility equipment preventive maintenance program.

The Need for Preventive Maintenance
Equipment is generally manufactured with a high degree of quality control, designed by certified engineers, and produced using well-suited materials that afford a maximum extended trouble-free service life. This is not to imply that equipment should be operated without any periodic observation, as well as adjustment or service offered by knowledgeable and experienced operators.

All equipment manufacturers recognize that there are recommended frequent intervals of operational condition verification and routine preventive maintenance actions. These actions are required to maintain peak performance and to ensure warranty provisions.

How Can Equipment Operators Help?
Operators: They are closest to the equipment and are often highly skilled and well trained. One of the greatest challenges is how does an operator effectively communicate to supervisors and managers what they take for granted — that equipment requires continual periodic preventive maintenance and observation to ensure the most reliable service life.

Suggestion: As an operator, you must look at the equipment along with the required observation and maintenance from the non-operators’ perspective. Ask yourself, how is what I’m spending benefiting the organization?

Action Steps: Here are action steps to follow as it applies to your equipment installation.

1. Acquire, catalogue and file manufacturers’ operation/maintenance manuals for each piece of equipment at your facility.
2. Become familiar with equipment, including:
   - Normal operational characteristics,
   - Daily/weekly/monthly/quarterly/semiannual/annual checklists,
   - Trouble shooting,
   - Preventive maintenance.
3. Prepare a log sheet and/or check list (if one does not exist).
4. Establish time and frequency requirements for items on the checklist.
5. Create a pre-emergency plan for equipment failure contingencies.
6. Review and update on an annual basis items 1 through 5.

You should communicate on a regular basis both verbally and in written reports to your supervisory and management personnel the successful results of your preventive maintenance efforts. Point out any upcoming challenges that will have to be addressed in the very near future. Remember to practice responding to the types of questions listed in the suggestion paragraph above.

**What To Consider When Setting Priorities**

Priorities: Establish a list of the most critical equipment and its supporting machinery. This allows you to focus on what can stop production, what can cause power to fail, and which boilers or pressure vessels may trigger a disastrous property loss or potential injuries should their controls fail.

By establishing this priority list, you demonstrate to management that your concerns are in line with theirs — to keep the plant in production, have a backup or standby for an emergency, have a pre-emergency plan that allows for a minimum downtime and least disruption to normal operations. A priority list of equipment must be periodically reviewed.

**Action Steps:** Here are action steps to follow in creating a list of critical equipment and its supporting machinery:

1. Begin with the utilities, including electricity, water, air, steam, and others.
2. Look at a piece of equipment or component. If this broke down, what would happen?
3. If the answer to No. 2 is not acceptable in order to keep the business operating, then consider what types of things could occur to cause a problem.
4. For each thing that could occur establish a method to either avoid the problem (such as check the oil level daily, change the oil monthly) or provide an equipment reliability alternative (install connections for a rental unit, purchase a spare gear set, acquire a second compressor).
5. Document your pre-emergency plan and file it with either the maintenance office or watch/security service station.
6. Include a listing of the following contacts, with business, home, cellular, facsimile and pager telephone numbers, as well as business, home and e-mail addresses:
   - In-house repair personnel,
   - Outside service technicians,
   - Special machine shop and/or foundries,
   - Manufacturers' service representatives,
   - Various sub-component suppliers,
   - Special rigging/crane/trucking services.
7. Walk through the emergency scenario to work out any potential oversights.
8. Review/update pre-emergency plans annually.

**Where Do You Apply Your Pre-Emergency Plan?**

**Working Together:** An effective equipment operator will look beyond their immediate responsibilities and offer service in other areas of the facility to ensure that machinery failures do not paralyze the operation. In addition, there may be other divisions or sister operations that can share equipment and/or personnel in the event of an emergency. This provides an opportunity to learn from one another as well as to better prepare your facility for handling emergencies.

**Action Steps:** Here are action steps to follow to help determine where to apply your pre-emergency plan:

1. As you tour the facility, ask what could go wrong with this equipment that may result in stopping the business.
2. As you think about the overall business, its parent corporation and other divisions within the organization,
3. Incorporate the critical equipment and support machinery in your pre-emergency plan as it fits within your location.

4. Periodically review these types of questions (Nos. 1-2 above) to ensure that you may not be relying on a potential spare piece of machinery at a business that is no longer owned by the parent corporation. Also, the equipment in other parts of your facility that may not be your direct responsibility may have been discontinued or possibly replaced with more critical machinery.

When Do You Apply Your Pre-Emergency Plan?

Proactive: It is always better to be proactive. Don’t wait for supervisory and management personnel to begin the process of disassembling the staff and reassigning duties that drastically affect proper equipment operation and preventive maintenance.

Action Steps: Here are action steps to follow to help you determine when to apply your equipment operation, preventive maintenance, and pre-emergency plan:

1. Immediately assess the equipment scope of responsibility.
2. If manufacturers’ equipment manuals are missing, obtain replacement manuals.
3. Follow by establishing good engineering practices for monitoring equipment operation, providing routine preventive maintenance, and responding to emergencies.
4. Continue to prepare or update job descriptions and accountabilities that include the duties and significance of equipment if it should fail to perform as it was designed.
5. Communicate on a daily/weekly/monthly basis to your supervisor and management the results of your accountabilities — include one or two specific examples of where equipment breakdown was avoided and how much money was saved.
6. Insert yourself in the planning process with respect to equipment major repair or replacement. Offer alternative solutions to major purchase decisions that can potentially save substantial investment dollars to be reallocated elsewhere.

Summary

Operators can and must continue to play the pivotal role in ensuring that equipment does not break down, or at the very least, when it does there is minimal impact on the overall operation of the facility. In order to meet this goal, the operator must lead by taking charge of the equipment for which they have responsibility. They must demonstrate how effective their role is in saving the business time and money by properly operating and maintaining the machinery.

For More Information

When you need assistance with equipment operation and pre-emergency planning, you can visit Hartford Steam Boiler’s web site at www.hsb.com, dial HSB’s toll-free Fax-On-Demand service at 1-800-716-7874, or call the HSB Inspection Hotline at 1-800-333-INSP (4677) for questions about the operation and inspection of boilers and pressure vessels. HSB’s web site has links to The Locomotive online (www.hsb.com/thelocomotive) and other technical articles and documents relating to many types of equipment. Fax-On-Demand offers a wide range of technical information, including several frequently requested documents in Spanish.

About the Author

James (Jim) F. Wainwright has 30 years experience as an inspector for The Hartford Steam Boiler Inspection and Insurance Company. Jim has assisted HSB with loss prevention, risk analysis, investigations, customer service, internal procedures and training, and engineering system development applications. He served in the U.S. Navy as a machinery operator aboard nuclear-powered submarines and assisted in the shipyard retrofits of two submarines.