

that maintenance feedback can improve on the original design. In addition, RCM recognizes that a difference often exists between the perceived design life and the intrinsic or actual design life, and addresses this through the Age Exploration (AE) process.

- e) RCM is driven by safety and economics. Safety shall be ensured at any cost; thereafter, cost-effectiveness becomes the criterion.
- f) RCM defines failure as any unsatisfactory condition. Therefore, failure may be either a loss of function (operation ceases) or a loss of acceptable quality (operation continues).
- g) RCM uses a logic tree to screen maintenance tasks. This provides a consistent approach to the maintenance of all kinds of equipment.
- h) RCM tasks shall be applicable. The tasks shall address the failure mode and consider the failure mode characteristics.
- i) RCM tasks shall be effective. The tasks shall reduce the probability of failure and be cost effective.
- j) RCM acknowledges three types of maintenance tasks. The tasks are Interval (Time or Cycle) Based and Condition-Based and Run-to-failure. In RCM, Run-to-Failure is a conscious decision and is acceptable for some equipment.

### **3.5.3 RCM Requirements Analysis**

RCM determines maintenance requirements by considering the following questions:

- a) What does the system do? What is its function?
- b) What failures are likely to occur?
- c) What are the likely consequences of failure?
- d) What can be done to reduce the probability of the failure, identify the onset of failure, or reduce the consequences of the failure?

Appendix A provides a decision logic tree for use in an RCM analysis to determine the type of maintenance appropriate for a given maintainable asset/equipment item. Note that the logic as presented results in a decision in the bottom blocks concerning whether a particular piece of equipment should be reactively maintained ('Accept Risk' and 'Install Redundant Units'), managed ('Define PM Task and Schedule') or predictively maintained ('Define PT&I Task and Schedule').

### **3.5.4 Identify the System Functions**

This step involves examining the capability or purpose of the system. Some items, such as a circulating pump, perform an on-line function (constantly circulating a fluid); their operational state can be determined immediately. Other items, such as a sump pump, perform an off-line function (intermittently evacuating a fluid when its level rises); their condition can be ascertained only through an operational test or check. Functions may be active, such as pumping a fluid, or passive, such as containing a fluid. Also, functions may be hidden, in which case there is no immediate indication of a failure. This typically applies to an emergency or protective system such as a circuit breaker that operates only in case of a short circuit (electrical failure of another system or component).