4.4.3 Identify the Failure Process

Determining the methods and root causes of failures provides insight into ways to detect or avoid failures. The examination, which investigates the cause of the problem and not just its effect, should consider factors such as wear, overload, fatigue, or other processes.

4.4.4 Verify the System

Before efforts are expended on a system, it is important to verify that the system was installed or is being used as originally designed. This review of the design and Maintenance Support Information (MSI) may reveal the root cause of a past or anticipated problem. Although the existing design may have been correct, the installation, while functional, may have been improper or there may have been latent manufacturing defects. These deficiencies should be discovered and corrected by the contractor during the acceptance process, before the DMAT accepts the equipment and the contractor leaves the job site. If, after acceptance, the installation is still under warranty, the problem may be resolved without an additional expenditure of DMAT / Consultant resources. Changes in the intended use of equipment can also create problems leading to excessive wear and premature failure.

4.4.5 Modify the System

Redesigning the system to eliminate the weakness may be the most desirable solution since it can eliminate a potential cost. However, redesign may not be possible in many O&M situations.

4.4.6 Root Cause Failure Analysis

In all cases when, for whatever reason, a major equipment item, system or process is not able to deliver its design performance, the Contractor is to consider that equipment item, system or process failed, and shall initiate an investigation to determine the root cause(s) of that failure. At the minimum, each investigation shall accomplish the following:

Identify what specific function of the equipment item, process or system is failing to meet design performance.

4.4.7 Possible causes and/or conditions causing performance failure

Determine whether or not the failure could have been prevented cost effectively.

Initiate cost effective barriers to future failure such as:

- Preventive (scheduled parts replacement) maintenance
- Predictive (vibration, heat, oil analysis) maintenance for wear related failures
- Install safeguards (screens, filters, and pressure relief) for failures caused by outside forces.
- Institute training for failures caused by improper installation or adjustment
- Troubleshooting drain failures