Failure Mode Analysis Summary

Definition

A **failure mode** is any event that causes a functional failure. It describes how an asset fails to perform its intended function.

Documenting Failure Modes

When documenting failure modes, you should:

1. List the functional failures first (loss of function)
2. Then record the failure modes that cause each functional failure
3. Use specific descriptions with at least a noun and a verb
4. Use precise verbs instead of generic terms like "fails" or "breaks"
5. Provide enough detail to develop a strategy without excessive analysis

Example Structure

| **Function** | **Functional Failure** | **Failure Mode** |
| --- | --- | --- |
| To transfer water from tank X to tank Y at not less than 800 liters/min | A: Unable to transfer any water at all | 1: Bearing seized |
|  |  | 2: Impeller comes adrift |
|  |  | 3: Impeller jammed on foreign object |
|  | B: Transfers less than 800 liters per minute | 1: Worn impeller |
|  |  | 2: Partially blocked suction line |

Importance of Failure Mode Analysis

* A single machine can fail for dozens of reasons; an entire plant could have tens of thousands of possible failures
* Day-to-day maintenance is managed at the failure mode level
* Maintenance meetings typically focus on what has failed, causes, repairs, and prevention
* Proactive maintenance requires identifying likely failure modes before they occur
* Identifying failure modes is essential for developing systematic proactive maintenance strategies

By analyzing failure modes properly, maintenance teams can shift from reactive to proactive management of physical assets.