

## **Mazda Multi-Discipline Problem Solving Process Objectives**

The **8 Disciplines (8D) Process** is a problem management tool popularly used in responding to customer returns or issues. Its effectiveness stems from the fact that it incorporates all the important aspects of problem management, i.e., containment of the problem, root cause analysis, problem correction and problem prevention.

Mazda subscribes to 7 of the 8 Disciplines and the output is the Mazda Multi-Discipline Problem Solving Report, the format of which follows the steps of the 8D Process. Below is the basic outline of the Mazda Multi-Discipline Problem Solving Report as used in the Customer Service Division - Supply Chain group:

### **Discipline 1. Describe the Problem/Non-conformance**

This step involves a detailed assessment of the problem highlighted by the customer. Under this step, the Mazda Multi-Discipline Problem Solving Report provides background information on and a clear picture of the problem being highlighted by the customer. It should include the following details: a) the identity of the customer; b) a description of the customer application; c) device information (device, package, lot #, date code, etc.; d) when the problem was encountered; e) where the problem was encountered; f) a specific description of the failure mode; and g) failure rate.

### **Discipline 2. Emergency Response / Actions Taken**

This step involves making sure the negative impact to the customer created by the described problem is minimized to the extent possible within 24-48 hours of receiving the Mazda Multi-Discipline Problem Solving Report. This step may require an emergency set-up of a manufacturing line or expedited transportation to provide customer with immediate product availability.

### **Discipline 3. Contain the Problem**

This discipline applies primarily to part manufacturing defects or problems and explains the extent of the problem and bounds it. Based on initial problem investigation, all lots or Purchase Orders that are potentially affected by the same problem must be identified and their locations pinpointed. If possible, specific lot #'s, Purchase Orders and/or date codes of potentially affected lots shall be enumerated in this portion of the report.

Lots that are still in the factory must be put on hold until their reliability has been properly assessed. They must only be released if the lots are either proven to be clean or the failures may be effectively screened.

If the problem has an extremely high reliability risk and the application of the product is critical (e.g., failure of the product is life-threatening), lots already in the field may need to be recalled. However, recall must only be done under extreme cases wherein the impact of reliability risk is greater than the impact of recall.

#### **Discipline 4. Identify the Root Cause**

This 8D Process step consists of performing the failure analysis and investigation needed to determine the root cause of the problem. The corresponding portion in the Mazda Multi-Discipline Problem Solving Report documents the details of the root cause analysis conducted. A detailed description of the actual failure mechanism must be given, to show that the failure has been fully understood.

The root cause is then presented, showing how it triggered the failure mechanism identified. All events emanating from the root cause and leading to the failure mechanism must be included in the explanation. As much evidence as possible must be provided to show that the root cause is the real culprit behind the problem. The root cause must also be correctively actionable.

#### **Discipline 5. Formulate and Verify Corrective Actions**

This next discipline identifies all possible corrective actions to address the root cause of the problem. The owners of the corrective actions and the target dates of completion shall be enumerated in this section of the report. It is also suggested that the rationale behind each corrective action be explained in relation to the root cause.

Sometimes, identification of the best corrective action(s) for the root cause requires preliminary evaluations and studies before they can be implemented. This is referred to as 'verification of the corrective actions. This must be done especially in cases wherein the affected volume is very large, since an incorrect solution deployed over a large inventory will result in wastage of crucial time and money.

#### **Discipline 6. Correct the Problem and Confirm the Effects**

The sixth discipline of the 8D Process involves the actual implementation of the identified corrective actions, details of which must be documented in the corresponding portion of the Mazda Multi-Discipline Problem Solving Report. The dates of completion and owners of the corrective actions must be shown in this section. Data showing that the corrective actions are effective in preventing the root cause of the problem must be presented. Any deficiency in the effectiveness of the corrective actions must be addressed by improvements in or additions of corrective actions.

#### **Discipline 7. Prevent Re-Occurrence of the Problem**

This next discipline should not be confused with 'correcting' the problem. Prevention of the problem entails the identification of devices or packages that are similarly vulnerable to the same problem highlighted by the customer, even if not affected under the current situation. Actions necessary to prevent these from being affected by a similar problem in the future are called preventive actions. All preventive actions must be enumerated, along with their owners and target dates of completion.

An important aspect of this discipline is the standardization and deployment of corrective actions or process improvements to all products that may possibly be subjected to the same issue.