Common Questions

What is the Purpose of this FMEA Handbook?

This FMEA Handbook introduces Failure Mode and Effects Analysis (FMEA) as defined by the Society of Automotive Engineers (SAE) and gives specific requirements for FMEAs at Ford Motor Company. Any italicized text quotes the SAE J1739 (Revised August 2002) standard.

You can use this FMEA Handbook:

• To learn the basics of FMEA
• As a reference tool, after training
• To assist in the writing, preparation, review, and editing of FMEAs

This FMEA Handbook is also intended to be used as a guide in deploying the Special Characteristics Operating System: i.e., to assist Ford engineering teams worldwide to identify product/process characteristics important to product safety, regulatory conformance, and customer quality. Specifically, the FMEA Handbook is intended to help deploy the policy and principles embodied in Ford Automotive Procedure – FAP 03-111.

Can this FMEA Handbook be Given to Suppliers?

This FMEA Handbook is available through FSN/FSP. Suppliers are encouraged to use it as a reference when they create FMEAs for Ford systems, sub-systems, and components.

Excerpts from this FMEA Handbook are also available on the Ford Intranet at:
http://www.quality.ford.com/cpar/fmea/

What Does this FMEA Handbook Contain?

This FMEA Handbook contains instructions for preparing an FMEA, and answers the What, Why, When, Who and How regarding FMEA methodologies. This FMEA Handbook shows how to conduct three types of FMEAs:

• Design FMEA
• Process FMEA
• Concept FMEA

Additionally, special applications of the three FMEA types are presented as examples. These special applications are machinery, environment, and software.

Continued on next page
Common Questions, Continued

What Does this FMEA Handbook Contain? (Continued)

This FMEA Handbook provides additional Ford-specific information for the creation of FMEAs. The most notable areas to reference are:

- Concept FMEA
- Designations for the Classification column
- Reduced emphasis on RPN, emphasis on Severity, the Severity times Occurrence (Criticality), then RPN (Severity x Occurrence x Detection)
- The inclusion of Robustness Tools in the FMEA process

Can the Guidelines Given in this FMEA Handbook be Supplemented?

This FMEA Handbook introduces the topic of potential FMEA and gives general guidance in applying the technique. FMEA techniques are continually being improved. Additional actions to improve the FMEA techniques may be implemented by the people preparing the FMEA. However, these actions should not undermine FMEA objectives.

FMEA Handbook Provenance

This FMEA Handbook is consistent with the SAE Recommended Practice, SAE J1739 – "Potential Failure Mode and Effects Analysis in Design (Design FMEA) and Potential Failure Mode and Effects Analysis in Manufacturing and Assembly Processes (Process FMEA), and Potential Failure Mode and Effects Analysis for Machinery (Machinery FMEA)" revision.

DaimlerChrysler, Ford Motor Company, and General Motors jointly developed the first release of this practice under the sponsorship of the United States Council for Automotive Research (USCAR). SAE J1739 gives general guidance in the application of the technique. DaimlerChrysler, Ford Motor Company, and General Motors representatives to the SAE have worked together to complete the latest revision of the SAE standards dated August 2002.

For more information or for a copy of J1739, visit:
http://www.sae.org/

Continued on next page
Common Questions, Continued

What Can I Read to Obtain More Background on FMEAs?

Ford/GM/DaimlerChrysler  Advance Product Quality Planning and Control Plan Reference (APQP)
Ford/GM/DaimlerChrysler  Quality System-9000 (QS-9000)
AIAG  http://www.aiag.org/  
SAE  http://www.sae.org/  
FMEA website:  http://www.quality.ford.com/cpar/fnea/

Where Can I Find More Information on Special Characteristics?

FAP 03 –111 – Selection and Identification of Significant and Critical Characteristics. Throughout Sections 2 through 5 of this handbook, the term Special Characteristics is used to denote those designated characteristics like YC and YS in DFMEA and V (sometimes referred to as CC) and SC in PFMEA. Refer to Section 6 for detailed discussion of these and other types of Special Characteristics.

Why does the Handbook Need a Revision?

- Keep the handbook consistent with the industrial standard - new SAE J1739 was published in August, 2002, and a 2-column design control FMEA form is recommended.
- Improve the quality of the handbook - many recommendation, suggestions, and corrections have been received from experts, engineers, and suppliers since the publication of the previous version. The revision focused on achieving:
  o better flow of the contents;
  o better and clearer examples, definitions, and procedures; and
  o elimination of the inconsistencies and errors.

What’s New in the 2004 Update?

The Version 4.1 minor update includes cosmetic updates and addition of an index. The Version 4.0 update included the following changes:

The FMEA flow chart has been updated according to FAP 07-005 - Vehicle Program Quality/Reliability/Robustness Planning. The new chart not only illustrated the information flow in the process of FMEA development, but also defines the role of FMEA in the failure modes avoidance. FMEA focuses on preventing mistakes, while as the Robustness Engineering Design Product Enhancement Process (REDPEPR) focuses on improving product robustness.

Continued on next page