

CQI-14

Automotive Warranty Management: A Guideline for Industry Best Practices

3rd Edition

»» Insight

»» Expertise

»» Results



The **Catalyst** for Peak Performance



This is a preview of "AIAG CQI-14:2018". [Click here to purchase the full version from the ANSI store.](#)



CQI-14

Automotive Warranty Management

Version 3, 2nd Printing, Issued April, 2018



ABOUT AIAG

Purpose Statement

Founded in 1982, AIAG is a globally recognized organization where OEMs and suppliers unite to address and resolve issues affecting the worldwide automotive supply chain. AIAG's goals are to reduce cost and complexity through collaboration; improve product quality, health, safety and the environment; and optimize speed to market throughout the supply chain.

AIAG Organization

AIAG is made up of a board of directors, an executive director, executives on loan from member companies, associate directors, a full-time staff, and volunteers serving on project teams. Directors, department managers, and program managers plan, direct and coordinate the association's activities under the direction of the executive director.

AIAG Projects

Volunteer committees focus on business processes or supporting technologies and methodologies. They conduct research and develop, publish, and provide training on standards, conventions, standard business practices, white papers, and guidelines in the areas of automatic identification, CAD/CAM, EDI/electronic commerce, continuous quality improvement, health focus, materials and project management, occupational health and safety, returnable containers and packaging systems, transportation/customs and truck and heavy equipment.

AIAG PUBLICATIONS

An AIAG publication reflects a consensus of those substantially concerned with its scope and provisions. An AIAG publication is intended as a guide to aid the manufacturer, the consumer and the general public. The existence of an AIAG publication does not in any respect preclude anyone from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the publication.

CAUTIONARY NOTICE

AIAG publications are subject to periodic review and users are cautioned to obtain the latest editions.

MAINTENANCE PROCEDURE

Recognizing that this AIAG publication may not cover all circumstances, AIAG has established a maintenance procedure. Please refer to the Maintenance Request Form at the back of this document to submit a request.

Published by:

**Automotive Industry Action Group
26200 Lahser Road, Suite 200
Southfield, Michigan 48033
Phone: (248) 358-3570 • Fax: (248) 358-3253**

APPROVAL STATUS

The AIAG Quality Steering Committee, the OESA Warranty Management Council and designated stakeholders approved this document for publication in April, 2015.

AIAG COPYRIGHT AND TRADEMARK NOTICE:

© 2015 Automotive Industry Action Group, except that copyright is not claimed as to any part of an original work prepared by a U.S. or state government officer or employee as part of the person's official duties.

Except as noted above, all rights are reserved by AIAG and no part of these materials may be reproduced, reprinted, stored in a retrieval system, or transmitted, in any form or by any means, electronic, photocopying, recording, or otherwise, without the prior written permission of Automotive Industry Action Group. Copyright infringement is a violation of federal law subject to criminal and civil penalties.

AIAG and Automotive Industry Action Group are registered service marks of the Automotive Industry Action Group. Automotive Industry Action Group makes no claim to any trademark of a third party. Trademarks of third parties included in these materials are the property of their respective owners.



ABOUT OESA

Purpose Statement

Founded in 1998, the Original Equipment Suppliers Association (OESA) is a trade group that serves original equipment suppliers in the North American automotive industry. Membership encompasses suppliers of components, systems, modules, materials and equipment used throughout the industry. With over 400 member companies having global annual automotive sales exceeding \$300 billion, OESA represents companies with more than 70 percent of North American automotive supplier sales.

OESA Mission

OESA advances the business interests of automotive original equipment suppliers by providing a forum to address issues of common interest, serving as a resource for industry information and analysis, promoting the interests of the OE supplier community, and serving as a voice and positive change agent for the industry.

OESA Organization

OESA is operated by a skilled professional staff and management team, and is overseen by a board of directors made up of 25 industry leaders selected from the OESA membership. OESA is a market segment association of the Motor and Equipment Manufacturers Association, which leads OESA's lobbying activities in Washington, D.C.

OESA Projects

Each year, OESA hosts numerous industry events and individual town hall meetings with OEM customers. In addition, OESA operates 13 peer group councils, including a Warranty Management Council that addresses commercial and operational issues regarding the reduction of warranty incidents. The council is open to senior executives responsible for warranty at OESA regular member companies. For more information, visit the councils section of <http://www.oesa.org>.

Original Equipment Suppliers Association
1301 W. Long Lake Road, Suite 225
Troy, Michigan 48098
Phone: (248) 952-6401 • Fax: (248) 952-6404
<http://www.oesa.org>



FOREWORD

In December 2006, members of the AIAG Quality Steering Committee and the OESA Warranty Management Council approved an AIAG-OESA Consumer-Centric Warranty Management project. In February 2007, two sub-committees began work on: 1) warranty manual development and 2) No Trouble Found (NTF) reduction strategies.

The defined deliverable for the combined project team was this guideline, *Consumer-Centric Warranty Management: A Guideline for Industry Best Practices*. This guideline, when coupled with applicable customer specific requirements, is intended to be an industry-wide suggested approach for managing warranty processes with the consumer in mind. Best practices were identified and developed based on the collective experiences of team members in the North American, automotive original equipment, light vehicle market. Team members believe these concepts could be applied to other vehicle markets or industries. *It is highly recommended that the entire supply chain support the implementation of CQI-14 for the full benefit and improved performance to be realized.*

Consumer-Centric Warranty Management: A Guideline for Industry Best Practices has its roots in an OESA document, *The Suppliers Practical Guide to Warranty Reduction*, published in November 2005. Although the joint project team agreed that the OESA document provided a solid foundation, the team also agreed that greater value could be realized for all industry stakeholders if warranty management was approached from the consumer's point of view. This newer guideline is intended to accomplish that goal. It also includes a visualization of recommended processes and a number of case studies that highlight the guideline's suggested approaches.

The project was designed to drive value through increased consumer satisfaction from the implementation of recommended best practices by some or all of the industry stakeholders. The team considered infrastructure and resource challenges necessary to support warranty management throughout the supply chain. Results of implementation may include: warranty incident reduction, reduced warranty costs, increased efficiency of resources, higher consumer loyalty, increased vehicle residual values and a more positive industry image.

With warranty impact receiving high levels of visibility both inside the industry and in the general public, the AIAG Quality Council and the OESA Warranty Management Council determined that self-assessment to this guideline was a highly recommended proactive step required to help in the reduction of warranty incident rates as well as a step needed to strengthen public trust in the automotive industry. Additionally, a more detailed OEM section has been added to this guideline to reflect the steps that the OEM can take to help the supply chain and its own organization address warranty issues more effectively.



CQI-14
Automotive Warranty Management
Version 3, 2nd Printing, Issued April, 2018



FOREWORD TO AUTOMOTIVE WARRANTY MANAGEMENT, CQI-14, 3RD EDITION

In the spirit of continuous improvement coupled with the experience gained from the 1st and 2nd edition, CQI-14 has been revised to simplify the assessment and eliminate redundancies, and to include references to current technologies being used today in the automotive industry.

Assessment tool revisions include recognition of areas of responsibility, enhanced scoring adjustments and revised reporting formats.

The CQI-14 Consumer-Centric Warranty Management document has been renamed to *Automotive Warranty Management* to clarify the intent of the guideline.

With the implementation of these changes, the CQI-14 1st and 2nd editions are obsolete.

<p>Note: Subject material is to be used as a guideline. Requirements are defined by individual OEMs and suppliers. This guideline does not replace or supersede customer specific requirements.</p>



ACKNOWLEDGEMENTS

AIAG and OESA appreciate the contributions put forth by the many individuals that shared their ideas, discussed their own practical experiences and reviewed the numerous drafts of this document. Many of the ideas raised by the reviewers have also been incorporated in the text. The following individuals from the joint project team dedicated considerable time and effort to the cause:

Paul AbernathyFederal-Mogul Corporation
Charles BarnesToyota Motor Engineering and Manufacturing North America, Inc.
Gregg Brinks.....FCA US LLC
James Bruin.....FCA US LLC
John ChalifouxOriginal Equipment Suppliers Association
Joel ColomboGeneral Motors Corporation
Peter Cooney.....General Motors Corporation
Krista CoyMetaldyne Corporation
Mike Da SilvaMagna International Inc.
Steven DouglasDENSO International America, Inc.
Larry DreslinskiMagna International Inc.
Dennis Froehlich.....Robert Bosch LLC
Dale HaganDura Automotive Systems, Inc.
Kevin Kelly.....Continental Corporation
Dan Kim.....Toyota Motor Engineering and Manufacturing North America, Inc.
David MimmsToyota Motor Engineering and Manufacturing North America, Inc.
Dan PatteraBorgWarner, Inc.
Mike Roberts.....Ford Motor Company
Dan Roche.....ArvinMeritor, Inc.
Dave Sakata*Freudenberg-NOK General Partnership
Craig SellmanDelphi Corporation
Jan Tucker.....Bosal International North America
Mary Kay Watson.....Brose North America, Inc.
Frank WhiteGKN Driveline North American, Inc.
Pamela Wyatt.....ArvinMeritor, Inc.

* Chairman



ACKNOWLEDGEMENTS FOR CQI-14, 2ND EDITION

AIAG and OESA appreciate the contributions put forth by the many individuals that shared their ideas and practical experiences, while reviewing the numerous drafts of this document. The following individuals dedicated time and effort to the Consumer-Centric Warranty Management, 2nd edition:

Core Members:

Gregg Brinks FCA US LLC
Dennis Froehlich Robert Bosch LLC
Jan Tucker Bosal International North America
Steven Douglas DENSO International America, Inc.

Supporting Members:

Charles Barnes Toyota Motor Engineering and Manufacturing North America, Inc.
James Bruin FCA US LLC
John Chalifoux Original Equipment Suppliers Association
Dave Sakata Freudenberg-NOK General Partnership
Mike Roberts Ford Motor Company

ACKNOWLEDGEMENTS FOR CQI-14, 3RD EDITION

The following individuals dedicated time and effort to the Automotive Warranty Management, 3rd edition:

Core Members:

Paul Abernathy Federal-Mogul Corporation
Emila Aganovic Lacks Enterprises
Gregg Brinks FCA US LLC
Peter Chhim Tenneco
Michael Hirt ADAC Automotive
John Pitt Lacks Wheel
Dave Sakata Freudenberg-NOK General Partnership
Craig Sellman Delphi Corporation

Supporting Members:

Mark Alexander Ubiquiti Inc.
Charles Barnes Toyota Motor Engineering and Manufacturing North America, Inc.
Bill English FCA US LLC
Dennis Froehlich Robert Bosch LLC
Mike Roberts Ford Motor Company
Kevin Timmerman Johnson Controls, Inc.
Daniel Underwood Nissan North America
Gary VanWagoner Magna International Inc.



TABLE OF CONTENTS

ABOUT AIAG	1
ABOUT OESA	2
FOREWORD	3
FOREWORD TO AUTOMOTIVE WARRANTY MANAGEMENT, CQI-14, 3RD EDITION	4
ACKNOWLEDGEMENTS	5
ACKNOWLEDGEMENTS FOR CQI-14, 2ND EDITION	6
ACKNOWLEDGEMENTS FOR CQI-14, 3RD EDITION	6
TABLE OF CONTENTS	7
INTRODUCTION: WHY AUTOMOTIVE WARRANTY MANAGEMENT?	11
1. ESTABLISHING THE BASELINE: INTRODUCTION TO WARRANTY	15
1.1 BENCHMARK THE WARRANTY MANAGEMENT PROCESS	15
1.2 SENIOR MANAGEMENT	16
1.3 GAIN ACCESS TO APPROPRIATE DATABASES	16
1.4 GAIN ACCESS TO WARRANTY RETURN PARTS	17
1.5 LINK WARRANTY RETURNED PARTS TO DATA	17
1.6 ESTABLISH METRICS WHEN MONITORING AND DISTRIBUTING WARRANTY INFORMATION	17
1.7 ESTABLISH ROOT CAUSE METHODOLOGY	17
1.8 COMMERCIAL COMMITMENTS	18
2. CONSUMER EVENT AND DEALERSHIP ACTIVITIES	21
2.1 CONSUMER PRESENTS A CONCERN	21
2.2 DEALER DOCUMENTS THE CONSUMER CONCERN	21
2.3 DEALER VERIFICATION OF CONSUMER CONCERN	21
2.4 DEALER DECIDES TO REPAIR	22
2.5 A DECISION IS MADE NOT TO REPAIR UNDER WARRANTY	22
2.6 DEALER FACILITATES REPAIR	22
2.7 DEALER DOCUMENTS WARRANTY CLAIM	23
2.8 DEALER REVIEWS REPAIR WITH CONSUMER	23
2.9 CLAIM IS ENTERED INTO OEM WARRANTY SYSTEM	23
2.10 REPLACED PART DISPOSITION FOLLOWING THE REPAIR	23
3. PROACTIVE PREVENTION: LESSONS LEARNED IN PRE-PROGRAM ACTIVITIES	27
3.1 USE PAST PROGRAM THINGS-GONE-WRONG	27
3.2 USE SURROGATE PROGRAMS	28
3.3 USE PAST QUALITY PERFORMANCE	28
3.4 USE DESIGN AND PROCESS FAILURE MODE AND EFFECTS ANALYSIS (FMEA)	29
3.5 USE RELIABILITY, DURABILITY, AND MANAGED CHANGE INFORMATION	29
3.6 REVIEW RECALLS AND CAMPAIGNS FROM GOVERNMENT AND/OR OTHER RELEVANT SOURCES	30
3.7 DESIGN FOR SIX SIGMA (DFSS)	30
3.8 PROGRAM RISK FACTORS	34
3.9 SUPPLY CHAIN ACTIVITIES	35
3.10 OEM SUPPLIER TRAINING FOR POTENTIAL NEW TIER 1 SUPPLIERS	35
4. IMPLEMENTING LESSONS LEARNED: ADVANCED PRODUCT QUALITY PLANNING (APQP)...	37
4.1 USE INPUTS FROM PRE-PROGRAM/LESSONS LEARNED TO DRIVE FAILURE MODE EFFECTS ANALYSIS AND DESIGN VALIDATION PLAN AND REPORT	37



CQI-14
Automotive Warranty Management
 Version 3, 2nd Printing, Issued April, 2018



4.2 CONDUCT DESIGN REVIEW BASED ON TEST RESULTS AND FAILURE MODES (DRBTR AND DRBFM)	38
4.3 DESIGN ROBUST ASSEMBLY, INSPECTION, DIAGNOSIS, AND REPAIR PROCESSES	38
4.4 APPLY DESIGN OF EXPERIMENTS FOR PROBLEM-SOLVING	38
4.5 USE END OF LIFE INSPECTION FOR CONSUMER USE POINTS	39
4.6 IDENTIFY ALL OEM/TIERED CUSTOMER ASSEMBLY CONNECT POINTS, TORQUE VERIFICATION AND IMPACT	39
4.7 DEVELOP PLANT AND DEALER TRAINING PROGRAMS	40
4.8 DEVELOP SERVICE MANUAL PROCEDURES	40
5. CONTAINING WARRANTY ISSUES: POST-START OF PRODUCTION	41
5.1 PROACTIVELY RECOVER AND ANALYZE EARLY FIELD RETURNS AND RELIABILITY TEST PARTS	42
5.2 APPLY HIGH-LEVEL ELECTRONIC WARRANTY DATA ANALYSIS	42
5.3 DEEP DIVE CLAIM DATA ANALYSIS	43
5.4 APPLY PARTNER ORGANIZATIONS PLANT AUDITS/RELEASE ENGINEERING INPUTS	44
5.5 OBTAIN, MONITOR, CONTROL FIELD RETURNS AND ANALYZE REMOVED PARTS	44
5.6 INTERFACE WITH TECHNICAL CALL CENTERS FOR PRODUCT ISSUES	45
5.7 REVIEW CONCERNED VEHICLE STUDY AT THE DEALER	45
5.8 GAIN ACCESS TO VEHICLES	46
5.9 CONTAINING THE PARTS PIPELINE	47
6. PREVENTING FUTURE WARRANTY EVENTS: ACTIONS/SOLUTIONS	49
6.1 SHARE ANALYSIS RESULTS WITH PARTNER ORGANIZATIONS TO SUPPORT IMPROVEMENT ACTIONS	49
6.2 UPDATE SUPPLIER AND PARTNER ORGANIZATION’S FAILURE MODE AND EFFECTS ANALYSIS (FMEA), CONTROL PLANS AND OTHER QUALITY / ENGINEERING DOCUMENTS	49
6.3 UPDATE REPAIR PROCEDURES INCLUDING TECHNICAL SERVICE BULLETINS (TSBs), SERVICE MANUALS, IMPROVED DIAGNOSTIC TOOLS, AND CALL CENTER DIAGNOSTIC PROCESSES	50
6.4 PROVIDE KIT PARTS FOR OPTIMAL WARRANTY PERFORMANCE	50
6.5 MANAGE EARLY WARNING INDICATORS AND SYSTEMS	50
6.6 IDENTIFY ROOT CAUSES BEHIND NO TROUBLE FOUND (NTF)	51
6.7 SUPPLY CHAIN ACTIVITY	53
6.8 LOOK-ACROSS IMPROVEMENT IMPLEMENTATION	53
7. CONTINUOUS IMPROVEMENT: INSTITUTIONALIZING THE PROCESS	55
7.1 IDENTIFY POTENTIAL IMPROVEMENT TARGETS (ATTACK HIGHEST PARETO CHART ITEMS)	55
7.2 MONITOR EARLY WARNING SYSTEMS	55
7.3 CLOSING THE WARRANTY MANAGEMENT LOOP	55
8. AUTOMOTIVE WARRANTY MANAGEMENT ASSESSMENT	61
8.1 HOW TO PERFORM THE CQI-14 ASSESSMENT	62
8.2 HOW TO GET STARTED	62
8.3 SCORING	66
8.4 REPORTING DISCIPLINE	67
8.5 ASSESSMENT FORMATS	68
APPENDIX SECTION I: EXAMPLE OF FAILURE MODE AND EFFECTS ANALYSIS (FMEA)	71
APPENDIX SECTION II: EXAMPLE OF DESIGN VALIDATION PLAN AND REPORT (DVP&R)	72
APPENDIX SECTION III: EXAMPLE OF DESIGN REVIEW BASED ON TEST RESULTS (DRBTR)	73
APPENDIX SECTION IV: EXAMPLE OF DESIGN REVIEW BASED ON FAILURE MODE (DRBFM)	74
APPENDIX SECTION V: MANUAL AND NTF CASE STUDIES	76
WATER LEAKS AND WIND NOISE (ZZ01)	77
SLOW MOVING GLASS (ZZ02)	79
AIR/FUEL SYSTEM MISFIRE (ZZ05)	81



CQI-14
Automotive Warranty Management
 Version 3, 2nd Printing, Issued April, 2018



O ₂ SENSORS INOPERATIVE (ZZ06)	83
FUEL DELIVERY SYSTEM WARRANTY INVESTIGATION (ZZ07)	85
INOPERATIVE POWER WINDOW SYSTEM (ZZ08)	87
NTF CASE STUDY – AFTERMARKET MODIFICATIONS (ZZ09)	89
DEALER TRAINING – INTERMITTENT FAULT CONDITIONS (ZZ10)	91
LOOSE SHIFT LEVER (ZZ11)	93
REPLACE TRANSMISSION SOLENOIDS FOR WEAR (ZZ12)	95
TRANSMISSION LOSS OF DRIVE (ZZ13)	97
POWER FOLDING MIRRORS (ZZ15).....	99
TRANSMISSION FLUID LEAK (ZZ17)	101
REAR SEAL / MAIN BEARING CAP LEAK (ZZ18).....	103
HEATED SEAT INOPERATIVE (ZZ20).....	105
DOOR OUTER BELT MOLDING MISALIGNMENT (ZZ21)	107
OEM OUTSIDE REAR VIEW MIRROR (OSRV) VIBRATION (ZZ22)	109
WINDOW REGULATOR MOTOR INOPERATIVE (ZZ23)	111
TAIL LAMP WATER INGRESS (ZZ24)	113
POWER TRACK FLEX SHAFT (ZZ30)	115
DEAD BATTERY DUE TO PROLONGED STORAGE AT DEALERSHIP (ZZ39)	117
SHIFT HESITATION DUE TO ENGINE COMPUTER SOFTWARE (ZZ40)	120
TIRE PRESSURE MONITORING SYSTEM (TPMS) POOR CAPTURE RATE (ZZ41)	123
APPENDIX SECTION VI: REDUCING RISK ON A GLOBAL PLATFORM LOCALIZATION PROJECT (ZZ19)	125
REDUCING RISK ON A GLOBAL PLATFORM LOCALIZATION PROJECT (ZZ19).....	125
APPENDIX SECTION VII: DEEP DIVE ANALYSIS (ZZ29).....	127
VALUE CHAIN MEMBERS: OEM/TIER 1 SUPPLIER/TIERED SUB-SUPPLIERS	127
APPENDIX SECTION VIII: DEFINITIONS AND ACRONYMS.....	129
APPENDIX SECTION IX: RESOURCES AND LINKS.....	137



CQI-14
Automotive Warranty Management
 Version 3, 2nd Printing, Issued April, 2018



Table of Figures

FIGURE 2: WARRANTY MANAGEMENT PROCESS	19
FIGURE 3: WARRANTY CLAIM PROCESS FLOW	24
FIGURE 3: WARRANTY CLAIM PROCESS FLOW (CONTINUED).....	25
FIGURE 4: AUTOMOTIVE WARRANTY MANAGEMENT GUIDELINE SECTIONS.....	26
FIGURE 5: DESIGN FOR SIX SIGMA (INCLUDING NEXT 2 PAGES).....	32
FIGURE 6: EFFECTIVE PROBLEM-SOLVING PROCESS	41
FIGURE 7: NO TROUBLE FOUND (NTF) DECISION TREE ANALYSIS TOOL	52
FIGURE 8: WARRANTY MANAGEMENT CLOSED LOOP PROCESS FLOW.....	57
FIGURE 9: NTF DECISION TREE ANALYSIS TOOL EXTENSION.....	59
FIGURE 11: WATER LEAKS AND WIND NOISE (ZZ01)	78
FIGURE 12: SLOW MOVING GLASS (ZZ02)	80
FIGURE 13: AIR / FUEL SYSTEM MISFIRE (ZZ05)	82
FIGURE 14: NO TROUBLE FOUND O ₂ SENSORS (ZZ06).....	84
FIGURE 15: FUEL DELIVERY SYSTEM WARRANTY INVESTIGATION (ZZ07)	86
FIGURE 16: POWER WINDOW SYSTEM WARRANTY INVESTIGATION (ZZ08).....	88
FIGURE 17: AFTERMARKET MODIFICATIONS (ZZ09).....	90
FIGURE 18: DEALER TRAINING – INTERMITTENT FAULT CONDITIONS (ZZ10)	92
FIGURE 19: LOOSE SHIFT LEVER (ZZ11)	94
FIGURE 20: REPLACE TRANSMISSION SOLENOID FOR WEAR (ZZ12).....	96
FIGURE 21: TRANSMISSION LOSS OF DRIVE (ZZ13)	98
FIGURE 22: POWER FOLDING MIRRORS (ZZ15).....	100
FIGURE 23: TRANSMISSION FLUID LEAK (ZZ17)	102
FIGURE 24: REAR SEAL / MAIN BEARING CAP (ZZ18)	104
FIGURE 25: HEATED SEAL INOP (ZZ20).....	106
FIGURE 26: DOOR OUTER BELT MOLDING (ZZ21)	108
FIGURE 27: OEM OUTSIDE REAR VIEW MIRROR VIBRATION (ZZ22)	110
FIGURE 28: WINDOW REGULATOR MOTOR FAILURE (ZZ23).....	112
FIGURE 29: TAIL LAMP WATER LEAK (ZZ24).....	114
FIGURE 30: POWER TRACK FLEX SHAFT (ZZ30)	116
FIGURE 31: EXAMPLE: CLAIM RATE VS. STORAGE TIME CORRELATION STUDY.....	117
FIGURE 32: DEAD BATTERY DUE TO PROLONGED STORAGE AT DEALERSHIP (ZZ39).....	119
FIGURE 33: SHIFT HESITATION DUE TO ENGINE COMPUTER SOFTWARE (ZZ40).....	122
FIGURE 34: TIRE PRESSURE MONITORING SYSTEM POOR CAPTURE RATE (ZZ41)	124
FIGURE 35: CLAIMS DATA ANALYSIS (ZZ29)	127



INTRODUCTION: WHY AUTOMOTIVE WARRANTY MANAGEMENT?

Automobile manufacturers, their suppliers, and their dealers profit from increased production and sales volumes and reduced operating costs. However, consumer satisfaction and value, as defined by the consumer, are the real long-term drivers of individual company performance. So when a consumer experiences difficulty with his or her vehicle, the experience impacts that consumer's perception of, and satisfaction with, not only the vehicle but the selling and/or servicing dealership and the vehicle manufacturer. In some cases, the reputation of the supplier is also at stake. Therefore, the reduction of field warranty claims is critical to improving consumer satisfaction, as measured by short-term initial quality and long-term vehicle durability and reliability.

As the industry continues to globalize its vehicle production and component sourcing footprint, the industry becomes more complex and warranty terms become longer term and more comprehensive. It also becomes increasingly important to have the ability to prevent, or quickly and effectively resolve, warranty issues so there is no recurrence in the same or future models.

This guideline is designed to promote advances in consumer satisfaction and continuous warranty improvement by providing a recommended, robust warranty management program that instills a consumer-centric approach in warranty management. This approach begins with the end consumer in mind, providing tactics, techniques, and case studies for all constituencies, particularly vehicle manufacturers and their suppliers. The guideline is organized in steps that partner organizations can take to proactively reduce warranty incident rates and risks associated with warranty events.

The intended value for key industry stakeholders includes:

- Consumers will benefit by realizing the reduced incident rates and faster detection-to-correction times that the deliverables, which are targeted for use by OEMs and suppliers, are intended to achieve.
- OEMs can “make it happen” and will benefit from reduced costs and improved quality, production volumes and profit. OEMs will use the project deliverables.
- Suppliers of all tiers, sizes and products can “make it happen” and will benefit from reduced costs and improved quality, which will lead to becoming or remaining suppliers of choice and increased production volumes and profit. Suppliers will use the project deliverables.
- Dealers will benefit from increased consumer satisfaction and brand loyalty. Dealers, although not directly involved, may use the project deliverables.

The guideline includes a visualization of recommended processes and case studies that document how companies have successfully implemented these processes. These examples have been included to provide the basis for understanding actions necessary for success, particularly for smaller suppliers that may not have extensive resources to address such warranty activities.

For readers familiar with the automotive industry, there is a common term called No Trouble Found (sometimes called “Trouble Not Found” or “No Fault Found”). It is widely used at OEMs, suppliers, and even at dealerships. Because high levels of No Trouble Found diagnoses are generally recognized as key inhibitors to effective warranty resolution, this guideline provides a recommended methodology for addressing issues as seen from the perspective of key constituencies, i.e., OEMs, suppliers, and dealers.

In practice, there can be more than one meaning to the term “No Trouble Found.” Generally speaking, one common meaning refers to the situation where a dealer is not able to reproduce a consumer concern,



CQI-14
Automotive Warranty Management
Version 3, 2nd Printing, Issued April, 2018



e.g., when a consumer has an issue with an engine noise and the dealership concludes there is “No Trouble Found.” The more common definition applies to a part that is removed from a vehicle and subsequently found to be “good,” based on dimensional and normal functional evaluation test methods. The authors of this report believe the first term is better referred to as “Consumer Concern Not Duplicated” or CCND. The latter term fits the more standard industry definition of “No Trouble Found” or NTF. While CCND is a recognized source of consumer dissatisfaction, the project team limited the scope of its work in this area to NTFs. This scope was driven by the reduced influence the OEMs and other supply chain partners have on this initial dealer assessment. However, monitoring of such CCND conditions is recommended as a possible input to a NTF concern and subsequent improved diagnostic approaches that would benefit both the dealer and the consumer.

CCND – Consumer Concern Not Duplicated – The designation applied to a consumer concern that, when investigated by the dealer service organization, cannot be reproduced. This does not discount the concern; rather, it indicates that the condition(s) that caused the concern was not reproduced and/or no data were captured by the in-vehicle diagnostic system indicating such a concern.

NTF – No Trouble Found – The designation applied to a part (component, system, or module) replaced during a service event that, when analyzed by the vehicle or parts manufacturer, meets all requirements of a “good part.” This does not discount the concern; rather, it indicates that the condition(s) that caused the concern was not a) reproduced or identified in the statement of requirements, b) qualification tests did not challenge the component sufficiently, c) no data were captured by the in-vehicle diagnostic system or part intelligence system indicating such a concern and/ or d) the true causal part was not correctly identified, so the wrong part was replaced.

Consumer satisfaction is a key objective for all stakeholders in the warranty management process. Other key objectives include reducing incident rates, mitigating risk, and reducing financial exposure.

Based on these objectives, the authors have defined Automotive Warranty Management as follows:

A focus on claim rate reduction that aligns all value chain organizations to collaboratively and continuously approach warranty improvement through best practices, recommended tools, and a root cause culture.

Note that the general principles described in this document, while related to automotive terminology, could be applied to other industries.