Presentations from the 12th Equipment Management Workshop
Presentations from the 12th Equipment Management Workshop

August 2-5, 1998
Austin, Texas

Sponsored by Committee on Equipment Maintenance

TRANSPORTATION RESEARCH BOARD
National Research Council

In cooperation with
TEXAS DEPARTMENT OF TRANSPORTATION

TRB Committee A3C08, Equipment Maintenance
John M. Burns, Jr., Chair

Edward H. Adams
Dwight R. Berkey
Andre D. Clover
Ronald D. Doemland
Van M. Frazier

William H. Gooch
Glenn R. Hagler
Hugh L. Hax
Richard W. Hunter
Thomas H. Maze

Doug Nielsen
A. Essam Radwan
Leland D. Smithson
Arlen T. Swenson
Walter J. Tennant, Jr.

Frank N. Lisle, Transportation Research Board Staff

Subscriber Category
IHC maintenance

Transportation Research Board
National Research Council
2101 Constitution Avenue, NW
Washington, DC 20418

The Transportation Research Board is a unit of the National Research Council, a private, nonprofit institution that is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. Under a congressional charter granted to the National Academy of Sciences, the National Research Council provides scientific and technical advice to the government, the public, and the scientific and engineering communities.

The Transportation Research Board is distributing this Circular to make the information contained herein available for use by individual practitioners in state and local transportation agencies, researchers in academic institutions, and other members of the transportation research community. The information in this Circular was taken directly from the submissions of the authors. This document is not a report of the National Research Council or of the National Academy of Sciences.
Foreword

Equipment managers in public and private organizations are responsible for all aspects of providing a diversified fleet of motorized equipment. Factors of concern to equipment managers include cost control, preventive maintenance, repair shop productivity, employee training and motivation, equipment replacement decisions, inventory control, commercial driver licenses, alternative fuels, environmental safety, privatization, electronically controlled diesel engines, and other related topics. Twelve Equipment Management Workshops have been conducted since 1976 to provide a continuing forum for the exchange of new ideas and developments in maintenance and management of equipment fleets.

The 12th Equipment Management Workshop was sponsored by the Transportation Research Board Committee on Equipment Maintenance in cooperation with the Texas Department of Transportation, in Austin, Texas, August 2–5, 1998. The proceedings of this Workshop are included in this Circular and are structured around the following topics:

- Improving Equipment Through Research
- Human Resource Management
- New Challenges—New Approaches
- 21st Century Fleet Management
- Alternative Fuels

Equipment research issues identified by workshop participants are being reviewed and expanded upon by members of the Committee on Equipment Maintenance for publication as research problem statements in future TRB Circulars. Planning is ongoing for the 13th Equipment Management Workshop scheduled for October 2000 in Sacramento, California.
Contents

SECTION I: IMPROVING EQUIPMENT THROUGH RESEARCH

**From Concept to Reality:**
*Advanced Technology and the Highway Maintenance Vehicle*
Duane Smith, *Iowa State University* .......................................................... 4

**AASHTO’s Winter Maintenance Program:**
*A Proactive Approach to International Technology Transfer*
Leland D. Smithson, *Iowa Department of Transportation* ...................... 15

**Texas DOT Vehicle Fleet Warning Light Policy Research**
Gerald L. Ullman, *Texas Transportation Institute* and
Don Lewis, *Texas Department of Transportation* ..................................... 22

**Development of Guidelines for Control of Radio-Frequency Interference**
Thomas F. Trost, Qianlin Zhou, and Ye Jin, *Texas Tech University* ............. 36

**Research in Support of State Equipment Fleets: Closer Than You Think**
Steven J. Lorenc and Leonhard E. Bernold, *Construction Automation and Robotics Laboratory, North Carolina State University* ...................... 38

SECTION II: HUMAN RESOURCE MANAGEMENT

**Skill-Based Pay Program for Mechanics**
Dan W. Domico, *North Carolina Department of Transportation* ............... 49

**The New Art of Hiring Smart:**
*Matching the Right Person to the Right Job*

SECTION III: NEW CHALLENGES, NEW APPROACHES

**By-Pass Filters: Taking Your Fleet the Extra Mile**
Donald S. Culpepper, *Gulf Coast Filters, Inc.* ........................................... 71

**Inspections of Aerial Equipment**

**Remanufacture: An Alternative to Rising Equipment Costs**
Dominic J. Durinzi, Jr., *DEVAL Corp.* ...................................................... 92
Presentations from the 12th Equipment Management Workshop

Dwight R. Berkey, *Oregon Department of Transportation* ........................................ 95

**SECTION IV: 21st CENTURY FLEET MANAGEMENT**

**Fleet Management Information Systems Selection and Procurement**
James M. Putnam, *Keane, Inc.* ................................................................. 99

**Reengineering Fleet Management**
Pam Nelson, *CCG Systems, Inc.* ............................................................. 116

**Meeting the Outsource Challenge:**
**Competing for Equipment Maintenance Services**
Randall G. Owen, *City of Charlotte, North Carolina* .............................. 121

**SECTION V: ALTERNATIVE FUELS**

**Status Report: EPAct and Clean Fuel Fleet Programs**
Richard Kolodziej, *Natural Gas Vehicle Coalition* .................................... 130

**Natural Gas Vehicles: Availability, Cost, and Benefits**
Richard Kolodziej, *Natural Gas Vehicle Coalition* .................................... 133

**APPENDIX A: 12TH EQUIPMENT MANAGEMENT WORKSHOP:**
**FINAL PROGRAM** .................................................................................. 137

**APPENDIX B: 12TH EQUIPMENT MANAGEMENT WORKSHOP:**
**PARTICIPANTS LIST** ............................................................................. 140