CONTENTS

1. INTRODUCTION - 1

2. HISTORY - 8

THE BEGINNING....8 DEVELOPMENT....12 DISPATCHING WITHOUT TRAIN ORDERS....18 MAINTENANCE OF WAY – THE OTHER TRAFFIC....29 THE TELEPHONE....31 RADIO....33 ACCOMPLISHMENT....33 TECHNOLOGY AND THE WORKDAY....36 BASIC TOOLS....48 TIMETABLE... 48 TRAINSHEET... 48 TRAIN ORDER BOOK... 52 CTC GRAPH... 53 STRINGLINE... 55 TRACK DIAGRAMS... 55

3. THE LANGUAGE OF THE TRAIN DISPATCHER - 61

4. JUST WHAT IS A TRAIN DISPATCHER? - 82

THE DEFINITION82 A COMBINATION OF DISCIPLINES83 THE VIRTUAL COLLISION83 REAL TRAINS AND THE IMAGINATION84 THINK FIRST85 MORE THAN JUST THE TRAINS85 HOW WIDE THE TRAIN IS MAKES A DIFFERENCE86 TRAIN PERFORMANCE86 STRATEGY AND TACTICS87 PLANNING88 EXECUTING THE PLAN89 CONSIDER THE CREW90 THE MULTI-FUNCTION PERSON91 THE TRAINS MUST GO ON92 NEVER A DULL MOMENT92 THE PUBLIC CONNECTION93 HISTORIAN94 CHAINED TO THE CHAIR94 SOME MATERIAL TO LEARN95 THE NECESSITY OF STRATEGIC PLANNING95 SIMPLE EXAMPLE OF STRATEGIC PLANNING97 THE TOOLS ... 97 THE RESULT ... 98 THE INVISIBLE WORK OF THE TRAIN DISPATCHER 100

5. SERIOUS BUSINESS - 110

SETTING UP A HAZARDOUS SITUATION....110 **KEEPING TRAINS FROM RUNNING INTO EACH OTHER....111 RECOGNIZING A HAZARDOUS SITUATION....112** THE BUCK STOPS HERE....114

6. RAILROAD FUNDAMENTALS - TRACK - 115

BASIC TRACK STRUCTURE....115 CURVES AND GRADES....127 CURVES... 127 GRADES... 130 CHANGING ROUTES....132 PROTECTING AGAINST UNCONTROLLED EQUIPMENT....140 CROSSING STREETS AND ROADS....141 TURNING ENGINES AND CARS....144 BRIDGES....146

7. RAILROAD FUNDAMENTALS – SIGNALS AND TRAFFIC CONTROL - 151

CONTENTS

BLOCK SIGNALS....152

A SHORT HISTORY... 152 AUTOMATIC BLOCK SIGNALS: A SHORT COURSE FOR TRAIN

DISPATCHERS... 155 General.. 155 Battery Power.. 163 Equipment Location.. 164 Standard Nomenclature.. 164 Wires Along the Track.. 165 Using the Rails as Wires.. 167 Handling More Trains by using More Signals.. 168 Cab Signals.. 170 Both Directions on One Track.. 171 Approach Lighting. 174 Switches.. 175 Electric Lock Switches.. 175 Track Maintenance Equipment.. 176 Signal Failures.. 177 Inspecting Trains.. 179

TRAFFIC CONTROL....182

BASICS... 182

TRAFFIC CONTROL SYSTEMS AND TRAIN DISPATCHERS... 183

Written Instructions.. 183 Verbal Instructions.. 193 SIGNALS AS TRAFFIC CONTROL... 194

Interlocking.. 194 Centralized Traffic Control.. 202 CROSSING DIAMONDS - A DEAD SPOT....207 HIGHWAY CROSSINGS....208

8. RAILROAD FUNDAMENTALS - ENGINES AND CARS - 210

WHEELS....210 CARS....213 LOCOMOTIVES....218 BRAKES....228 BRAKE TESTS....238 INITIAL TERMINAL AND 1000 MILE AIR BRAKE TEST... 238 INTERMEDIATE TERMINAL AIR BRAKE TEST... 240

ELEMENTS of TRAIN DISPATCHING

RUNNING BRAKE TEST... 240 TELEMETRY....240 DERAILMENTS....242 NAMING THE PARTS OF CARS AND ENGINES....244

9. RAILROAD FUNDAMENTALS - OPERATION - 246

YARDS....246 RECEIVING... 247 CLASSIFICATION... 247 DISPOSITION... 250 DEPARTURE... 251 STORAGE... 252 CLEANING... 252 REPAIR... 252 LOCOMOTIVE SERVICE... 253 INTERMODAL... 253

SCHEDULES....257

OPERATING SCHEDULES ... 257 TRANSPORTATION SCHEDULES... 258

TRAINS....259

TRAIN OPERATION... 259 WHY TRAINS RUN... 261 WHEN TRAINS RUN... 264 STATION WORK... 266 HAZARDOUS MATERIAL SHIPMENTS... 275 THE PAPERWORK TRAINS NEED... 278 CREWS... 282 Yard.. 289 Assigned.. 290

Pool.. 292 DEADHEADING....294

10. ADDITIONAL INFORMATION - 298

ELEMENTS OF TRAIN DISPATCHING - VOLUME 2....299

xiv