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# National Interagency Incident Management System

# Basic Land Navigation

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This publication is available for download at www.nwcg.gov. It may also be ordered from National Interagency Fire Center, ATTN: Great Basin Cache Supply Office, 3833 S. Development Ave., Boise, Idaho 83705. Order NFES 2865.

# PREFACE

Basic Land Navigation is pre-course work for several courses in the National Wildfire Coordinating Group (NWCG) wildland fire curriculum. It is primarily designed for students to complete in a non-classroom environment; however, it is often used as a student workbook for navigation courses. The 2007 version was developed by an interagency group of experts with direction and guidance from the National Interagency Fire Center (NIFC) Fire Training Group under authority of the NWCG. The primary participants in this development effort were:

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NWCG appreciates the efforts of these personnel and all those who have contributed to the development of this training product.

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# INTRODUCTION

Navigating with a compass and map is an essential skill for many incident positions. Even with new technology, such as Global Positioning System (GPS) receivers, map and compass skills are still needed. Confidence with navigation skills comes with practice and proficiency. This confidence level often impacts how a person performs during a crisis – which can result in life or death decisions.

*Basic Land Navigation* is an introduction to land navigation. It begins with a general overview of maps. Then it specifically addresses how to read topographic maps. Next it covers various types of geographic location systems, such as latitude/longitude and Universal Transverse Mercator (UTM). This is followed by basic instructions on using a compass and clinometer. Then a general overview of the Global Positioning System is presented. The last chapter builds on skills learned in the previous chapters and adds new skills for navigation and field mapping. The three appendixes – glossary, answers to exercise, and tools/resources – include additional information as a reference.

Each chapter starts with a bulleted list of what you will learn. This is followed by a general overview of the chapter and how the information can be used. The technical content is then presented with several illustrations to facilitate understanding the concepts. Each chapter ends with the section "Checking Your Understanding," which consists of several questions. The answers to those questions are in Appendix B. Map scales may have changed during the printing of this publication; this may cause the correct answers to be slightly different than the given answers.

As you read through the chapters it will be helpful to have a U.S. Geological Survey (USGS) color topographic map to use as a reference. To complete the exercises you will need the following materials:

- Compass with adjustment for magnetic declination
- Clinometer
- Calculator
- Engineer's ruler (see Appendix C)
- Protractor (see Appendix C)
- Dot grid (see Appendix C)
- UTM grid reader (see Appendix C)