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MULTISERVICE PROCEDURES FOR WELL-DRILLING OPERATIONS

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PREFACE

PURPOSE

This manual is a guide for engineer personnel responsible for planning, designing, and drilling wells. This manual focuses on techniques and procedures for installing wells and includes expedient methods for digging shallow water wells, such as hand-dug wells.

SCOPE AND APPLICABILITY

Engineer personnel assigned to well-drilling teams must have a basic understanding of groundwater principles and well-drilling mechanics and hydraulics to successfully install wells. A well driller enhances his skills primarily from experience in solving problems, overcoming obstacles in the field, and learning from failures. This manual reviews common experiences well drillers encounter in the field, including well installation and completion in North Atlantic Treaty Organization (NATO) countries.

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The provisions of this publication are the subject of international agreement STANAG 2885 ENGR (Edition 2), *Emergency Supply of Water in War*.

Unless otherwise stated, masculine nouns and pronouns do not refer exclusively to men.

This publication contains copyrighted material.

Part One. Basics

Chapter 1

Introduction

1-1. Field Water Supply. In the theater of operations (TO), the tactical or installation commander provides water-support requirements to the combat service support (CSS) elements. The CSS elements' task is to provide water. Requests for well-drilling support go through operational channels to corps or theater army headquarters.

Tactical and logistical personnel plan and coordinate water-support functions. They ensure that sufficient water-production and distribution assets are available to continuously support the forces in the TO. Planners should consider the following items when locating well sites:

- Tactical situation.
- Geographical area of operations (AO).
- Location of existing water sources.
- Size of the force being supported.
- Planned force-deployment rates.
- Dispersion of forces in a geographic area.
- Water-consumption rates and anticipated well capacity.
- Availability of transportation to move well-drilling equipment and well-completion materials.
- Logistical support and main supply routes.
- Availability of assets for water distribution.
- Time required to drill and prepare a well for production.

Groundwater sources are normally used to supplement surface-water sources. In arid environments, exploring and using groundwater can reduce the need to transport water to a desired location. Groundwater may also be used when threat forces employ nuclear, biological, chemical (NBC) munitions, which could contaminate surface-water supplies in the TO.

1-2. Water Detection.

a. *Responsibilities.* In an undeveloped or a developed TO, terrain analysts, ground-survey teams, and well-drilling teams identify surface-water and groundwater sources. Water detection may be provided for all forces in the TO with assets from the Water Detection Response Team (WDRT). See Appendix A for details on the WDRT. Engineer ground-survey teams determine whether a groundwater source is adequate and accessible for development.

b. *Procedures.* Analysts use surface-water, groundwater, and existing-water-facilities overlays from the worldwide Water Resources Data Base (WRDB) (Appendix A). Surface- and existing-water-facilities water sources are identified primarily from maps and visual inspection. Groundwater sources are identified by analyzing information from groundwater-