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Recommended Practices for Core Analysis

RECOMMENDED PRACTICE 40
SECOND EDITION, FEBRUARY 1998

American
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- To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

Recommended Practices for Core Analysis

Exploration and Production Department

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SCOPE

These recommended practices for core analysis replace API RP 40*, Recommended Practice for Core Analysis Procedure*, 1960, and API RP 27, *Recommended Practice for Determining Permeability of Porous Media*, 1952, (reissued 1956). In the first section of the new recommended practices, Planning a Coring Program, key factors to be taken into consideration in obtaining core samples are explained and advantages of different coring procedures are given. The second section, Wellsite Core Handling Procedures and Preservation, addresses documentation of coring conditions and how cores should be handled once they reach the surface, including marking and preservation. The third section, Core Screening and Core Preparation, describes how the condition and nature of core samples can be documented through core gamma logs and various imaging techniques, and how samples should be selected and prepared for basic testing. Also covered in the third section are methods of preserving samples prior to testing, and procedures for cleaning and drying samples. The fourth section, Fluid Saturation, explains how fluid saturations can be determined on different types of samples and the limitations of the various techniques. The fifth section, Porosity Determination, defines different types of porosity and explains the measurements. The sixth section, Permeability Determination, explains the theory and methods for measurement of permeability of porous media to a single phase. Relative permeability measurements to two or three phases are not covered in this document. The seventh section, Supplementary Tests, covers determination of grain size, brine salinity, oil gravity, and acid solubility. The eighth and final section, Reporting, supplies forms to assist in recording the details of core handling and testing methodology that could be critical in interpreting basic core analysis data.

Core analysis, like other technical areas, is continually evolving so that both methodology and costs are changing. The recommended practices provided here represent a snap shot in time of the consensus advice of a large international committee.

Geologic materials come in a vast range of chemical compositions and physical states. For unusual samples or extraordinarily accurate data, it may be necessary to develop special procedures.

CONTENTS

SECTION 1—PLANNING A CORING PROGRAM