

INSTITUTE OF PETROLEUM  
PETROLEUM MEASUREMENT MANUAL

PART X  
Meter Proving

SECTION 7

CALIBRATION OF REFERENCE METERS  
USED FOR GANTRY METER PROVING

SUB-SECTION 7.2

VOLUMETRIC AND GRAVIMETRIC  
TANK METHODS

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## INTRODUCTION AND SCOPE

Recommended procedures for the proving of gantry meters are provided in Part X of the IP Petroleum Measurement Manual, Sections 2 and 5, which describe the use of reference meters and volumetric tanks as traceable reference measurement standards.

While the earlier sections of Part X of this Manual provide general guidance on the various methods of reference meter calibration, no detailed procedures for calibration have hitherto been available. Methods for the calibration of reference meters include the use of gravimetric facilities within calibration laboratories, or the use of volumetric proving tanks or pipe provers under either laboratory or controlled field conditions.

This sub-section of the Petroleum Measurement Manual has been prepared to provide guidance for the use of volumetric proving tanks or gravimetric facilities to calibrate reference meters which are specifically employed for proving loading gantry meters. The volumetric proving tank methods described herein may

be applied in a flow laboratory or in the field.

It should be noted that the procedure for calibrating a reference meter with a volumetric proving tank differs in detail from the procedure for proving a gantry meter with a volumetric proving tank as described in the Petroleum Measurement Manual, Part X, Sections 2 and 5.

This document describes the selection and calibration of equipment and the operational procedures and calculation routines that are recommended when using volumetric proving tanks or gravimetric facilities. Procedures for the calibration of reference meters with small volume provers are given in sub-section 7.1 of Part X of the Petroleum Measurement Manual.

The methods described in this document are intended for use with refined products that are loaded into non-pressurised road or rail vehicles via gantry meters. They are not intended for use with products such as live crude oil or liquefied petroleum gases.