

ISO 7507-3:2006-07 (E)

Petroleum and liquid petroleum products - Calibration of vertical cylindrical tanks - Part 3: Optical-triangulation method

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Precautions	1
5	Equipment	2
5.1	Equipment for measurement of angles	2
5.2	Stadia	2
6	Equipment set-up and procedure	2
6.1	Preparation of tank	2
6.2	Establishment of calibration conditions	2
6.3	Set-up of theodolites and/or total stations	3
7	Stadia set-up and procedure	3
8	Measurement of horizontal distance between two theodolite stations using a stadia	3
9	Measurement of horizontal distance between two theodolite stations using a total station	5
10	Procedure for internal optical tank wall measurements	5
11	Procedures for external measurements	8
11.1	General	8
11.2	Reference circumference measured by strapping	8
11.3	Reference distances measured between pairs of theodolite stations	10
12	Tolerances	11
12.1	Distances between theodolites	11
12.2	Horizontal angles	11
12.3	Reference circumference	11
13	Other measurements for tank calibrations	12
13.1	Tank-bottom calibrations	12
13.2	Other measurements and data	12
14	Calculations and development of tank capacity tables	13
14.1	From the internal procedure	13
14.2	From the reference circumference procedure	13
14.3	From the reference distances between pairs of theodolites	13
14.4	Corrections	13
14.5	Tank capacity table	13

Annex A (normative) Computation of internal radii from internal measurements	14
Annex B (normative) Determination of the radius of the circle by the least-squares method	15
Annex C (normative) Computation of internal radii from reference circumference and external measurements	20
Annex D (normative) Computation of internal radii from reference distances between pairs of theodolite stations	22
Annex E (informative) Calibration uncertainties	24
Annex F (normative) Procedure for checking the theodolite(s)	36
Bibliography	38