

3D scanning water phantom Under URT6034	 IAEA International Atomic Energy Agency	IAEA Specification Dated 2026/07/07
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SPECIFICATION

3D Scanning Water Phantom plus additional dosimetry equipment for Kilimanjaro Christian Medical Centre (KCMC), Tanzania

1. Scope

- 1.1. This specification describes the requirements for a 3D scanning water phantom (hereinafter referred to as “the System”) to be installed at Kilimanjaro Christian Medical Centre (KCMC), Tanzania (hereinafter referred to as “the End-User”).
- 1.2. The procurement of this equipment is related to the IAEA TC project URT6034 “Expanding and Improving Radiotherapy and Nuclear Medicine Services Phase II.”

2. Applicable Documents

- 2.1 The IAEA Core Specification 3DSWPH01 shall apply in its entirety except where explicitly modified or supplemented by this Country Specific Specification.
- 2.2 IAEA Core Specification 3DSWPH01 – 3D Scanning Water Phantom for Radiotherapy Dosimetry compatible with Varian TrueBeam and Halcyon.

3. Country Specific Requirements (variations from IAEA Core Specification 3DSWPH01)

3.1 Treatment units	Varian TrueBeam and Halcyon
3.2 Connectors	All electrometers, ionization chambers, detectors and associated extension cables shall be supplied with TNC-compatible connectors
3.3 Treatment Planning System (TPS)	The system software shall support export of beam data in formats accepted by Varian Eclipse and Elekta Monaco Treatment Planning Systems
3.4 Additional holders for detectors	Detector holders shall be provided with a range of detectors including Farmer-type chambers (e.g., PTW 30013 or PTW 30006), parallel-plate ionization chambers (e.g., PTW Markus and Advanced Markus) and silicon detector systems (e.g., PTW microSilicon)
3.5 Languages for markings and operational manuals	English

4. OPTIONAL additional list of Dosimetry Equipment (variations from IAEA Core Specification 3DSWPH01)

Item	Item description	Reference Product No.	Quantity
4.1	Reference-class single-channel electrometer for radiotherapy dosimetry with TNC connector, capable of operation with selectable bias voltage from 0 to ± 400 V.		1
4.2	Calibrated waterproof cylindrical Farmer-type ionization chamber with nominal sensitive volume of approximately 0.6 cm^3 , TNC connector, supplied with a calibration certificate including ND,w calibration coefficient for Co-60 traceable to an SSDL or ACDS/PSDL.		1

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4.3	Calibrated waterproof parallel-plate ionization chamber suitable for reference and relative electron beam dosimetry, with TNC connector and calibration certificate traceable to an SSDL or ACDS/PSDL.		1
4.4	Low-noise triaxial extension cable, minimum length 20 m, with TNC connectors compatible with the supplied electrometer and detectors.	-	1
4.5	Portable one-dimensional scanning water phantom suitable for absolute dosimetry, depth-dose measurements and beam quality determination.		1
4.6	Detector suitable for small-field dosimetry in accordance with IAEA TRS-483, the detector shall be suitable for stereotactic beam measurements, output factor determination and beam profile measurements, and shall be supplied with TNC-compatible connectivity.		1
4.7	Detector holders compatible with Items 4.2, 4.3 and 4.6 for use with the 1D water phantom specified in Item 4.5.	-	1
4.8	LINAC alignment phantom (e.g. cube phantom or rotating test plate) suitable for verification of optical distance indicator, treatment-field crosshairs, room lasers and light-field coincidence at gantry angles 0°, 90° and 270°.		1
4.9	PMMA CT simulator laser-alignment phantom incorporating 2 mm alignment notches for verification of sagittal, lateral and ceiling laser positioning.		1
4.10	Daily Quality Assurance constancy device for automated verification of external beam radiotherapy treatment units. The system shall provide simultaneous measurement of beam output, symmetry and flatness using a minimum of five detectors and shall be suitable for use with linear accelerators and cobalt-60 teletherapy units where applicable. The device shall provide trend analysis, data storage and automated reporting of daily QA results.		2
4.11	Radiochromic films for radiotherapy dosimetry and quality assurance, suitable for high-resolution measurement of beam profiles, output factors, patient-specific QA and small-field dosimetry. Films shall be supplied with associated calibration and handling recommendations.		2 boxes