



## SPECIFICATION

### Flame Atomic Absorption Spectrophotometer

#### 1. Scope

- 1.1. This specification describes the requirements for a flame atomic absorption spectrophotometer (hereinafter referred to as "Equipment").
- 1.2. The scope of delivery includes installation, pre-commissioning, operational training of the personnel of SSE Chernobyl NPP laboratory (hereinafter referred to as the "End-User"), testing of the equipment in using of the process media and LRW of SSE ChNPP, and warranty service.
- 1.3. The project is aimed at assisting the End-User to perform activities in the field of radioactively contaminated water and radioactive waste management. The Equipment will be used in the ChNPP measurement laboratory for quantitative determination of elemental composition of substances in liquid radioactive waste and radioactively contaminated water.

#### 2. Applicable documents

The following documents shall be applicable for this Specification to the extent specified hereinafter:

- SIST EN ISO 7980:2000 - Water quality - Determination of calcium and magnesium - atomic absorption spectrometric method (ISO 7980:1986).

In the event of any discrepancies between the documents mentioned above and the content of this specification, this specification shall take precedence to resolve the conflict.

#### 3. Requirements

##### 3.1. *Functional and performance requirements:*

The Equipment shall meet the following functional and performance requirements:

- 3.1.1. Atomic absorption spectrophotometer with flaming atomizer.
- 3.1.2. Stationary version, for laboratory use.
- 3.1.3. Automatic positioning of the burner.
- 3.1.4. Software for instrument control, data collection and processing

##### 3.2. *Technical requirements*

The Equipment should meet the following technical requirements:

- 3.2.1. Ability to quantify the chemical elements K, Na, Ni, Zr, Al, Fe, Cu, **Ca**.
- 3.2.2. Spectral range: 185-900 nm.
- 3.2.3. Spectral bandwidth: 0.1, 0.2, 0.4, 0.7, 1.0, 2.0 nm.
- 3.2.4. Number of positions for lamps - 8 pcs.
- 3.2.5. Electrical power supply from an alternating current network with a voltage of 220 volts, frequency 60 Hz.
- 3.2.6. Equipped with:



- personal computer,
- monitor; and
- multifunctional printer based on laser printing.

#### **4. Labeling**

- 4.1. The Equipment shall have the appropriate labelling with identification of equipment model, manufacturer, serial number, and bar-code.
- 4.2. The Equipment shall have all safety labelling in English language.

#### **5. Packaging**

- 5.1. The Equipment delivered to the End-User shall be packed in accordance with international standards applied for land and air shipping.
- 5.2. All labelling signs on the components and packaging shall be in the English language with clear designation of address and contact person of End-User.

#### **6. Quality requirements**

- 6.1. The Equipment shall be manufactured and installed in line with the requirements of the manufacturer's/Contractor's ISO quality system or equivalent quality assurance system.
- 6.2. The Contractor shall document the compliance with the quality assurance system requirements (international calibration certificate of CIPM MRA, or verification/calibration certificate issued by a metrological centre of Ukraine).

#### **7. Testing and acceptance**

- 7.1. The Equipment, prior to shipment, shall be tested for compliance with manufacturer's technical parameters and minimum requirements specified herein.
- 7.2. The Equipment, after installation at the End-User site, shall be tested by the Contractor in the presence of the End-User to demonstrate that the performance meets the manufacturer's performance specification and the minimum requirements specified in Section 3 above.
- 7.3. The results of the testing of the Equipment shall be documented by the Contractor in an acceptance protocol that shall be signed by the End-User.

#### **8. Installation and training**

- 8.1. The Contractor shall install the Equipment at the End-User's facility. In one month after receipt of the Purchase Order, the Contractor shall notify the



End-User on the requirements for the installation and site preparation (if any).

- 8.2. The Contractor shall provide a two (2) day training for up to three (3) staff of the End-User in the operation and maintenance of the Equipment at the End-User's location immediately after installation.

## 9. Deliverable Data Items

- 9.1. The Contractor shall provide, in both hard copy and electronic format, two (2) complete sets of operation and servicing manuals both in English language.
- 9.2. The Contractor shall provide CIPM MRA international calibration certificate, or a verification/calibration certificate issued by a metrological centre of Ukraine.