

BDBG-09
DETECTING UNIT OF GAMMA RADIATION

LOGBOOK

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1 GENERAL GUIDELINES

1.1 Carefully study the operating manual before using the BDBG-09 detecting unit of gamma radiation (hereinafter the detecting unit).

The logbook should be always included in the delivery kit of the detecting unit.

All records in the logbook should be accurate and clear.

Erasures and uncertified corrections are not allowed.

Operation is registered in hours.

The detecting unit can be used under the following conditions:

- ambient air temperature from minus 40 °C to 60 °C;
- relative humidity up to 100 % at temperature of 40 °C;
- atmospheric pressure from 84 kPa to 106.7 kPa.

1.2 The logbook contains the following abbreviations:

DER - \dot{H}^* (10) ambient dose equivalent rate of gamma radiation.

2 KEY SPECIFICATIONS

2.1 Key specifications are presented in the Table 2.1

Table 2.1

| Name | Standardized values according to the specification | Actual data |
|---|--|------------------------|
| 1 Measurement range of gamma radiation DER, $\mu\text{Sv/h}$ | 0.05 – 10 ⁷ | meets the requirements |
| 2 Basic relative permissible error limit at gamma radiation DER measurement with 0.95 confidence probability, % | 15+2/ \dot{H}^* (10) , where \dot{H}^* (10) – is a numeric value of gamma radiation DER in $\mu\text{Sv/h}$ | |
| 3 Energy range of detected gamma radiation, MeV | 0.05 – 3.00 | meets the requirements |

Table 2.1 (continued)

| Name | Standardized values according to the specification | Actual data |
|---|--|------------------------|
| 4 Energy dependence of measurement results of the detecting unit at gamma radiation DER measurement in the energy range of 0.05 MeV to 1.25 MeV, % | ±25 | meets the requirements |
| 5 Anisotropy of the detecting unit at gamma quanta incidence at angles from +60° to minus 60° horizontally and vertically relative to the main direction, %, marked by the „+” symbol, does not exceed: - for ¹³⁷ Cs and ⁶⁰ Co isotopes - for ²⁴¹ Am isotope | 25 60 | meets the requirements |
| 6 Operating supply voltage range of the detecting unit from the external regulated power supply, V | 7 - 13 | meets the requirements |
| 7 Useful current of the detecting unit, mA, not more than | 30 | meets the requirements |
| 8 Time of operating mode setting and measurement time of the detecting unit, min, not more than | 3 | meets the requirements |
| 9 Unstable readings of the detecting unit during 24 hrs of continuous operation, %, not more than | 5 | meets the requirements |

Table 2.1 (continued)

| Name | Standardized values according to the specification | Actual data |
|---|--|------------------------|
| 10 Complementary permissible error limit at measurement caused by ambient temperature change from minus 40 °C to 60 °C, % | ±5 per each 10 °C deviation from 20 °C | meets the requirements |
| 11 Dimensions of the detecting unit without fastening elements, mm, not more than | 60 × 60 × 170 | meets the requirements |
| 12 Weight of the detecting unit without fastening elements, kg, not more than | 0.5 | meets the requirements |

Quality Control Department Representative _____ (signature)

2.2 Precious materials content

The detecting unit contains no precious materials.

3 DELIVERY KIT

3.1 The delivery kit of the detecting unit consists of units and maintenance documentation presented in the Table 3.1.

Table 3.1

| Type | Item | Quantity |
|--------------------|-----------------------------|----------|
| BICT.418266.008 | BDBG-09 detecting unit | 1 |
| BICT.745265.001 | Corbel | 1 |
| BICT.418266.006 HE | Operating manual * | 1 |
| BICT.418266.006 ΦO | Logbook | 1 |
| BICT.412915.003 | Packing | 1 |
| BICT.412911.001 | Assembly parts kit (APK) ** | 1 |
| BICT.412919.001 | Technological kit *** | 1 |

* One copy per one consignment of the detecting units

** APK is applied by the user at production of the connecting cable for connection to the system. Belden 8102 cable with added screen (not included in the kit) is recommended. The connecting cable should be ordered additionally.

*** Supplied on the customer's demand in a separate order.

4 CERTIFICATE OF ACCEPTANCE

The BDBG-09 detecting unit of gamma radiation of BICT.418266.008 type with _____ serial number meets the TY Y 33.2-22362867-009:2004 standard technical requirements, is tested and accepted for use.

Date of manufacture _____

Quality Control Department:

Stamp here

(signature)

Verification mark here

State Verification Officer:

(signature)

5 PACKING CERTIFICATE

The BDBG-09 detecting unit of gamma radiation of BICT.418266.008 type with _____ serial number is packed by the PE “SPPE “Sparing-Vist Center” in accordance with the TY Y 33.2-22362867-009:2004 standard technical requirements.

Date of packing _____

Stamp here

Packed by _____ (signature)

Packed product accepted by _____ (signature)

6 PUTTING IN PROLONGED STORAGE AND REMOVAL FROM STORAGE

Table 6.1

| Date of putting in prolonged storage | Method | Date of removal from storage | Name of the enterprise in charge of putting the unit in prolonged storage or removing from storage | Date, position, and signature of the responsible official |
|--------------------------------------|--------|------------------------------|--|---|
| | | | | |

7 WARRANTY

7.1 The manufacturer warrants that the detecting unit meets the technical requirements, provided that the user observes the operating, shipping and storage conditions described in the BICT.418266.006 HE operating manual.

7.2 The warranty period of the detecting unit shall terminate and be of no further effect in not less than 18 months after the date of putting it into operation and not more than 24 months after the manufacture date.

7.3 The warranty period of storage of the detecting unit is 6 months after the manufacture date.

7.4 The warranty period is prolonged for the time when the detecting unit has been under warranty repair.

7.5 After the warranty period terminates, the repair of the detecting unit is performed under separate contracts.

7.6 Warranty and post-warranty repair is done only by the manufacturer.

7.7 In case of mechanical damage or removal of seals, the repair is done at the user's expense.

8 CLAIMS

8.1 In case of failure or troubles during the warranty period of the detecting unit, the user should contact the producer enterprise by e-mail (see below) to receive the address of the nearest service center:

PE “SPPE “Spring-Vist Center”

Tel.: (+380 32) 2421515, fax: (+380 32) 2422015

E-mail: sales@ecotest.ua.

8.2 All claims are registered in the Table 8.1

Table 8.1

| Date of failure | Claim summary | Action taken | Note |
|-----------------|---------------|--------------|------|
| | | | |

9 STORAGE

Table 9.1

| Date | | Storage conditions | Position, name and signature of the responsible official |
|-----------------------|--------------------------|--------------------|--|
| of placing in storage | of removing from storage | | |
| | | | |

10 TRANSFER AND ASSIGNMENT DURING USE

10.1 Transfer of the detecting unit during use

Table 10.1

| Received | | Position, name and signature of the person responsible for acceptance | Sent | | Position, name and signature of the person responsible for sending |
|----------|--------------------------|---|------|--------------------------|--|
| from | number and date of order | | to | number and date of order | |
| | | | | | |

10.2 Assignment of the detecting unit during use

Table 10.2

| Position | Name of the person responsible for use | No and date of order | | Signature of the responsible official |
|----------|--|----------------------|--------------|---------------------------------------|
| | | about assignment | about repeal | |
| | | | | |

11 OPERATION REGISTER

11.1 Operation register

Table 11.1

| Date | Purpose for operation | Time of switching on | Time of switching off | Operation duration |
|------|-----------------------|----------------------|-----------------------|--------------------|
| | | | | |

11.2 Calendar operation register

Table 11.2

| Month | Total per year | | | | | | | | |
|-------|-----------------|-------|-----------|-----------------|-------|-----------|-----------------|-------|-----------|
| | 20 | | | 20 | | | 20 | | |
| | Number of hours | Total | Signature | Number of hours | Total | Signature | Number of hours | Total | Signature |
| | | | | | | | | | |

12 TROUBLE RECORD DURING USE

Table 12.1

| Date and time of trouble Operating mode | Type (external manifestation) of trouble | Cause of trouble, number of operation hours of the failed element | Action taken and claim note | Position, name and signature of the person responsible for solving the problem | Note |
|--|--|---|-----------------------------|--|------|
| | | | | | |

13 PERIODIC VERIFICATION OF KEY SPECIFICATIONS

Table 13.1

| Verified specification | | Verification date | | | | | |
|---|---|-------------------|-----------------------------------|--------------|-----------------------------------|--------------|-----------------------------------|
| Name | Value according to the technical requirements | 20 | | 20 | | 20 | |
| | | Actual value | Measured by (position, signature) | Actual value | Measured by (position, signature) | Actual value | Measured by (position, signature) |
| Basic relative error limit of the detecting unit at gamma radiation DER measurement | $15+2/H^*(10)$, where $H^*(10)$ – is a numeric value of gamma radiation DER in $\mu\text{Sv/h}$ | | | | | | |

Table 13.1 (continued)

| Verified specification | | Verification date | | | | | |
|---|---|-------------------|-----------------------------------|--------------|-----------------------------------|--------------|-----------------------------------|
| Name | Value according to the technical requirements | 20 | | 20 | | 20 | |
| | | Actual value | Measured by (position, signature) | Actual value | Measured by (position, signature) | Actual value | Measured by (position, signature) |
| Basic relative error limit of the detecting unit at gamma radiation DER measurement | $15+2/H^*(10)$, where $H^*(10)$ – is a numeric value of gamma radiation DER in $\mu\text{Sv/h}$ | | | | | | |

**14 COMPONENT PARTS (COMPONENTRY INCLUDED)
REPLACEMENT**

Table 14.1

| Removed part | | | | Newly placed part | | Date, position and signature of the person responsible for replacement |
|---------------|--------------------------------------|------------------------|------------------|-------------------|--------------------------------------|--|
| Name and type | Number or name of the detecting unit | Number of hours worked | Cause of failure | Name and type | Number or name of the detecting unit | |
| | | | | | | |

15 CATEGORY APPROVAL

Table 15.1

| Date | Reason for category approval | Approved category | Position, name and signature of the responsible official | Note |
|------|------------------------------|-------------------|--|------|
| | | | | |

16 REPAIR

Table 16.1

| Position, name and signature of the responsible official | who performed the repair | who accepted after repair |
|--|-------------------------------------|---------------------------|
| | Name of repair | Type of repair |
| Name of the repair organization | Date | of completion of repair |
| | | of arriving for repair |
| Reason for repair | Name and type of the component part | |

17 VERIFICATION AND INSPECTION RESULTS

Table 17.1

| Date | Type of verification or inspection | Result of verification or inspection | Position, name and signature of the person responsible for verification | Note |
|------|------------------------------------|--------------------------------------|---|------|
| | | | | |

NOTES