

«ROSATOM» STATE NUCLEAR ENERGY CORPORATION

CERTIFICATE OF APPROVAL

Registration number 209

dtd. November 30, 2022

for Design and Transportation of Package

RADIATION HEADS OF GAMMA-PROJECTORS RID-SE4UM P (EXERTUS LIGHT) AND RID-SE4WM P (EXERTUS LIGHT W) WITH SEALED SOURCE OF GAMMA RADIATION SE-75

RUS/7132/B(U)-96T (Rev.3)

Issued 30.11.2022

Validity 30.11.2027

**Vice General director
on state policy in the field of
safety of using atomic energy
in defense purposes**

J.V. Jakovlev

№ 001416

List of approval

CONFIRMED

Vice-chief of Federal service
on ecological, technological
and atomic supervision

A.V. Ferapontov

25.11.2022

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for Design and Transportation

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LIGHT) AND RID-SE4WM P (EXERTUS LIGHT W) WITH SEALED SOURCE OF
GAMMA RADIATION SE-75**

RUS/7132/B(U)-96T (Rev.3)

Validity up to 30.11.2027

Chief of Department on safety
management of nuclear fuel, nuclear
energy ship installations and
radioactively dangerous objects of
Federal Agency on ecological,
technological and atomic
supervision

_____ D.J. Belkin

«_24_»_11_2022

Director on special transportation
and emergency - Director of
Nuclear and Radiation Safety
Department, Organization for
Licensing and Authorization
Activities of Rosatom State Nuclear
Energy Corporation

_____ S.V. Raikov

«_14_»_11_2022

Applicant: JSC “Energomontage International” (JSC “EMI”), 107078, Moscow, Krasnovorotskiy proezd 3, bld. 1, room III-5.

Shipper: JSC EMI.

Consignees: Russian and foreign enterprises according to delivery/service contracts.

Consignee, including back shipments: JSC “EMI”.

Shippers during the back-shipment: Russian and foreign enterprises according to delivery/service contracts.

Certificate of Approval is granted to JSC “EMI”.

This certificate confirms that design and transportation of radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W) with sealed source of gamma radiation Se-75 with characteristics according to Div.3 of this certificate correspond the requirements of the following norms: “Rules of safety during transportation of radioactive materials (NP-053-16)”, “Sanitary Rules of Safety for Workers and Personal During Transportation of Radioactive Materials (Chemicals)” (SanPiN 2.6.1.1281-03) and “Rules of secure transportation of radioactive materials” (Detailed requirements for safety No. SSR-6, IAAE, Vienna, issue 2012).

According to NP-053-16, radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W) are slated to type B(U) packages.

Radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W) are designed for transportation by air-, special auto-, sea- and railway sources of transportation.

Name of transport package set: radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W).

Authentication token of the package: RUS/7132/B(U)-96.

Transport category of the package, not more – “III Yellow”.

Transport index, not more – 10.

Transportation of radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W) without radioactive content is provided according to transport category “II-Yellow”.

UN number and transport name:

2916. Radioactive Material, type B(U) package, fission or non-fission – free package.

2909. Radioactive material, free package – products made of natural uranium or depleted uranium or natural thorium.

2912. Radioactive material, Low Specific Activity, fission or non-fission – free package.

1. Basic purpose

Radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) produced according to Technical Requirements DVPA21.00.00.000 TU and RID-Se4WM P (Exertus Light W) produced according to Technical Requirements DVPA23.00.00.000

TU and from 01.10.2022 – according to technical requirements DVPA21.00.00.000 TU (here and after – radiation heads) are designed for NDT control of welding seams quality, control integrity of materials, measuring thickness during all stages of manufacturing and usage, as well as for transportation and temporarily storage of sealed sources Se-75 slated for special form radioactive materials.

2. Design of transport package set

2.1. Elaborator and manufacturer of the radiation heads – JSC “EMI”.

2.2. Radiation heads (see Picture 1) consist of protection unit (1) places in the body (7) made of stainless steel; source holder (2), support (3), fixing unit (4) with gear and multicolor display, two locking systems (5) and (6), preventing extraction of source from storage position without remote control and guide tube attached.

Protection unit (1) is made of depleted uranium (for RID-Se4UM P (Exertus Light) or tungsten alloy (for RID-Se4WM P (Exertus Light W)). Inside the DU shield there is tungsten-framed straight channel for source holder.

Source holder (2) is made as a chain with tungsten and steel segments connected by spring pins. The source is fixed in the middle of source holder.

Fixing unit (4) consists on the body, shock-absorber bracket and gear; it is designed to stop source holder in storage position. It switched on automatically when the source returns in protection unit. Fixing unit has lock which may be opened only after correct attachment of remote control and guide tube (or source). When it unlocked one can't unplug guide tube or terminator of source.

Locking unit (5) is designed to attach remote control and consists of aluminum body, button and flange. The button prevents unlocking of source when remote control is not attached.

Locking unit (6) consists of aluminum body, button and sleeve to fix the guide tube. Sleeve is connected with lock which, together with gear, prevents disconnection of guide tube when the lock is unlocked.

Dimensions of radiation heads, not more:

L = 220 mm;

W = 190 mm;

H = 110 mm.

Weight of radiation head RID-Se4UM P (Exertus Light) is not more than 6,0 kg.

Weight of radiation head RID-Se4WM P (Exertus Light W) is not more than 8,2 kg.

3. Radioactive content

In the radiation heads it is allowed transportation and temporarily storage of sealed source of gamma-radiation Se-75 slated for special form radioactive materials and duly certified with maximum activity 5,18 TBq (140 Ci).

4. Radiation Safety

4.1. Radiation safety is provided according to the requirements of Rules NP-053-16 and rules of IAAE No.SSR-6.

4.2. Level of radiation in any point of fully loaded RADIATION HEADS shouldn't exceed:

- In any point of external surface - 2mSv/h;
- At 1 m distance from external surface – 0,1 mSv/h.

Transport index shouldn't exceed 10.

4.3. Total TI of a number of packages placed in one sea-, auto-, railway- source of transportation shouldn't exceed 50. During transportation by air, total TI shouldn't exceed 50 for civil plain and 200 for cargo aircraft. During transportation by sea, total TI shouldn't exceed 50 for parcels or little transport containers and 200 for big transport containers or the whole ship.

4.4. Level of radiation in any external point of transportation source shouldn't exceed 2mSv/h; at 2 m distance from external surface – 0,1 mSv/h.

4.5. Precise transport category and transport index is defined by the Shipper according to NP-053-016 and/or rules of IAAE No.SSR-6, if needed.

4.6. Radiation safety during transportation is provided by implementing of Program of Radiation Safety During Transportation of Radioactive Materials PR ISM-07 Issue 2 JSC EMI.

5. Terms of Exploitation

5.1. Exploitation of radiation heads is provided according to the requirements of existing norms: “Rules of safety during transportation of radioactive materials (NP-053-16)”, “Norms of Radiation Safety” NRB-99/2009, “Sanitary Rules of Safety for Workers and Personal During Transportation of Radioactive Materials (Chemicals)” (SanPiN 2.6.1.1281-03), OSPORB-99/2010 “Main Sanitary Rules of Safety” and manual.

5.2. All transportation according to this certificate-permission may be provided only if shippers, forwarders and consignees are duly certified in the field of atomic energy.

5.3. During transportation of radiation head by car, the special car should be equipped according to requirements of “Rules of Transportation by Car” and “European Agreement about International Transportation of Dangerous Goods” (DOPOG).

Radiation head should be fixed inside the car according to the scheme created for each type of a car according to requirements of NP-053-16, “Rules of Transportation by Car” and “European Agreement about International Transportation of Dangerous Goods” (DOPOG).

5.4. Radiation heads validity of which is finishing within the period of validity of this certificate, may be used only if their working period is prolonged according to NP-024-2000.

6. Emergency terms

In case of emergency occur during transportation of radiation head one should immediately report to:

- Dispatcher of Center of Transportation Control OAO “Atomspetztrans” by phones (499) 949-4481; (499) 262-31-08; (495) 657-86-07;
- ChU FGUP “SKZ RosAtom”, (495) 933-60-44, (499) 949-23-11;
- Dispatcher of AO “ATZ Rosatom”, round a clock, (812) 702-19-00, fax (812) 591-53-33;
- Operative Duty of Rostehnadzor by phones (495) 532-15-08; (495) 532-15-09, fax (495) 532-15-10,
- Dispatcher of JSC EMI (round-a-clock) by phone (499) 262-36-73, as well as emergency card No. 701, Plan of Work to Eliminate Consequences of Emergency During Transportation of Radioactive Substances” (issue 2, PL ISM-01), JSC EMI.

7. Quality Assurance

Program Of Quality Assurance For Radioactive Substances During Their Usage, Transportation And Storage POK ISM-02, issue 1, JSC EMI.

8. Norms and Rules

- 8.1. “Rules of safety during transportation of radioactive materials (NP-053-16)”, Rostehnadzor, 2016;
- 8.2. “Rules of secure transportation of radioactive materials" (Concrete requirements for safety No. SSR-6, IAAE, Vienna, issue 2012);
- 8.3. “Sanitary Rules of Safety for Workers and Personal During Transportation of Radioactive Materials (Chemicals)” (SanPiN 2.6.1.1281-03);
- 8.4. “Norms of Radiation Safety” NRB-99/2009, “Sanitary Rules of Safety” SanPiN 2.6.1.2523-09;
- 8.5. "Basic Medical Rules Of Radiation Safety" (OSPORB-99/2010), “Sanitary Rules and Norms” SP.2.6.1.2612-10”;

8.6. “Requirements for Planning and Readiness to Eliminate Consequences of Emergencies During Transportation of Nuclear Materials and Radioactive Substances” NP-074-06, Rostekhnadzor, 2006;

8.7. “Requirements for Quality Assurance Programs for Nuclear Enterprises” NP-090-11, Rostekhnadzor, 2012;

8.8. “Content and Structure of Radiation Safety Program During Transportation of Radioactive Materials” (RB-127-17). M.: Rostekhnadzor, 2017;

8.9. “Recommendations for Elaboration of Q/A Programs During Transportation of Radioactive Material” RB-110-16. M.: FBU NTZ JRB, 2016.

9. List of Documents Used

9.1. Application of AO “V/O “Isotop” for issuing of Certificate of Approval for design and transportation of radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W) with sealed source of gamma radiation Se-75, No. 58/29-03/5204 dtd 24.10.2022 (power of attorney JSC “EMI” No. 26/2022 dtd 04.03.2022);

9.2. Expert report No. 58/29-02/7132-3 dtd.20.10.2022.

9.3. Certificate of approval RUS/7132/B(U)-96T (Rev.2) for design and transportation of radiation head of gamma-projectors RID-Se4UM P (Exertus Light) with sealed source of gamma radiation Se-75. State corporation “Rosatom”, 2017.

9.4. Certificate of approval RUS/7131/B(U)-96T (Rev.2) for design and transportation of radiation head of gamma-projectors RID-Se4WM P (Exertus Light W) with sealed source of gamma radiation Se-75. State corporation “Rosatom”, 2017.

9.5. Plan of Work to Eliminate Consequences of Emergency During Transportation of Radioactive Substances PL ISM-01 Issue 2, copy, JSC EMI;

9.6. Agreement for Services/Works for Prevention and Elimination of Emergencies During Transportation of Radioactive Substances No. 218-01/26-01/22-34 dtd 07.02.2022, JSC “EMI” (copy).

10. Common Terms (use of this certificate)

10.1. On all questions connected with this certificate one should apply to:

- Department of Nuclear and radiation Safety of State Corporate of Atomic Energy “Rosatom” (119017, Moscow, Bolshaya Ordynka Str. 24, tel.: (499) 949-29-27, fax (499) 949-23-05);

- Federal Service of Ecological, Technological and Atomic Supervision, 109147, Moscow, Taganskaya Str., 34, tel. (495) 532-13-48, fax (495) 532-13-46;

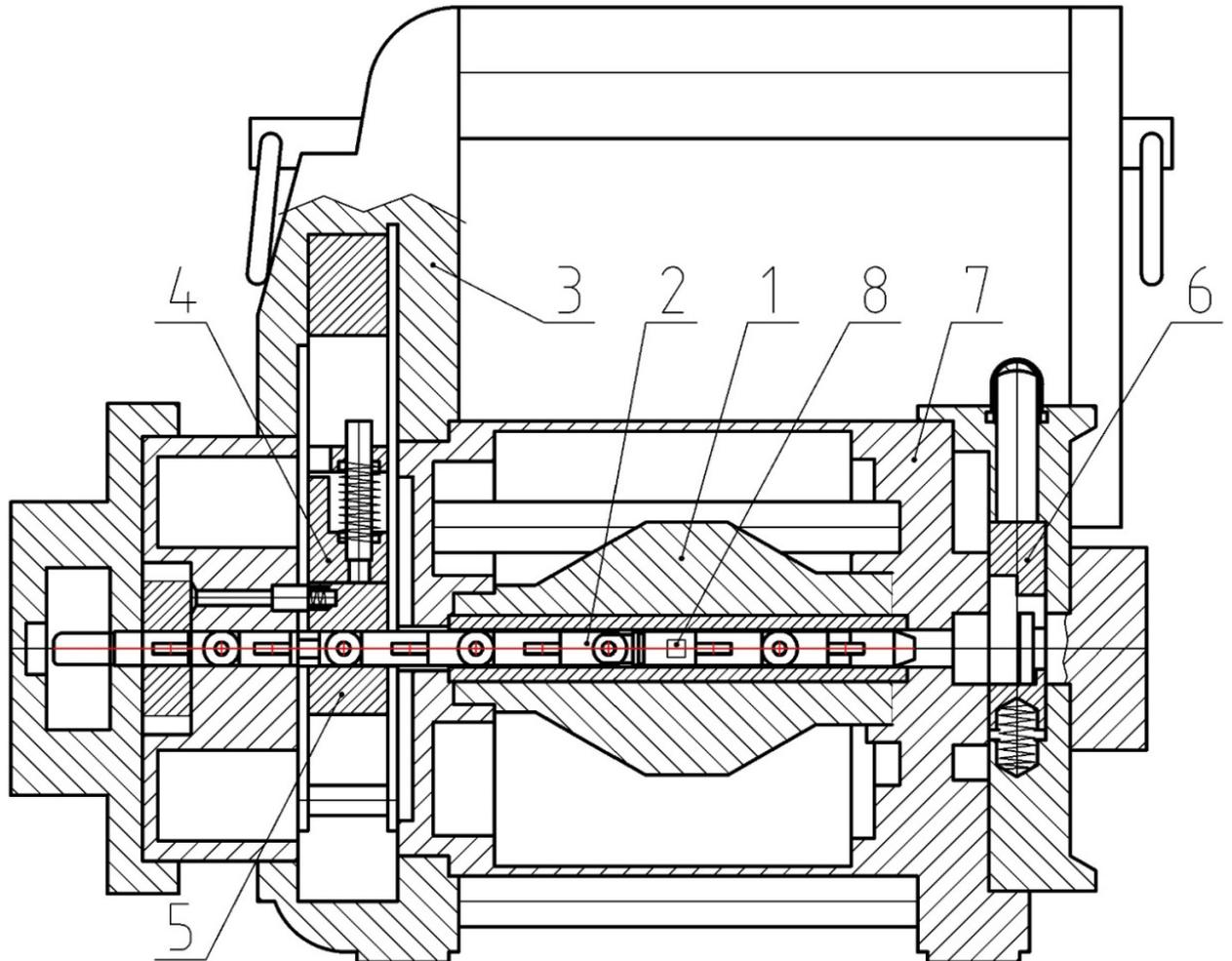
- AO “V/O "Izotop" (119435, Moscow, Pogodinskaja str. 22, tel.: (495) 981-96-16, fax: (499) 245-1721.

10.2. Only original and copies of this certificate of approval officially recorded are valid.

10.3. The present Certificate of Approval doesn't liberate Shipper and Consignee from implementation of any request of the government of any country on/across territory of which transportation of this package is provided.

10.4. Radionuclide sources characteristics of which mentioned in Div.3 of this certificate should correspond to requirements applied to special form radioactive material and should be duly certified.

Picture 1
Radiation heads of gamma-projectors RID-Se4UM P (Exertus Light) and RID-Se4WM P (Exertus Light W)



1 – Protection unit; 2 – Source holder; 3 – Flange; 4 – Fixing unit; 5 – Locking system; 6 – Locking system; 7 - Body; 8 – Source

*Translation is correct and
fully corresponds the original
A. Alekseev*



December 05, 2022