

**STATE ATOMIC ENERGY CORPORATION
"ROSATOM"**

CERTIFICATE

for the design of the UKTIA-RT type transport packaging sets and transportation of radioactive materials in these sets

RUS/6368/A-96T (Rev. 1)

State Atomic Energy Corporation "Rosatom", being the Official Regulatory Body (ORB) of the Russian Federation in issues regarding nuclear and radiation safety during transportation of nuclear and radioactive materials and goods including mentioned materials, basing on Expert's Report AE 1363, hereby certifies that the design of the UKTIA-RT type transport packaging sets and transportation of radioactive materials, which characteristics are given in section 2 of this certificate, in these sets are in compliance with the requirements of the "Safety Regulations for the Radioactive Materials Transportation", NP-053-04, of the "Sanitary Regulations for Radiation Safety of Personnel and Population during Transportation of Radioactive Materials (Substances)", SanPin 2.6.1.1281-03, of the "Regulations for the Safe Transportation of Radioactive Materials", rev. in 2009, TS-R-1, IAEA, 2009, of the " European Agreement Concerning the International Carriage of Dangerous Goods by Roads", ADR.

The certificate is issued for RITVERC GmbH.

The certificate is valid since September 21, 2015 until September 21, 2020.

Distinctive mark
appointed by the regulatory body

The Deputy
Director General

RUS/6368/A-96T (Rev. 1)

_____ I.M. Kamenskih
_____ 2015

1. Main Function

The UKTIA-RT type transport packaging sets performed in accordance with TU 6968- 003-23102128-2012 are intended for transportation and temporary (intransit) storage of sealed radionuclide sources and solid and liquid radioactive substances.

2. Allowed Radioactive Content

The UKTIA-RT type transport packaging sets are allowed to be used for transportation and temporary (intransit) storage of sealed radionuclide sources and radioactive materials both conforming the requirements to Special Form Radioactive Material, and nonconforming the requirements to Special Form Radioactive Material, based on the radionuclides listed in Tables 1 and 2.

3. Description of UKTIA-RT Type Transport Packaging Sets

The disposable transport packaging sets of UKTIA-RT type comply with the requirements to the type A packages.

Specifications provide for 26 versions of UKTIA-RT type transport packaging sets with similar structure and difference mainly in dimensions of structural elements and the type of lead container.

14 versions of UKTIA-RT transport packaging sets (with a small box) have external dimensions of 220x220x230 mm and 12 versions (with a big box) have external dimensions of 480x480x480 mm.

7 versions of UKTIA-RT transport packaging sets with a small box are intended for transportation of solid and liquid radioactive substances, and 7 versions for transportation of sealed radionuclide sources.

6 versions of UKTIA-RT transport packaging sets with a big box are intended for transportation of solid and liquid radioactive substances, and 6 versions for transportation of sealed radionuclide sources.

Main properties and dimensions of the UKTIA-RT packaging sets are presented in Table 3.

Table 1. Maximum permissible radionuclide activity in the UKTIA-RT-M transport packaging set

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-						
	-1-RT-M	-3-RT-M	-5-RT-M	-10-RT-M	-15-RT-M	-20-RT-M	-40-RT-M
Tritium	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)
Carbon-14	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)
Sodium-22	0.08 (0.002)	0.1 (0.0027)	0.11 (0.003)	0.16 (0.0043)	0.22 (0.006)	0.31 (0.0084)	0.9 (0.024)
Phosphorus-32	17 (0.46)	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)
Phosphorus-33	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Sulfur-35	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)
Chlorine-36	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)
Potassium-40	1.2 (0.032)	1.4 (0.038)	1.5 (0.041)	1.8 (0.049)	2.3 (0.062)	2.7 (0.073)	6.6 (0.178)
Calcium-45	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)
Scandium-46	0.08 (0.0022)	0.1 (0.0027)	0.11 (0.003)	0.15 (0.004)	0.2 (0.0054)	0.27 (0.0073)	1 (0.027)
Titanium-44 + scandium-44	0.07 (0.0019)	0.111 (0.003)	0.14 (0.0037)	0.2 (0.0054)	0.3 (0.008)	0.48 (0.0129)	2 (0.054)
Vanadium-49	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)	37(1)
Chromium-51	4.6 (0.124)	10 (0.27)	25 (0.68)	50 (1.35)	300 (8.1)	1000 (27)	30000 (810)
Manganese-52	0.047 (0.0013)	0.058 (0.0015)	0.067 (0.0018)	0.085 (0.0023)	0.11 (0.003)	0.15 (0.004)	0.47 (0.013)
Manganese-54	0.19 (0.005)	0.25 (0.0068)	0.27 (0.0073)	0.38 (0.0103)	0.55 (0.015)	0.84 (0.023)	4 (0.108)
Ferrum-55	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)
Ferrum-59	0.148 (0.004)	0.166 (0.0045)	0.19 (0.0051)	0.24 (0.0065)	0.3 (0.0081)	0.4 (0.011)	1.2 (0.032)
Cobalt-56	0.05 (0.0014)	0.06 (0.0016)	0.067 (0.0018)	0.087 (0.0024)	0.12 (0.0032)	0.15 (0.0041)	0.42 (0.011)
Cobalt-57	1.8 (0.049)	160 (4.3)	180 (4.9)	300 (8.1)	500 (13.5)	820 (22.1)	7000 (189)
Cobalt-60	0.07 (0.0019)	0.08 (0.0021)	0.09 (0.0024)	0.11 (0.003)	0.14 (0.0038)	0.175 (0.0047)	0.525 (0.014)
Nickel-63	370 (10)	370 (10)	370 (10)	370 (10)	370 (10)	370 (10)	370 (10)
Copper-64	0.74 (0.02)	1.295 (0.035)	1.7 (0.0046)	3.4 (0.092)	6.8 (0.184)	13.5 (0.365)	120 (3.24)
Zinc-65	0.3 (0.008)	0.32 (0.0086)	0.33 (0.009)	0.48 (0.013)	0.63 (0.019)	0.85 (0.023)	2.8 (0.076)
Gallium-67	1 (0.027)	6.3 (0.17)	12 (0.32)	48 (1.3)	130 (3.5)	280 (7.6)	2000 (54)
Germanium-68	0.167 (0.005)	0.296 (0.008)	0.392 (0.011)	0.81 (0.022)	1.66 (0.045)	3.36 (0.091)	35 (0.94)
Selenium-75	0.4 (0.011)	2.3 (0.062)	5 (0.135)	27 (0.73)	100 (2.7)	320 (8.6)	3000 (81)
Krypton-85	65 (1.75)	110 (2.97)	140 (3.78)	300 (8.1)	600 (16.2)	1300 (35.1)	10000 (270)
Strontium-85	0.3 (0.0081)	0.48 (0.013)	0.62 (0.017)	1.3 (0.035)	2.7 (0.073)	5.5 (0.15)	130 (3.51)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-						
	-1-RT-M	-3-RT-M	-5-RT-M	-10-RT-M	-15-RT-M	-20-RT-M	-40-RT-M
Strontium-89	3.7 (0.1)	3.7 (0.1)	3.7 (0.1)	3.7 (0.1)	3.7 (0.1)	3.7 (0.1)	3.7 (0.1)
Strontium-90 + yttrium-90	0.37 (0.01)	1.85 (0.05)	20.4 (0.55)	36.7 (0.99)	59.4 (1.6)	92 (2.5)	300 (8.1)
Yttrium-87	0.33 (0.009)	0.55 (0.015)	0.74 (0.02)	1.66 (0.045)	4 (0.11)	9 (0.24)	270 (7.3)
Yttrium-88	0.07 (0.0019)	0.075 (0.002)	0.08 (0.0022)	0.1 (0.0027)	0.13 (0.0035)	0.17 (0.005)	0.44 (0.012)
Yttrium-91	47 (1.27)	55 (1.49)	60 (1.6)	70 (1.9)	95 (2.6)	130 (3.5)	360 (9.73)
Zirconium-88	0.37 (0.01)	0.8 (0.0216)	1.3 (0.035)	4.4 (0.12)	15 (0.41)	50 (1.35)	3000 (81)
Zirconium-89	0.14 (0.0038)	0.18 (0.00486)	0.2 (0.0054)	0.3 (0.0081)	0.42 (0.011)	0.6 (0.016)	2.7 (0.073)
Zirconium-95 + niobium-95m	0.22 (0.0059)	0.26 (0.007)	0.31 (0.0084)	0.45 (0.012)	0.71 (0.019)	1.1 (0.03)	7.6 (0.205)
Niobium-95	0.21 (0.0057)	0.25 (0.0068)	0.3 (0.008)	0.42 (0.011)	0.65 (0.018)	1 (0.027)	6.3 (0.17)
Molybdenum-99 + Technetium-99m	0.54 (0.015)	1.4 (0.038)	1.8 (0.049)	2.5 (0.067)	4.2 (0.114)	6.5 (0.176)	40 (1.08)
Technetium-99	74 (2)	74 (2)	74 (2)	74 (2)	74 (2)	74 (2)	74 (2)
Ruthenium-103	0.3 (0.0081)	0.52 (0.014)	0.68 (0.018)	1.4 (0.038)	3.1 (0.084)	6.6 (0.178)	14 (0.378)
Ruthenium-106 + Rhodium-106	0.7 (0.019)	1.1 (0.03)	1.3 (0.035)	2.2 (0.059)	3.9 (0.105)	6 (0.162)	32 (0.865)
Palladium-103 + Rhodium-103	840 (22.7)	3020 (81.6)	4600 (124)	13180 (356)	36990 (1000)	40000 (1080)	40000 (1080)
Argentum-110m + Argentum-110	0.06 (0.0016)	0.07 (0.0019)	0.08 (0.0022)	0.11 (0.003)	0.16 (0.0043)	0.23 (0.0062)	0.9 (0.0243)
Cadmium-109	37 (1)	37 (1)	37 (1)	37 (1)	37 (1)	37 (1)	37 (1)
Indium-111 + Cadmium-111m	0.4 (0.011)	5 (0.135)	19 (0.51)	37 (1)	37 (1)	37 (1)	37 (1)
Stannum-113 + Indium-113m	0.57 (0.015)	1.3 (0.035)	2 (0.054)	6.7 (0.181)	23 (0.621)	75 (2.03)	2000 (54)
Stannum-117m	1.1 (0.03)	2.4 (0.065)	4 (0.11)	10 (0.27)	52 (1.4)	130 (3.5)	400 (10.8)
Stannum-119m	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Stannum-121m	66.6 (1.8)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Stibium-124	0.09 (0.0024)	0.11 (0.003)	0.13 (0.0035)	0.17 (0.0046)	0.22 (0.0059)	0.3 (0.0081)	0.95 (0.0257)
Stibium-125+	0.35 (0.0094)	0.6 (0.0162)	0.8 (0.0216)	1.5 (0.041)	2.9 (0.078)	5.6 (0.151)	68 (1.84)

Radionuclide	Maximum activity, GBq (Ci) for the package of type YKTIA-						
	-1-RT-M	-3-RT-M	-5-RT-M	-10-RT-M	-15-RT-M	-20-RT-M	-40-RT-M
tellurium-125m							
Tellurium-125m	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Iodine-124	-	-	0.26 (0.007)	0.37 (0.01)	0.555 (0.015)	0.81 (0.022)	2.6 (0.07)
Iodine-125	24 (0.649)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Iodine-129	11 (0.3)	90 (2.43)	90 (2.43)	90 (2.43)	90 (2.43)	90 (2.43)	90 (2.43)
Iodine-131	0.4 (0.0108)	0.9 (0.0243)	1.4 (0.038)	3.7 (0.1)	8.7 (0.235)	16 (0.43)	170 (4.59)
Caesium-134	0.1 (0.0027)	0.13 (0.0035)	0.15 (0.004)	0.25 (0.0068)	0.39 (0.0105)	0.6 (0.016)	3.6 (0.097)
Caesium-137	0.27 (0.0073)	0.38 (0.01)	0.44 (0.012)	0.74 (0.02)	1.2 (0.032)	2 (0.054)	17 (0.46)
Barium-133	0.38 (0.01)	1.2 (0.032)	2.2 (0.06)	10 (0.27)	43 (1.16)	180 (4.86)	3000 (81)
Barium-140 + lanthanum-140	0.07 (0.0019)	0.09 (0.0024)	0.1 (0.0027)	0.13 (0.0035)	0.16 (0.0043)	0.22 (0.006)	0.61 (0.0165)
Cerium-139	0.6 (0.016)	3 (0.081)	12 (0.324)	120 (3.24)	2000 (54)	2000 (54)	2000 (54)
Cerium-141	1.9 (0.051)	22 (0.6)	135 (3.65)	600 (16.2)	600 (16.2)	600 (16.2)	600 (16.2)
Cerium-144+ praseodymium-144	3 (0.081)	7 (0.189)	7.5 (0.203)	10 (0.27)	13 (0.35)	15.6 (0.42)	30 (8.1)
Promethium-147	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Samarium-145	0.9 (0.024)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Samarium-151	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Europium-152	0.14 (0.0038)	0.2 (0.0054)	0.22 (0.006)	0.29 (0.0078)	0.39 (0.011)	0.5 (0.0135)	1.6 (0.0432)
Europium-154	0.12 (0.0032)	0.16 (0.0043)	0.18 (0.0049)	0.24 (0.0065)	0.31 (0.0084)	0.41 (0.011)	1.2 (0.032)
Europium-155	1.6 (0.043)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Gadolinium-153	0.66 (0.018)	25 (0.68)	250 (6.8)	740 (20)	740 (20)	740 (20)	740 (20)
Ytterbium-169	0.27 (0.007)	12.9 (0.35)	37 (1)	314.5 (8.5)	1000 (27)	1000 (27)	1000 (27)
Thulium-170	13 (0.351)	37 (1)	37 (1)	37 (1)	37 (1)	37 (1)	37 (1)
Tantalum-182	0.13 (0.0035)	0.2 (0.0054)	0.22 (0.0059)	0.29 (0.0078)	0.39 (0.0105)	0.51 (0.0138)	1.8 (0.049)
Iridium-192	0.18 (0.0049)	0.4 (0.011)	0.6 (0.016)	1.6 (0.043)	3.4 (0.092)	7 (0.19)	30 (0.81)
MerCiry-203	0.6 (0.016)	3.4 (0.092)	9 (0.243)	100 (2.7)	900 (24.3)	900 (24.3)	900 (24.3)
Thallium-204	70 (1.9)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)
Lead-210	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)
Polonium-210	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)
Bismuth-207	0.1 (0.0027)	0.12 (0.0032)	0.13 (0.0035)	0.2 (0.0054)	0.26 (0.007)	0.35 (0.0095)	0.6 (0.0162)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-						
	-1-RT-M	-3-RT-M	-5-RT-M	-10-RT-M	-15-RT-M	-20-RT-M	-40-RT-M
Radium-226	0.485 (0.013)	1.53 (0.041)	2.37 (0.064)	5.83 (0.157)	7 (0.19)	7 (0.19)	7 (0.19)
Radium-224	0.117 (0.00316)	0.157 (0.00423)	0.172 (0.00466)	0.216 (0.00584)	0.272 (0.00736)	0.34 (0.0092)	0.787 (0.0213)
Radium-226	0.1 (0.0027)	0.13 (0.0035)	0.15 (0.0041)	0.19 (0.0051)	0.24 (0.0065)	0.32 (0.0086)	0.55 (0.0149)
Radium-228	0.17 (0.0046)	0.24 (0.0065)	0.27 (0.0073)	0.365 (0.01)	0.491 (0.013)	0.665 (0.018)	2 (0.054)
Radium-228 (Special Form Radioactive Material)	0.17 (0.0046)	0.24 (0.0065)	0.27 (0.0073)	0.365 (0.01)	0.491 (0.013)	0.665 (0.018)	2.3 (0.061)
Thorium-227	1.35 (0.036)	5 (0.135)	5 (0.135)	5 (0.135)	5 (0.135)	5 (0.135)	5 (0.135)
Thorium-228	0.12 (0.0032)	0.16 (0.0042)	0.172 (0.0047)	0.216 (0.0058)	0.272 (0.0074)	0.34 (0.0092)	0.787 (0.0213)
Thorium-230	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Thorium-232	8.10^{-4} ($2.2 \cdot 10^{-5}$)	8.10^{-4} ($2.2 \cdot 10^{-5}$)	8.10^{-4} ($2.2 \cdot 10^{-5}$)	8.10^{-4} ($2.2 \cdot 10^{-5}$)	8.10^{-4} ($2.2 \cdot 10^{-5}$)	8.10^{-4} ($2.2 \cdot 10^{-5}$)	8.10^{-4} ($2.2 \cdot 10^{-5}$)
Actinium-227	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)
Protactinium-231	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)
Uranium-232	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Uranium-233	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g
Uranium-234	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)
Uranium-235	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$)- 15g
Uranium-236	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)
Uranium-238	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)
Natural uranium	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)
Neptunium-235	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Neptunium-237	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)
Plutonium-236	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)
Plutonium-238	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Plutonium-238	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-						
	-1-RT-M	-3-RT-M	-5-RT-M	-10-RT-M	-15-RT-M	-20-RT-M	-40-RT-M
(Special Form Radioactive Material)							
Plutonium-239	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g
Plutonium-239 (Special Form Radioactive Material)	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g
Plutonium-240	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Plutonium-241	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)
Plutonium-242	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Plutonium-244	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Americium-241	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Americium-241 (Special Form Radioactive Material)	2.6 (0.071)	2000 (54)	2000 (54)	2000 (54)	2000 (54)	2000 (54)	2000 (54)
Americium-241m	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Americium-243	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Curium-242	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)
Curium-243	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Curium-244	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)
Curium-244 (Special Form Radioactive Material)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)
Curium-245	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)
Curium-246	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)
Californium-252	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$	$2 \cdot 10^{-2} (5.4 \cdot 10^{-4})$

Table 2. Maximum radionuclide activity in the UKTIA-RT-M transport packaging set

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-					
	-1-RT-B	-3-RT-B	-5-RT-B	-10-RT-B	-15-RT-B	-20-RT-B
Tritium	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)	3700 (100)
Carbon-14	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)
Sodium-22	0.38 (0.01)	0.383 (0.01)	0.64 (0.017)	0.92 (0.025)	1.27 (0.034)	1.73 (0.047)
Phosphorus-32	66 (1.8)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)
Phosphorus-33	1000 (27)	1000 (27)	1000 (27)	1000 (27)	1000 (27)	1000 (27)
Sulfur-35	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)
Chlorine-36	600 (16)	600 (16)	600 (16)	600 (16)	600 (16)	600 (16)
Potassium-40	6.1 (0.166)	6.5 (0.175)	6.7 (0.161)	10.7 (0.29)	13.3 (0.36)	16.7 (0.45)
Calcium-45	1000 (27)	1000 (27)	1000 (27)	1000 (27)	1000 (27)	1000 (27)
Scandium-46	0.44 (0.012)	0.63 (0.017)	0.71 (0.019)	0.95 (0.026)	1.29 (0.035)	1.77 (0.048)
Titanium-44 + Scandium-44	0.35 (0.009)	0.77 (0.021)	0.92 (0.025)	1.42 (0.038)	2.13 (0.058)	3.13 (0.085)
Vanadium-49	40000 (1080)	40000 (1080)	40000 (1080)	40000 (1080)	40000 (1080)	40000 (1080)
Chromium-51	22 (0.58)	136 (3.66)	277 (7.48)	1700 (46)	10560 (285)	30000 (810)
Manganese-52	0.24 (0.0066)	0.26 (0.007)	0.41 (0.011)	0.54 (0.015)	0.72 (0.02)	0.96 (0.026)
Manganese-54	1 (0.027)	1.09 (0.029)	1.12 (0.03)	2.66 (0.072)	3.9 (0.105)	5.8 (0.15)
Ferrum-55	40000 (1080)	40000 (1080)	40000 (1080)	40000 (1080)	40000 (1080)	40000 (1080)
Ferrum-59	0.76 (0.021)	1.06 (0.029)	1.16 (0.031)	1.5 (0.04)	1.93 (0.052)	2.54 (0.069)
Cobalt-56	0.26 (0.007)	0.29 (0.008)	0.43 (0.012)	0.57 (0.015)	0.74 (0.02)	0.96 (0.026)
Cobalt-57	3.96 (0.11)	1130 (31)	1430 (38)	2320 (63)	3820 (103)	6310 (170)
Cobalt-60	0.37 (0.01)	0.39 (0.01)	0.4 (0.011)	0.69 (0.019)	0.88 (0.024)	1.14 (0.031)
Nickel-63	30000 (810)	30000 (810)	30000 (810)	30000 (810)	30000 (810)	30000 (810)
Copper-64	3.92 (0.106)	4.16 (0.112)	4.55 (0.123)	25.9 (0.7)	51.8 (1.4)	101 (2.7)
Zinc-65	1.53 (0.041)	1.62 (0.044)	2.4 (0.065)	3.14 (0.085)	4.16 (0.112)	5.6 (0.15)
Gallium-67	3.6 (0.1)	53.1 (1.44)	100 (2.7)	368 (9.9)	950 (25.5)	1920 (52)
Germanium-68	0.8 (0.022)	0.85 (0.023)	0.93 (0.025)	5.5 (0.15)	11.4 (0.31)	23 (0.62)
Selenium-75	1.4 (0.04)	2.4 (0.065)	3.3 (0.09)	159 (4.3)	692 (18.7)	2560 (69)
Krypton-85	170 (4.7)	795 (21.5)	1080 (29)	2300 (62)	4980 (134)	10000 (270)
Strontium-85	1.5 (0.04)	1.6 (0.042)	4.9 (0.13)	10.3 (0.28)	21.8 (0.59)	47.1 (1.27)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-					
	-1-PT-B	-3-RT-B	-5-RT-B	-10-RT-B	-15-RT-B	-20-RT-B
Strontium-89	38 (1)	507 (13.7)	600 (16)	600 (16)	600 (16)	600 (16)
Strontium-90 + yttrium-90	18.3 (0.5)	113 (3.1)	148 (4)	261 (7.1)	300 (8.1)	300 (8.1)
Yttrium-87	1.63 (0.044)	1.74 (0.047)	6 (0.16)	13.7 (0.37)	31.5 (0.85)	73.4 (2)
Yttrium-88	0.36 (0.0097)	0.38 (0.0102)	0.52 (0.014)	0.65 (0.018)	0.83 (0.022)	1.05 (0.028)
Yttrium-91	252 (6.8)	344 (9.3)	378 (10.2)	482 (13)	600 (16.2)	600 (16.2)
Zirconium-88	1.8 (0.05)	6.9 (0.19)	11 (0.3)	36.3 (0.98)	122 (3.3)	416 (11.2)
Zirconium-89	0.72 (0.019)	0.76 (0.021)	1.38 (0.037)	2 (0.054)	2.92 (0.079)	4.24 (0.114)
Zirconium-95 + niobium-95m	1.05 (0.028)	1.11 (0.03)	2 (0.054)	2.9 (0.079)	4.3 (0.12)	6.6 (0.18)
Niobium-95	1.07 (0.029)	1.8 (0.049)	2.1 (0.057)	3.2 (0.087)	4.9 (0.13)	7.6 (0.205)
Molybdenum-99 + Technetium-99m	2.34 (0.063)	5.2 (0.14)	6.4 (0.17)	17.2 (0.46)	25.9 (0.7)	39.2 (1.06)
Technetium-99	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)
Ruthenium-103	1.56 (0.042)	4 (0.108)	5.36 (0.145)	11.4 (0.309)	24.6 (0.665)	53.4 (1.44)
Ruthenium-106 + Rhodium-106	3.86 (0.104)	8.47 (0.23)	10.7 (0.29)	19 (0.51)	32.8 (0.88)	54.6 (1.47)
Palladium-103 + Rhodium-103	4580 (124)	6540 (177)	33300 (900)	40000 (1080)	40000 (1080)	40000 (1080)
Argentum-110m + Argentum-110	0.31 (0.0085)	0.51 (0.014)	0.59 (0.016)	0.84 (0.0227)	1.2 (0.0324)	1.69 (0.0457)
Cadmium-109	114 (3.1)	2000 (54.1)	2000 (54.1)	2000 (54.1)	2000 (54.1)	2000 (54.1)
Indium-111 + Cadmium-111m	1.57 (0.042)	48.2 (1.3)	184 (4.9)	3000 (81)	3000 (81)	3000 (81)
Stannum-113 + Indium-113m	2.7 (0.073)	10 (0.27)	15.9 (0.43)	50.7 (1.37)	164 (4.45)	538 (14.5)
Stannum-117m	3.9 (0.106)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)
Stannum-119m	10950 (296)	30000 (810)	30000 (810)	30000 (810)	30000 (810)	30000 (810)
Stannum-121m	600 (16.2)	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)
Stibium-124	0.5 (0.0136)	0.79 (0.0214)	0.9 (0.0243)	1.23 (0.0332)	1.65 (0.0447)	2.2 (0.059)
Stibium-125+	1.78 (0.048)	4.8 (0.13)	6.4 (0.17)	12.8 (0.34)	25.2 (0.68)	48.7 (1.31)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-					
	-1-RT-B	-3-RT-B	-5-RT-B	-10-RT-B	-15-RT-B	-20-RT-B
tellurium-125m						
Tellurium-125m	281 (7.6)	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)	900 (24.3)
Iodine-124	-	-	1.66 (0.045)	2.47 (0.067)	3.54 (0.096)	4.95 (0.134)
Iodine-125	320 (8.6)	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)
Iodine-129	90 (2.4)	90 (2.43)	90 (2.43)	90 (2.43)	90 (2.43)	90 (2.43)
Iodine-131	1.74 (0.047)	5.96 (0.16)	8.86 (0.24)	22.7 (0.61)	53.1 (1.4)	112 (3)
Caesium-134	0.51 (0.014)	0.54 (0.015)	1.12 (0.03)	1.76 (0.047)	2.74 (0.074)	4.37 (0.118)
Caesium-137	1.39 (0.037)	2.68 (0.072)	3.25 (0.088)	5.39 (0.146)	9.06 (0.245)	15.3 (0.415)
Barium-133	1.62 (0.044)	2.1 (0.057)	13.2 (0.06)	44.3 (1.2)	147 (3.9)	484 (13.07)
Barium-140 + lanthanum-140	0.37 (0.01)	0.39 (0.011)	0.65 (0.18)	0.86 (0.023)	1.11 (0.03)	1.43 (0.039)
Cerium-139	4 (0.108)	1950 (52.7)	2000 (54)	2000 (54)	2000 (54)	2000 (54)
Cerium-141	1.9 (0.051)	22 (0.6)	135 (3.65)	600 (16.2)	600 (16.2)	600 (16.2)
Cerium-144+ praseodymium-144	3 (0.081)	7 (0.189)	7.5 (0.203)	10 (0.27)	13 (0.35)	15.6 (0.42)
Promethium-147	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)	740 (20)
Samarium-145	8 (0.21)	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)
Samarium-151	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)
Europium-152	0.14 (0.0038)	0.2 (0.0054)	0.22 (0.006)	0.29 (0.0078)	0.39 (0.011)	0.5 (0.0135)
Europium-154	0.12 (0.0032)	0.16 (0.0043)	0.18 (0.0049)	0.24 (0.0065)	0.31 (0.0084)	0.41 (0.011)
Europium-155	6.6 (0.178)	3000 (81)	3000 (81)	3000 (81)	3000 (81)	3000 (81)
Gadolinium-153	4.1 (0.111)	9000 (243)	9000 (243)	9000 (243)	9000 (243)	9000 (243)
Ytterbium-169	1.32 (0.036)	104.2 (2.82)	300 (27)	1000 (27)	1000 (27)	1000 (27)
Thulium-170	13 (0.351)	37 (1)	37 (1)	37 (1)	37 (1)	37 (1)
Tantalum-182	0.13 (0.0035)	0.2 (0.0054)	0.22 (0.0059)	0.29 (0.0078)	0.39 (0.0105)	0.51 (0.0138)
Iridium-192	0.18 (0.0049)	0.4 (0.011)	0.6 (0.016)	1.6 (0.043)	3.4 (0.092)	7 (0.19)
MerCiry-203	0.6 (0.016)	3.4 (0.092)	9 (0.243)	100 (2.7)	900 (24.3)	900 (24.3)
Thallium-204	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)	500 (13.5)
Lead-210	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)	7.4 (0.2)
Polonium-210	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)	20 (0.54)
Bismuth-207	0.1 (0.0027)	0.12 (0.0032)	0.13 (0.0035)	0.2 (0.0054)	0.26 (0.007)	0.35 (0.0095)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-					
	-1-RT-B	-3-RT-B	-5-RT-B	-10-RT-B	-15-RT-B	-20-RT-B
Radium-226	0.485 (0.013)	1.53 (0.041)	2.37 (0.064)	5.83 (0.157)	7 (0.19)	7 (0.19)
Radium-224	0.117 (0.00316)	0.157 (0.00423)	0.172 (0.00466)	0.216 (0.00584)	0.272 (0.00736)	0.34 (0.0092)
Radium-226	0.1 (0.0027)	0.13 (0.0035)	0.15 (0.0041)	0.19 (0.0051)	0.24 (0.0065)	0.32 (0.0086)
Radium-228	2 (0.054)	2 (0.054)	2 (0.054)	2 (0.054)	2 (0.054)	2 (0.054)
Radium-228 (Special Form Radioactive Material)	600 (16.2)	600 (16.2)	600 (16.2)	600 (16.2)	600 (16.2)	600 (16.2)
Thorium-227	1.35 (0.036)	5 (0.135)	5 (0.135)	5 (0.135)	5 (0.135)	5 (0.135)
Thorium-228	0.12 (0.0032)	0.16 (0.0042)	0.172 (0.0047)	0.216 (0.0058)	0.272 (0.0074)	0.34 (0.0092)
Thorium-230	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Thorium-232	$8 \cdot 10^{-4}$ ($2.2 \cdot 10^{-5}$)	$8 \cdot 10^{-4}$ ($2.2 \cdot 10^{-5}$)	$8 \cdot 10^{-4}$ ($2.2 \cdot 10^{-5}$)	$8 \cdot 10^{-4}$ ($2.2 \cdot 10^{-5}$)	$8 \cdot 10^{-4}$ ($2.2 \cdot 10^{-5}$)	$8 \cdot 10^{-4}$ ($2.2 \cdot 10^{-5}$)
Actinium-227	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)	0.09 (0.0024)
Protactinium-231	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)	0.4 (0.0108)
Uranium-232	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Uranium-233	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g	5.4 (0.15) -15g
Uranium-234	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)
Uranium-235	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$) 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$) 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$) 15g	$1.2 \cdot 10^{-2}$ ($3.2 \cdot 10^{-5}$) 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$) 15g	$1.2 \cdot 10^{-3}$ ($3.2 \cdot 10^{-5}$) 15g
Uranium-236	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)	6 (0.162)
Uranium-238	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)
Natural uranium	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)	$2.5 \cdot 10^{-3}$ ($6.8 \cdot 10^{-5}$)
Neptunium-235	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Neptunium-237	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)	0.39 (0.0106)
Plutonium-236	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)	3 (0.081)
Plutonium-238	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Plutonium-238 (Special Form Radioactive Material)	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)	10000 (270)

Radionuclide	Maximum permissible activity, GBq (Ci), for the package of type UKTIA-					
	-1-RT-B	-3-RT-B	-5-RT-B	-10-RT-B	-15-RT-B	-20-RT-B
Plutonium-239	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g	1 (0.027) 0,43g
Plutonium-239 (Special Form Radioactive Material)	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g	34.5 (0.93) -15g
Plutonium-240	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Plutonium-241	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)	60 (1.62)
Plutonium-242	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Plutonium-244	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Americium-241	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Americium-241 (Special Form Radioactive Material)	2.6 (0.071)	2000 (54)	2000 (54)	2000 (54)	2000 (54)	2000 (54)
Americium-241m	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Americium-243	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Curium-242	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)	10 (0.27)
Curium-243	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)	1 (0.027)
Curium-244	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)	2 (0.057)
Curium-244 (Special Form Radioactive Material)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)	400 (10.8)
Curium-245	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)
Curium-246	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)	0.9 (0.024)
Californium-252	$2 \cdot 10^{-2}$ ($5.4 \cdot 10^{-4}$)	$2 \cdot 10^{-2}$ ($5.4 \cdot 10^{-4}$)	$2 \cdot 10^{-2}$ ($5.4 \cdot 10^{-4}$)	$2 \cdot 10^{-2}$ ($5.4 \cdot 10^{-4}$)	$2 \cdot 10^{-2}$ ($5.4 \cdot 10^{-4}$)	$2 \cdot 10^{-2}$ ($5.4 \cdot 10^{-4}$)

Table 3 - Main properties and dimensions of the UKTIA-RT packaging set

UKTIA-RT code	Thickness of radiation protection, lead in mm, minimum	Overall dimensions, (L x W x H), mm		Weight, kg, maximum	
		with a small box -M	with a big box -B	with a small box -M	with a big box -B
UKTIA-1-1RT	-	220x220x230	480x480x480	0.6	3.5
UKTIA-1-2RT					
UKTIA-3-1RT	3			1.0	3.9
UKTIA-3-2RT					
UKTIA-5-1RT	5			1.4	4.3
UKTIA-5-2RT					
UKTIA-10-1RT	10			2.3	5.2
UKTIA-10-2RT					
UKTIA-15-1RT	15			3.3	6.2
UKTIA-15-2RT					
UKTIA-20-1RT	20			5.3	8.2
UKTIA-20-2RT					
UKTIA-40-1RT	40	-	9.2	-	
UKTIA-40-2PT					

Design of UKTIA-3-1RT-M, UKTIA-5-1RT-M, UKTIA-10-1RT-M, UKTIA-15-1RT-M packaging sets for transportation of solid and liquid radioactive substances is given in Figure 1.

Design of UKTIA-3-2RT-M, UKTIA-5-2RT-M, UKTIA-10-2RT-M, UKTIA-15-2RT-M packaging set for transportation of sealed radionuclide sources is given in Figure 2.

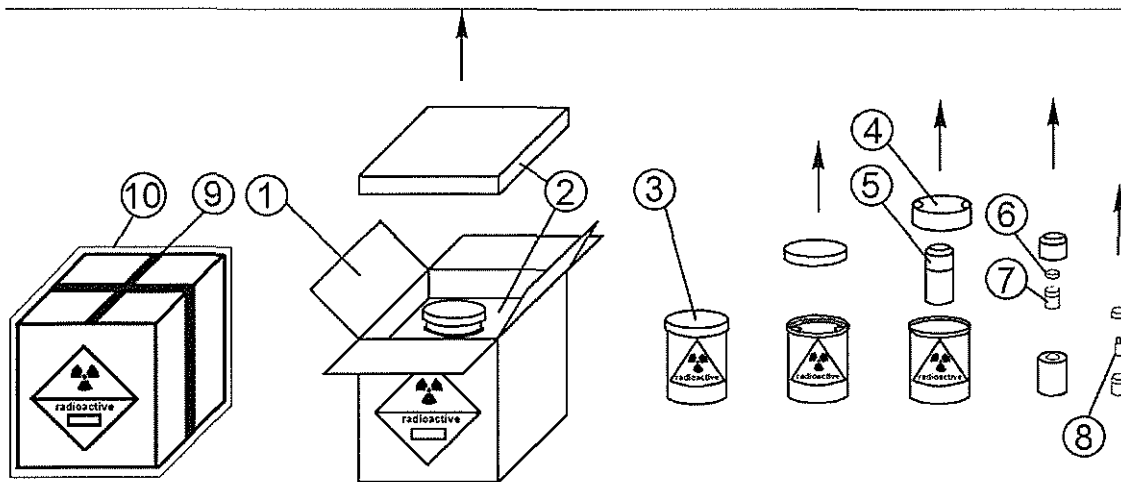
Design of UKTIA-20-1RT-M packaging set for transportation of solid and liquid radioactive substances is given in Figure 3.

Design of UKTIA-20-2RT-M packaging set for transportation of sealed radionuclide sources is given in Figure 4.

Design of UKTIA-40-1RT-M packaging set for transportation of solid and liquid radioactive substances is given in Figure 5.

Design of UKTIA-40-2RT-M packaging set for transportation of sealed radionuclide sources is given in Figure 6.

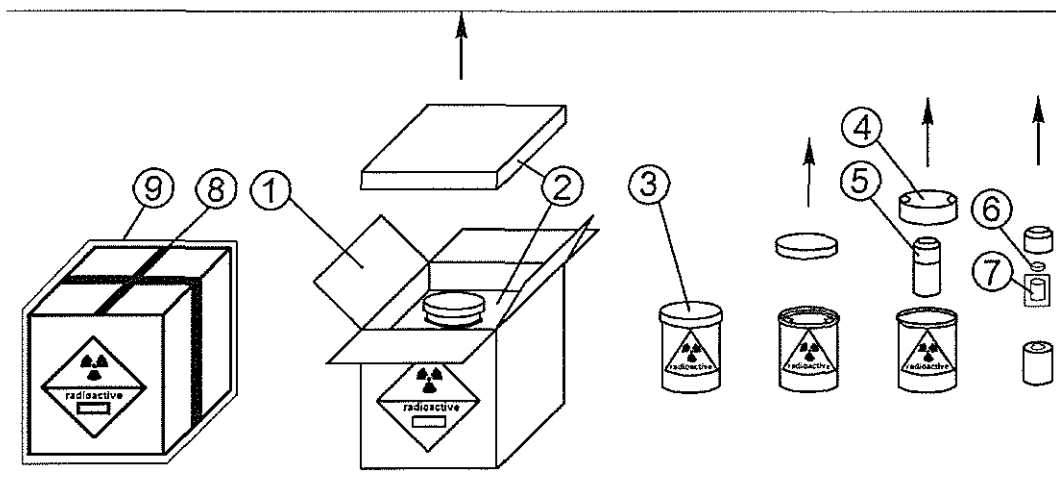
**Design of UKTIA-3-1RT-M, UKTIA-5-1RT-M, UKTIA-10-1RT-M,
UKTIA-15-1RT-M packaging sets**



- | | |
|------------------------|---|
| 1 - corrugated box | 6 –sponges |
| 2 - foam insert | 7 - airtight case |
| 3 - airtight metal can | 8 - primary package containing radioactive material |
| 4 - liner | 9 - adhesive tape or equivalent |
| 5 - lead container | 10- waterproof film |

Figure 1

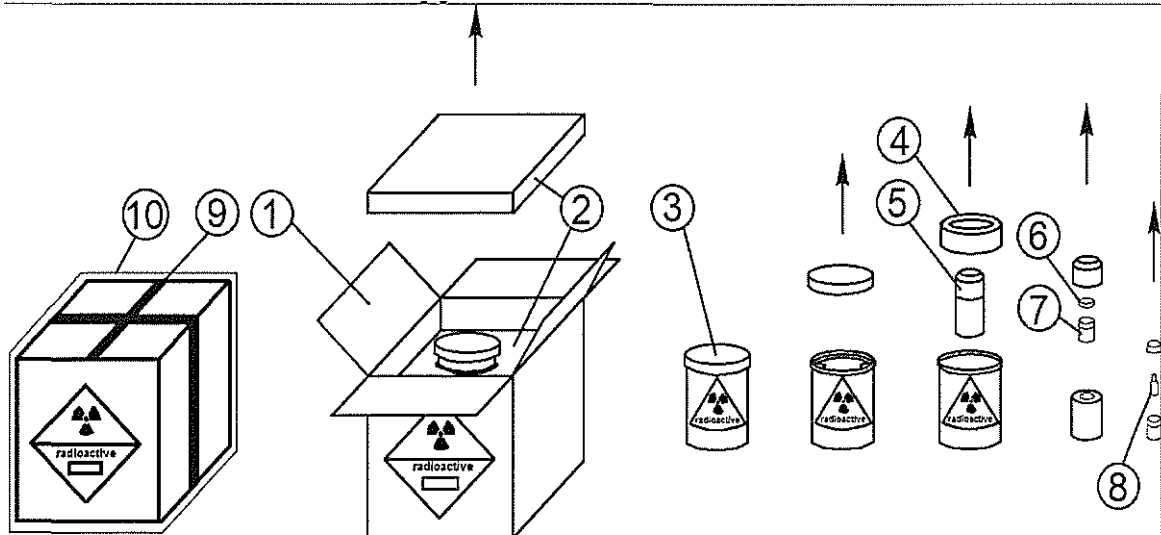
Design of UKTIA-3-2RT-M, UKTIA-5-2RT-M, UKTIA-10-2RT-M, UKTIA-15-2RT-M transport packaging sets



- | | |
|------------------------|---------------------------------|
| 1 - corrugated box | 6 –sponges |
| 2 - foam insert | 7 - sealed radionuclide source |
| 3 - airtight metal can | 8 - adhesive tape or equivalent |
| 4 - liner | 9 - waterproof film |
| 5 - lead container | |

Figure 2

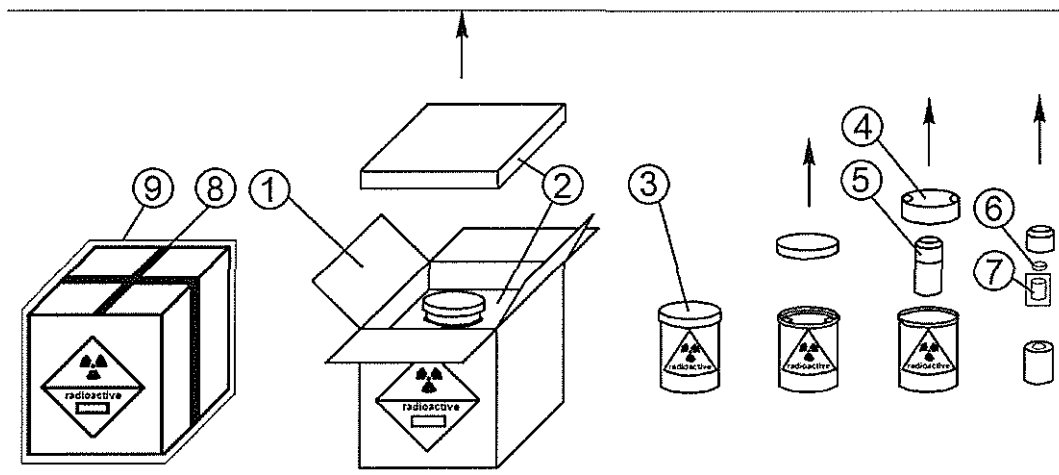
Design of UKTIA-20-1RT-M transport packaging sets



- | | |
|------------------------|---|
| 1 - corrugated box | 6 –sponges |
| 2 - foam insert | 7 - airtight case |
| 3 - airtight metal can | 8 - primary package containing radioactive material |
| 4 - liner | 9 - adhesive tape or equivalent |
| 5 - lead container | 10 - waterproof film |

Figure 3

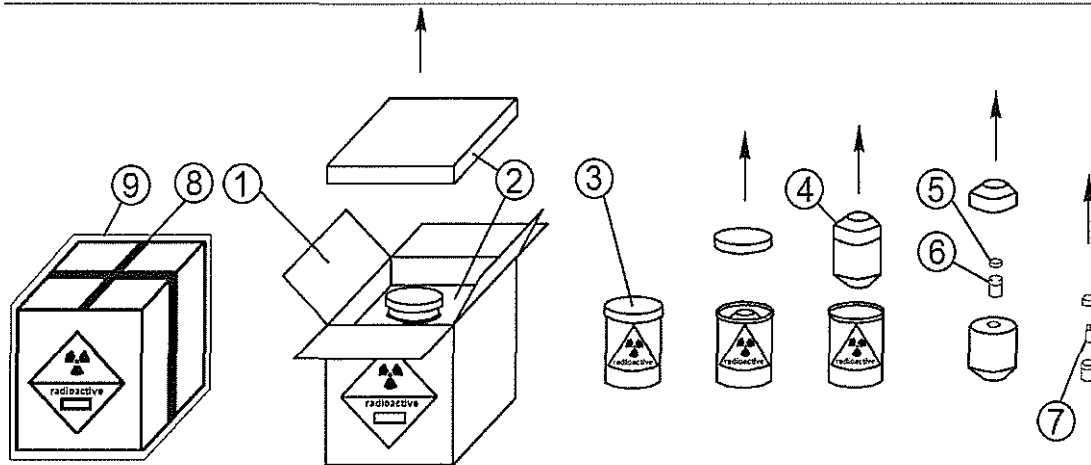
Design of UKTIA-20-2RT-M transport packaging sets



- | | |
|------------------------|---------------------------------|
| 1 - corrugated box | 6 –sponges |
| 2 - foam insert | 7 - sealed radionuclide source |
| 3 - airtight metal can | 8 - adhesive tape or equivalent |
| 4 - liner | 9 - waterproof film |
| 5 - lead container | |

Figure 4

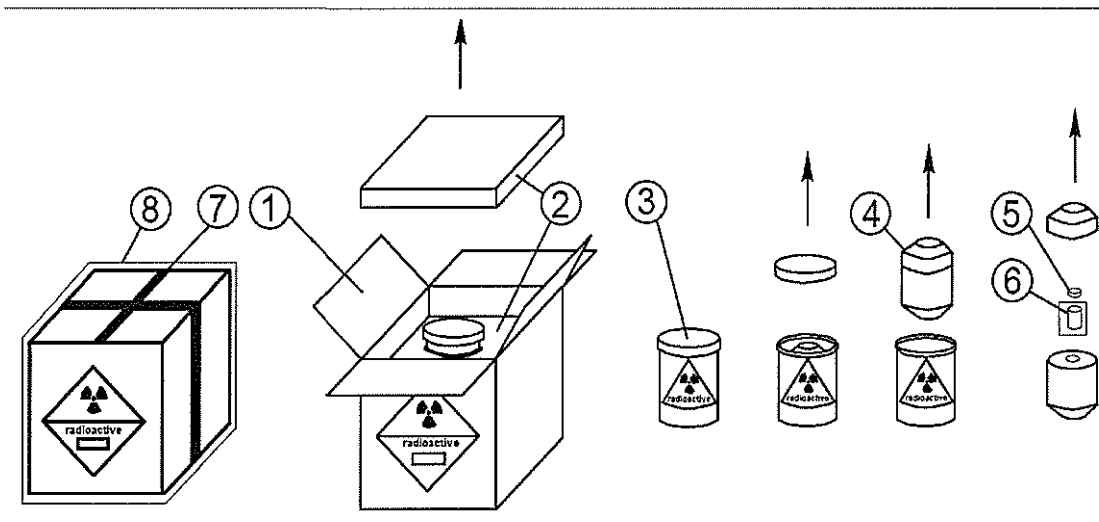
Design of UKTIA-40-1RT-M transport packaging sets



- | | |
|------------------------|---|
| 1 - corrugated box | 6 - airtight case |
| 2 - foam insert | 7 - primary package containing radioactive material |
| 3 - airtight metal can | 8 - adhesive tape or equivalent |
| 4 - lead container | 9 - waterproof film |
| 5 - sponges | |

Figure 5

Design of UKTIA-40-2RT-M transport packaging sets



- | | |
|------------------------|---------------------------------|
| 1 - corrugated box | 5 - sponges |
| 2 - foam insert | 6 - sealed radionuclide source |
| 3 - airtight metal can | 7 - adhesive tape or equivalent |
| 4 - lead container | 8 - waterproof film |

Figure 6

Design of the UKTIA-1-1RT-M packaging set for transportation of solid and liquid radioactive substances is given in Figure 7.

Design of the UKTIA-1-2RT-M packaging set for transportation of sealed radionuclide sources is given in Figure 8.

According to Specifications solid and liquid radioactive substances as well as sealed radionuclide sources can be transported in packaging sets with a big box (UKTIA-RT-B). In this case transport packing set in a small box completed according to figures 1-8 is put into a big box.

The design of UKTIA0-RT-B packaging set for transportation of solid and liquid radioactive substances as well as sealed radionuclide sources is given in Figure 9.

A corrugated box is made of P32 GOST R 52901 grade corrugated cardboard or cardboard with the same properties.

A foam insert is made of foamed polystyrene with density of approximately 35 kg/m³ or polyethylene foam.

Cardboard inserts are made of T23 GOST R 52901 grade cardboard or cardboard with the same properties.

A metal can of 99x122 mm size made in accordance with TL 8110&0051 BWB (Germany) can be used as an airtight can.

Liners are made of foamed polystyrene with density of approximately 35 kg/m³ or polyethylene foam.

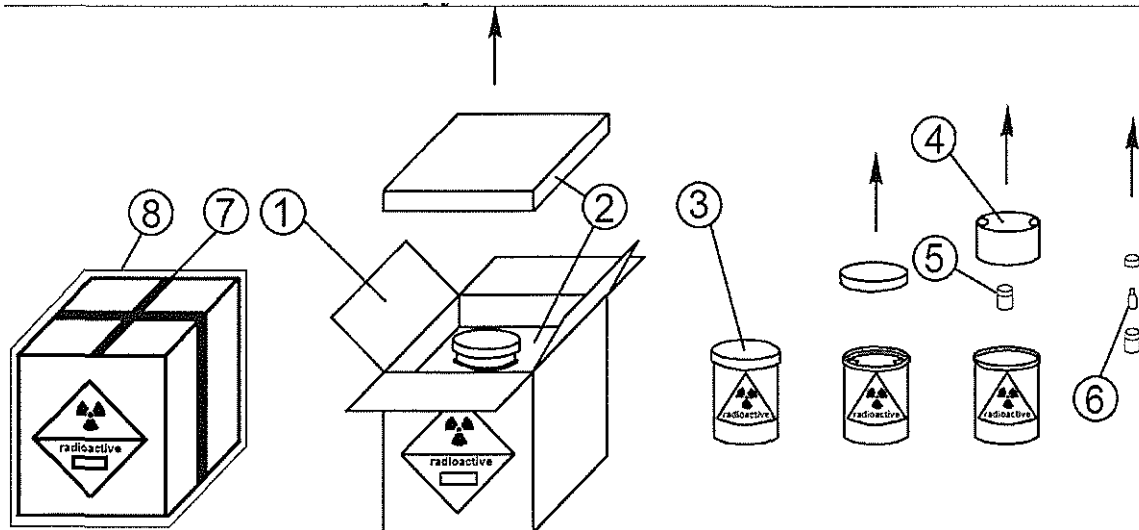
A lead container is made of lead of C1 GOST 3778 grade or lead with the same properties.

Foamed polyurethane of ST-2236 grade is used as sponges.

An airtight case used as the secondary package is made of aluminium alloy or steel.

Glass ampoules, airtight primary package bottles (for transportation of solid and liquid radioactive materials), cases (for transportation of solid radioactive substances) or polyethylene bags (for transportation of sealed radionuclide sources) are used as a primary package (inner package).

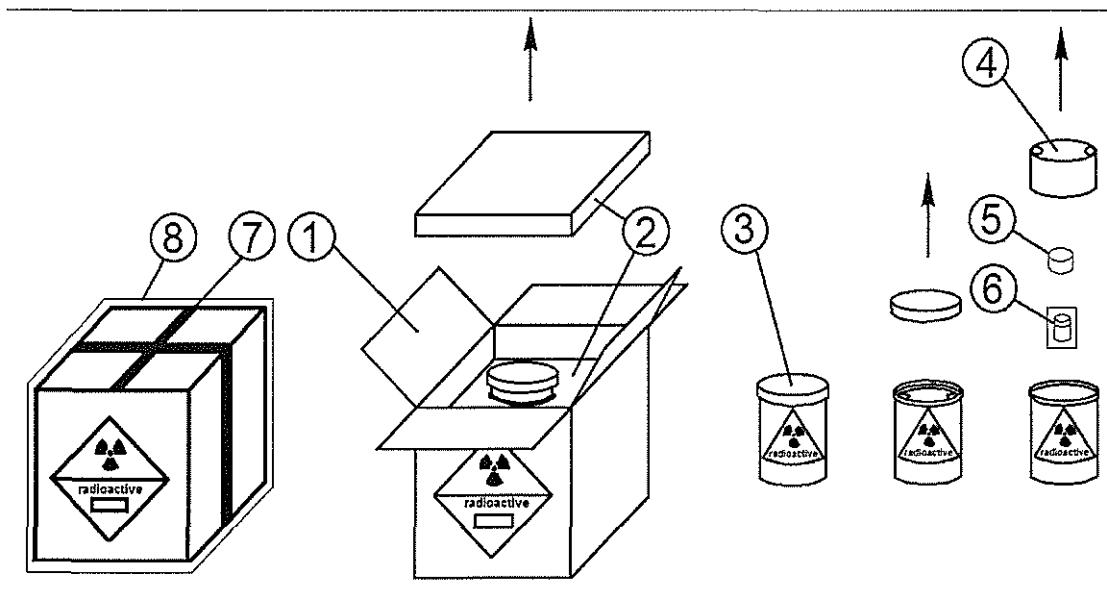
Design of UKTIA-1-1RT-M transport packaging sets



- | | |
|------------------------|---|
| 1 - corrugated box | 5 - airtight case |
| 2 - foam insert | 6 - primary package containing radioactive material |
| 3 - airtight metal can | 7 - adhesive tape or equivalent |
| 4 - liner | 8 - waterproof film |

Figure 7

Design of UKTIA-1-2RT-M transport packaging sets



- | | |
|------------------------|---------------------------------|
| 1 - corrugated box | 5 - sponge |
| 2 - foam insert | 6 - sealed radionuclide source |
| 3 - airtight metal can | 7 - adhesive tape or equivalent |
| 4 - liner | 8 - waterproof film |

Figure 8

Design of UKTIA-RT-B transport packaging sets

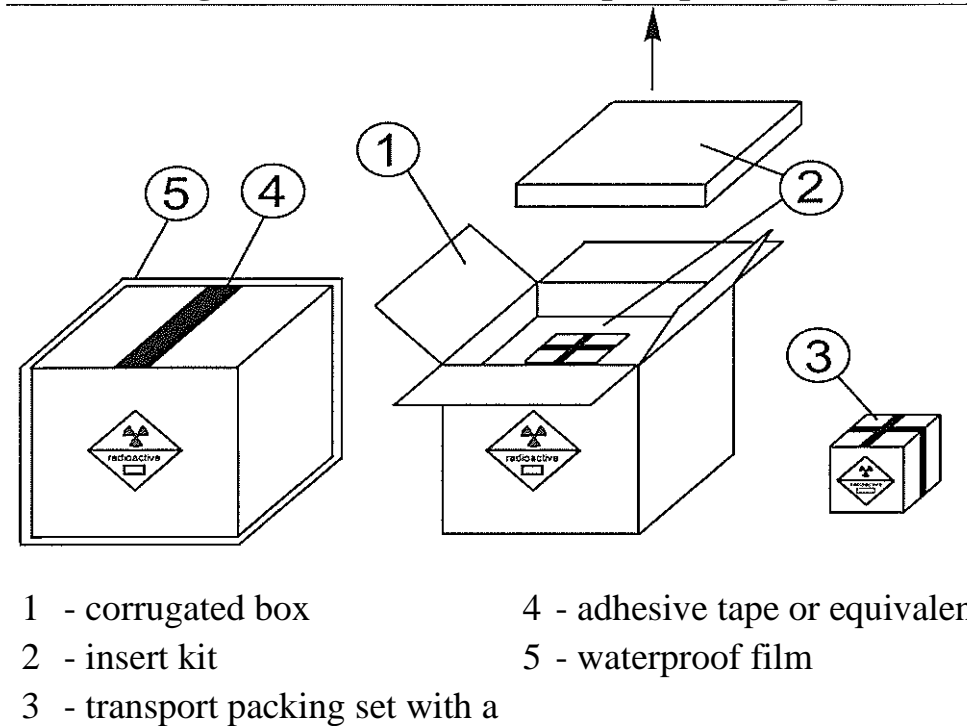


Figure 9

4. Transport Facilities and Transportation Conditions

The transport packaging sets of UKTIA-RT type containing radioactive substances may be transported by all kinds of transport, observing safety regulations for Class 7 dangerous goods transportation under GOST 19433-88 and NP-053-04, provided for each kind of transport facility.

The transport packaging sets of UKTIA-RT type containing radioactive substances shall be transported as a transport category not exceeding “III-YELLOW” (transport index not exceeding 10), with the equivalent radiation dose rate at the maximum radioactive content load:

- at any point on the surface - 2.0 mSv/h (200 mrem/h) maximum;
- at the distance of 1 meter from the surface 0.1 mSv/h (10 mrem/h) maximum.

The total number of the UKTIA-RT type transport packaging sets containing radioactive substances put on the transport facility shall be with the total transport index not exceeding 50 and the radiation level shall not exceed 2 mSv/h (200 mrem/h) at any point on the surface of the transport facility and 0.1 mSv/h (10 mrem/h) at the distance of 2 meters from the surface.

5. Safeguard Instructions

Works with the UKTIA-RT type transport packaging sets while loading and unloading radioactive content and during transportation shall be performed observing of all applicable NP-053-04 “Safety Rules for Transportation of Radioactive Substances”, NRB-99/2009 “Radiation Safety Norms”, OSPORB-99/2010 "Basic Sanitary Regulations for Radiation Safety Protection", SanPin 2.6.1.1281-03 “Sanitary Regulations for Radiation Safety of Personnel and Population during Transportation of Radioactive Materials (Substances)” as well as according to specifications.

In emergency during transportation of the UKTIA-RT type transport packaging set containing radioactive substance, it should be report immediately to:

CJSC “Atomspectrans” command dispatching service at +7 (499) 763-04-77, +7 (499) 946-44-81 (24 hour);

FSUE “SKC ROSATOM Russia” at +7 (495) 933 60 44, fax: +7 (495) 933 60 45, +7 (499) 949 24 35;

FSUE “ATC SPb” command at +7 (812) 702 19 00, fax: +7 (812) 591 53 33 (24 hour);

as well as follow emergency response card #701, the requirements of Section 7 of NP-053-04 and the requirements of Section 3 of NP-014-2000 “Violation Review and Registration while Handling Radiation Sources and Radioactive Substances Used in National Economy”.

This certificate shall not relieve the consignor to meet the requirements of regulations for the safe transportation of any country to the territory or within the territory of which this package will be transported.

On any matters concerning the certificate, please contact the Department of Nuclear and Radiation Safety and Licensing and Permissible Activity Organization of the State Atomic Energy Corporation "Rosatom" (119017, Moscow, B. Ordynka str., 24; phone: +7 (499) 949 48 28, +7 (499) 949 29 27), or FSUE “ATC SPb” (194292, Saint-Petersburg, 3rd Verhny per, 2; tel.: +7 (812) 591 52 30, tel./fax: +7 (812) 702 19 01).

Only registered copies of this certificate bearing the original seal of FSUE “ATC SPb” or the Department of Nuclear and Radiation Safety and Licensing and Permissible Activity Organization of the Federal Agency of Atomic Energy “Rosatom” are valid.

Deputy Head of the Federal
Service for Environmental,
Technological and Nuclear
Supervision

Head of the Department of Nuclear and
Radiation Safety and Licensing and
Permissible Activity Organization of the
Federal Agency of Atomic Energy
“Rosatom”

_____ A.V. Ferapontov
_____ 2015

_____ S.V. Raikov
_____ 2015

Director General
of FSUE “ATC SPb”

_____ A.I. Sorokin
_____ 2015