

Appendix C-1
Individual Characteristics
of Fuel Rod # RT1 before the BGR Test

RT1

**Table C-1.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT1
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.23-2.82 mm	2.82-3.44 mm	3.44-3.71 mm	3.71-3.795 mm
U ²³⁴	0.233	0.229	0.226	0.222
U ²³⁵	7.714	7.414	7.140	6.952
U ²³⁶	6.401	6.413	6.425	6.440
U ²³⁸	928.8	925.1	913.6	882.2
Pu ²³⁸	0.361	0.381	0.412	0.468
Pu ²³⁹	4.952	5.516	7.463	12.68
Pu ²⁴⁰	2.581	2.740	3.537	5.775
Pu ²⁴¹	1.037	1.217	1.738	3.134
Pu ²⁴²	0.751	0.905	1.332	2.480
Np ²³⁷	0.606	0.625	0.644	0.657
Am ²⁴¹	0.382	0.443	0.627	1.132
Oxygen	134.5	134.5	134.5	134.5
Other fission products	47.16	50.05	58.19	79.88

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data

Table C-1.2. Initial individual characteristics of fuel rod # RT1*

Axial coordinate (from lower cap) (mm)	Cladding average outer diameter (mm)	Fuel mass ** (g)	Linear fuel mass** (g/cm)	Gas flow area ^{3)**} (mm ²)	Burnup** (MW d/kg U)
25 ¹⁾	-	1.47	4.18	4.800	48.05
30	9.065	2.08	4.17	4.806	47.98
35	9.066	2.07	4.14	5.101	47.95
40	9.065	2.08	4.17	4.806	47.98
45	9.063	2.13	4.25	4.800	47.94
50	9.067	2.12	4.25	4.800	47.75
55	9.063	2.13	4.26	4.800	47.56
60	9.064	2.08	4.17	4.806	47.51
65	9.063	2.07	4.14	5.101	47.70
70	9.067	2.07	4.13	5.199	48.14
75	9.066	2.02	4.03	6.183	48.72
80	9.064	2.06	4.12	5.298	49.20
85	9.065	2.03	4.07	5.790	49.17
90	9.063	2.06	4.12	5.298	48.59
95	9.061	2.08	4.17	4.806	48.34
100	9.061	2.04	4.07	5.790	48.83
105	9.065	2.00	3.99	6.576	49.17
110	9.063	2.03	4.05	5.986	48.77
115	9.065	2.10	4.20	4.800	48.17
120	9.063	2.10	4.20	4.800	47.82
125	9.059	2.11	4.22	4.800	47.71
130	9.061	2.12	4.24	4.800	47.75
135	9.059	2.11	4.23	4.800	47.90
140	9.061	2.11	4.21	4.800	48.13
145	9.059	2.09	4.17	4.806	48.40
150	9.059	2.09	4.17	4.806	48.68
155	9.059	2.07	4.14	5.101	48.79
160	9.058	2.08	4.16	4.904	48.68
165	9.059	2.06	4.12	5.298	48.49
170	9.062	2.05	4.10	5.495	48.32
175 ²⁾	9.066	1.83	4.05	5.986	48.16

* All parameters were determined using results of pre-test examinations

** Average values at the length interval equal to the axial coordinate ± 2.5 mm

¹⁾ Bottom end coordinate of fuel stack is 24 mm;

²⁾ Top end coordinate of fuel stack is 177 mm

³⁾ Gas flow area beyond the fuel stack (mm²):

Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-15.1mm – 45.82; 15.1-24.0mm – 24.97

Top: 177.0-181.5mm – 45.82; 181.5-207.5mm – 28.26; 207.5-284mm – 45.82; 284-293mm – 28.26; 293-302mm – 0.00

RT1

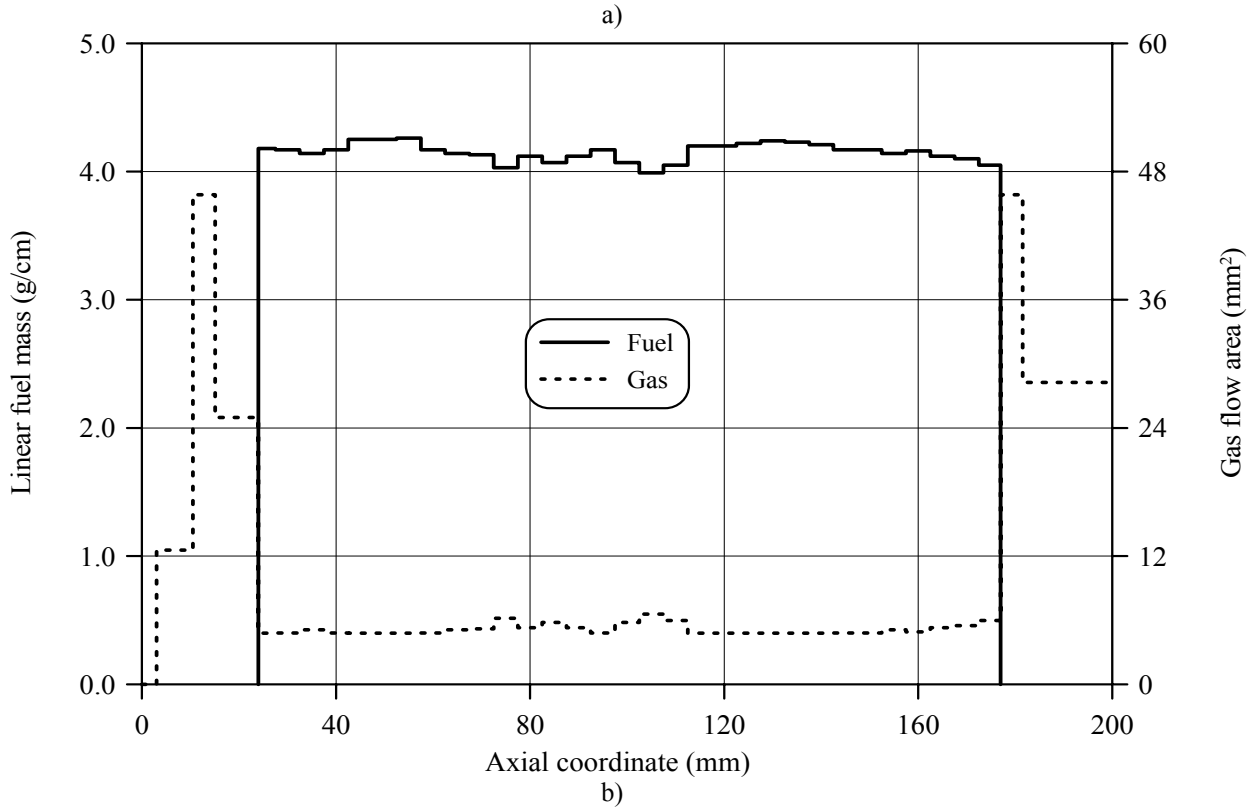
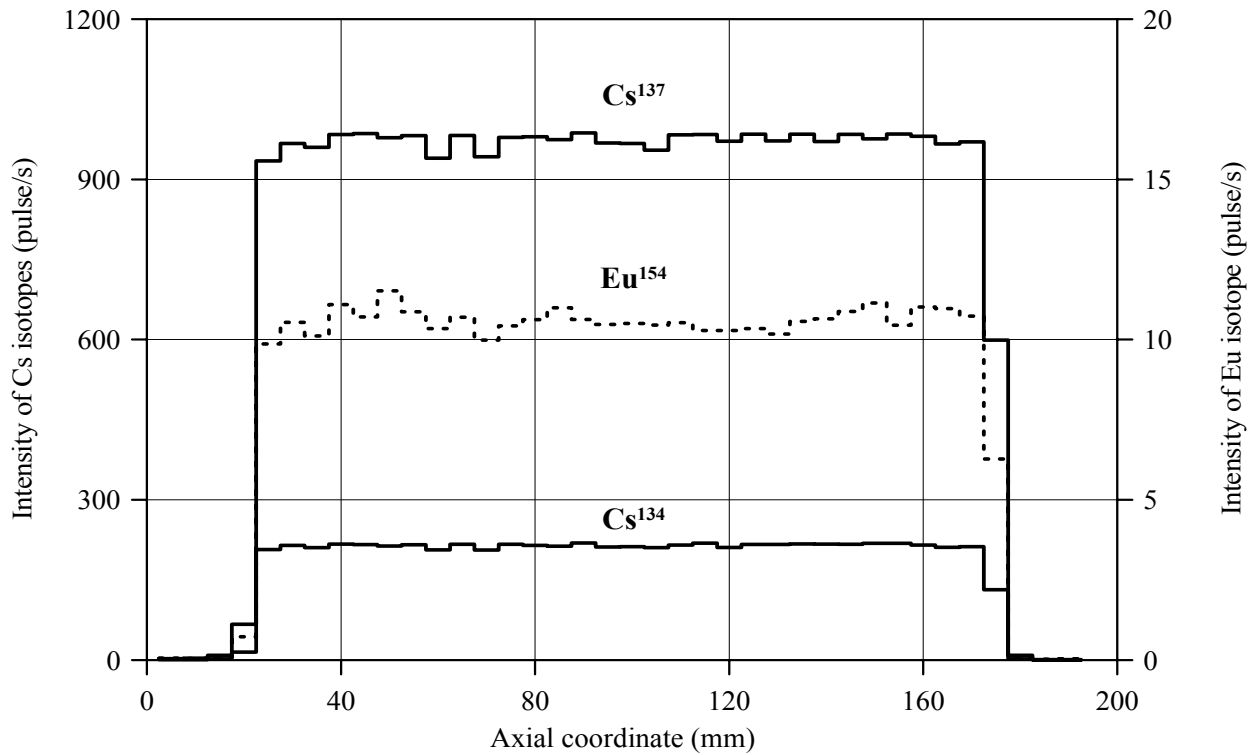
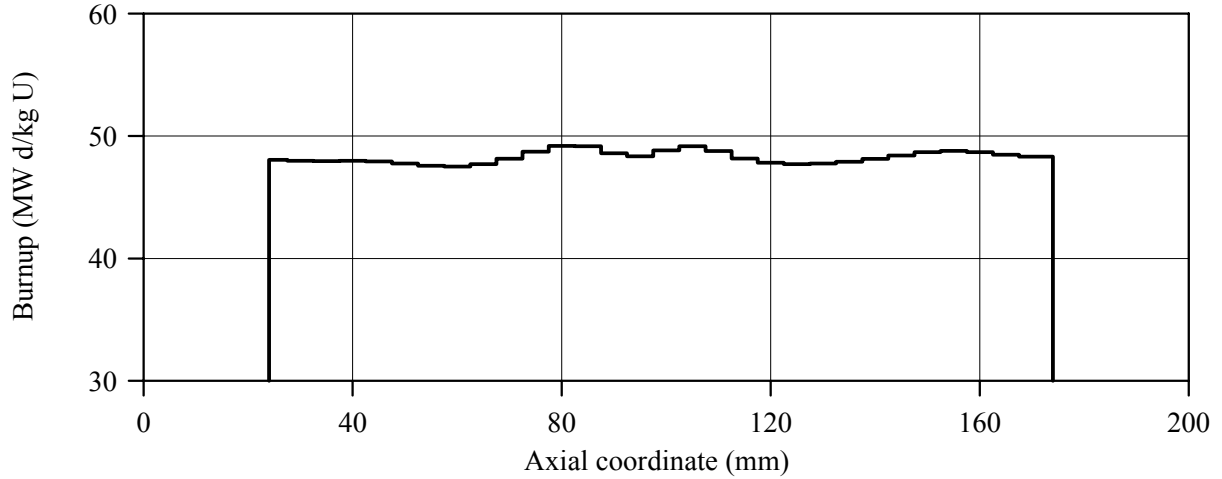
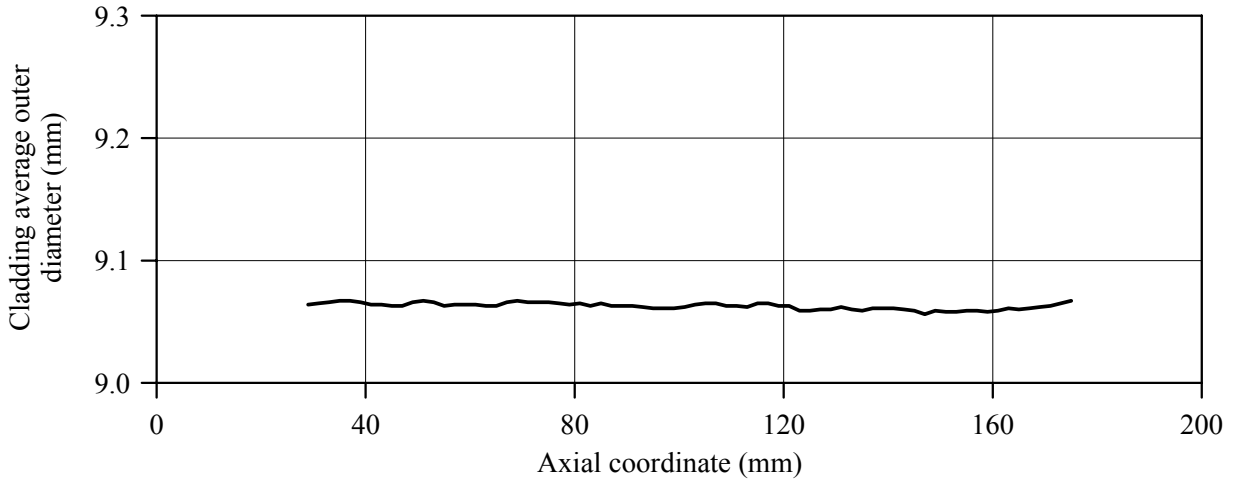


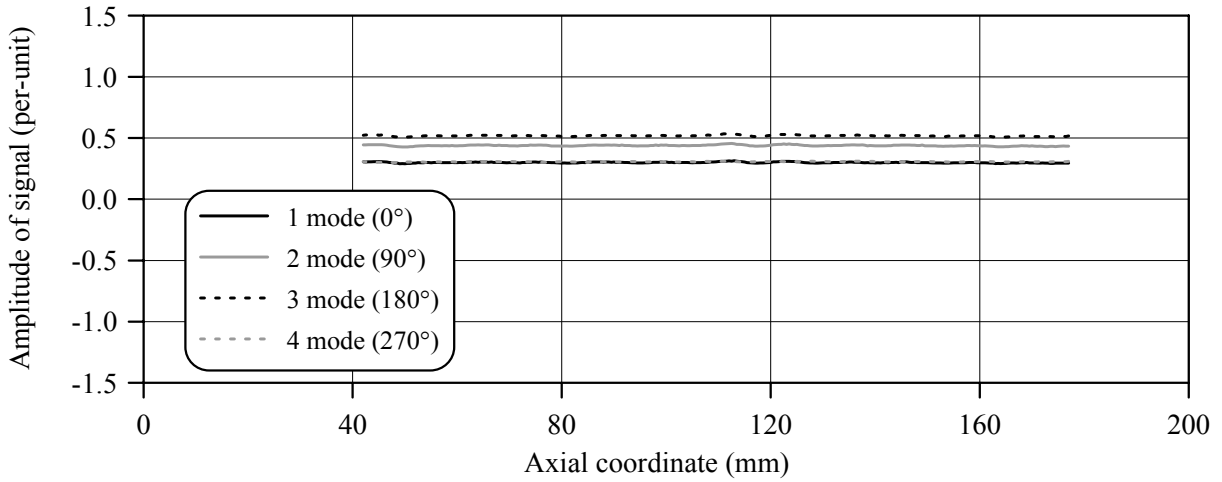
Fig.C-1.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT1



a)



b)



c)

Fig.C-1.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT1

RT1

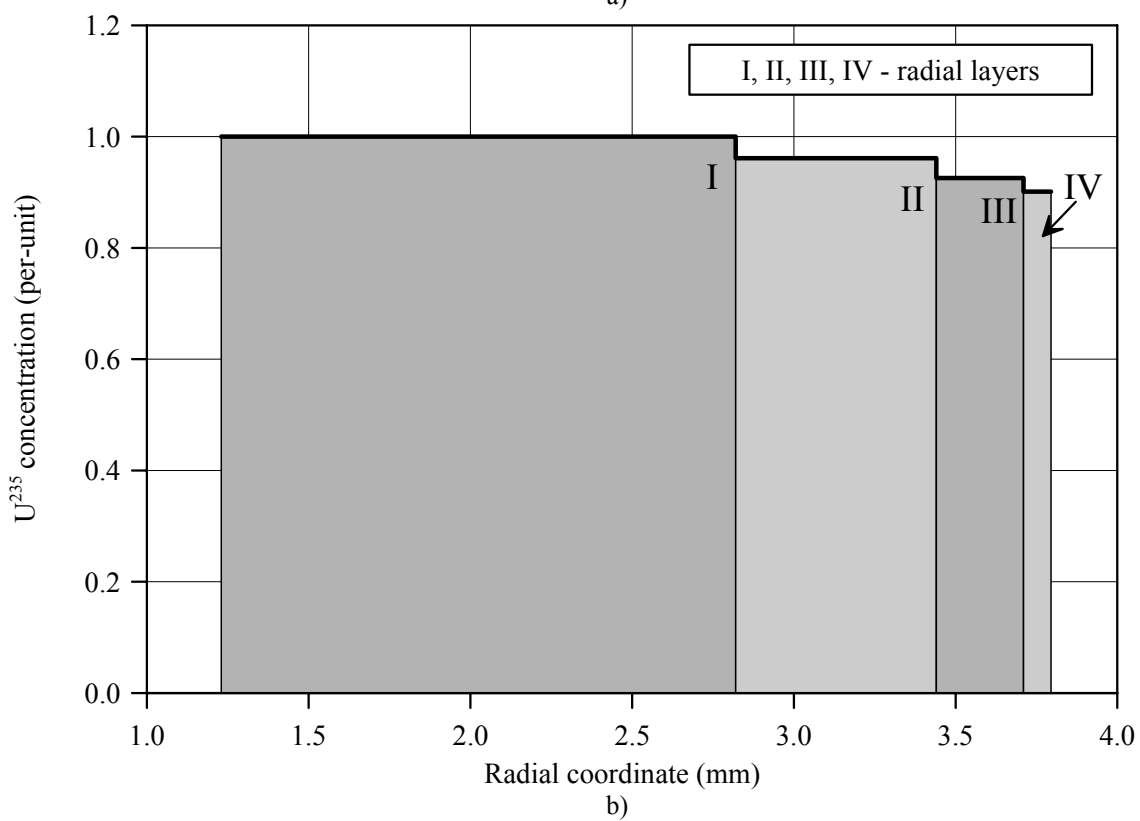
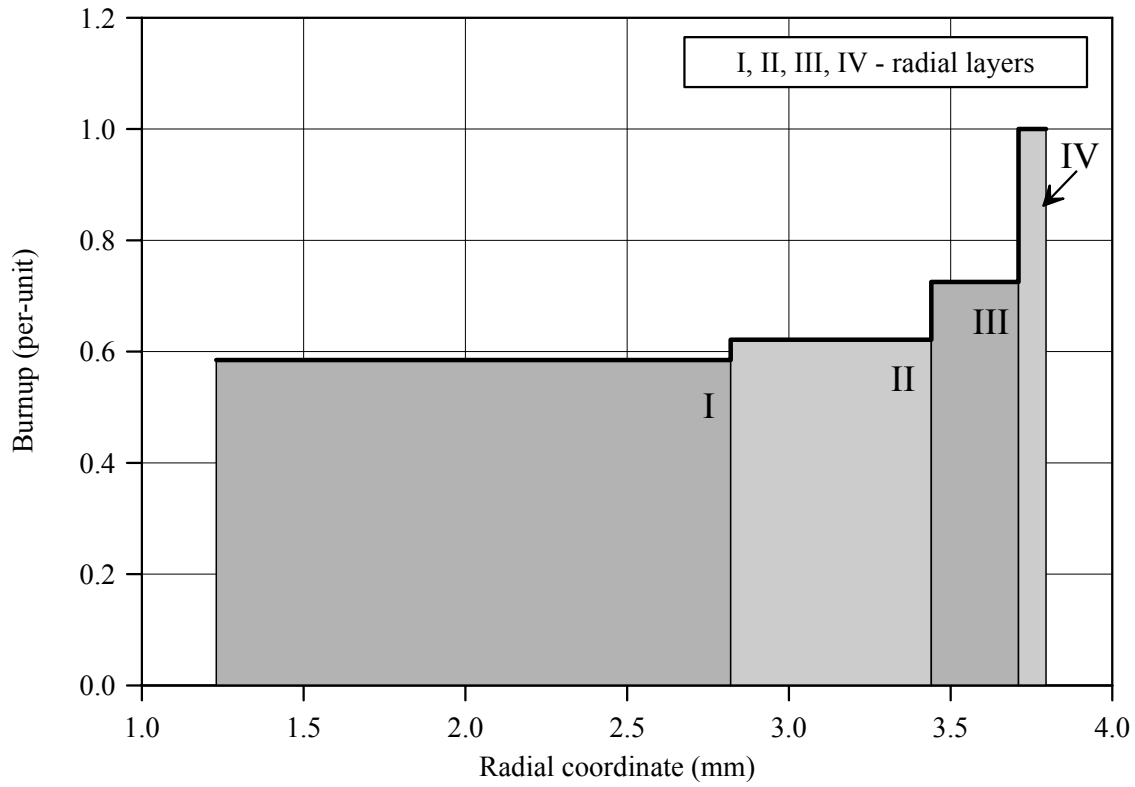


Fig.C-1.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT1 (calculated values)

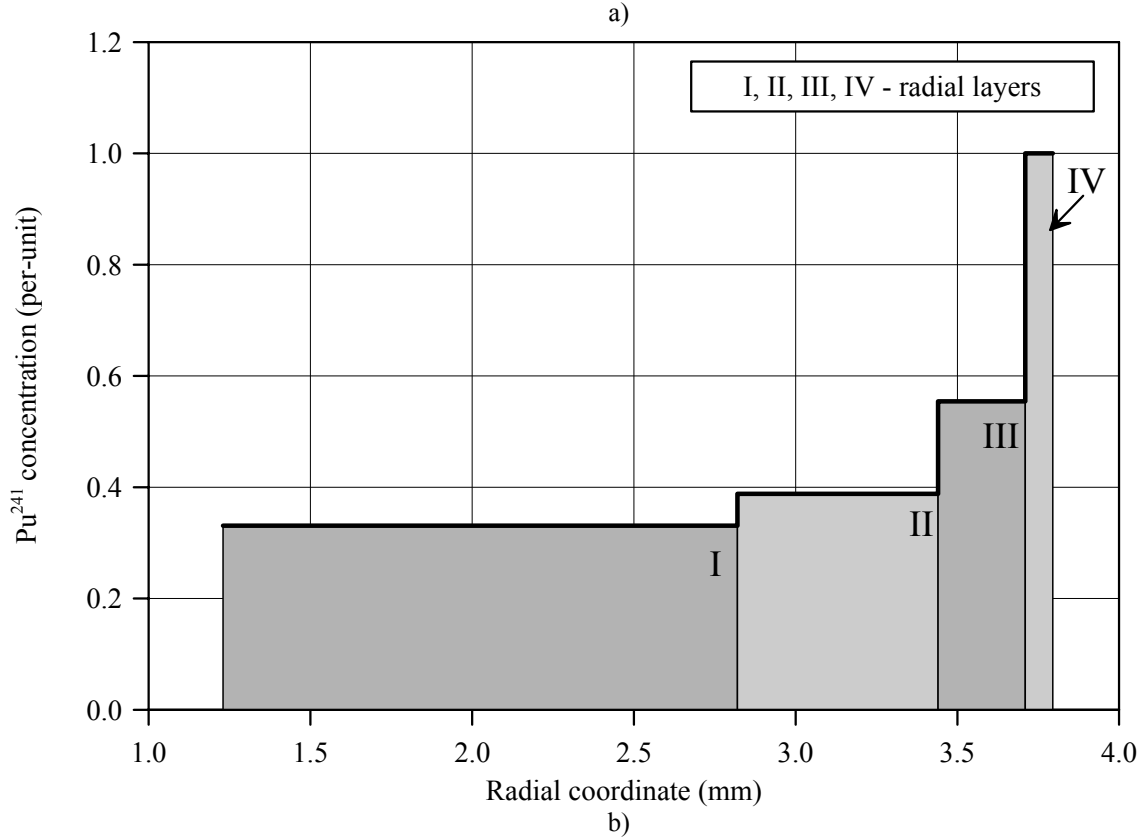
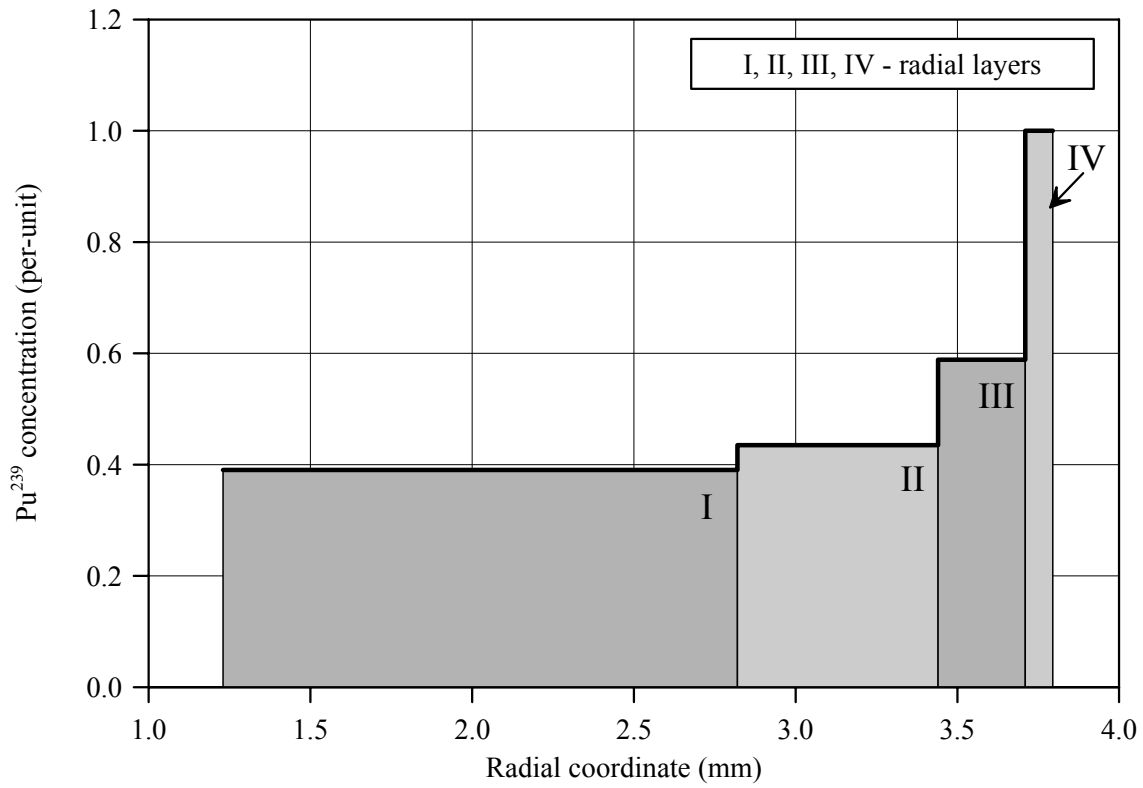


Fig.C-1.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT1 (calculated values)

Appendix C-2
Individual Characteristics
of Fuel Rod # RT2 before the BGR Test

RT2**Table C-2.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT2
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.23-2.82 mm	2.82-3.44 mm	3.44-3.71 mm	3.71-3.795 mm
U ²³⁴	0.233	0.229	0.226	0.222
U ²³⁵	7.796	7.493	7.216	7.026
U ²³⁶	6.451	6.463	6.475	6.490
U ²³⁸	928.7	925.0	913.5	882.1
Pu ²³⁸	0.352	0.371	0.401	0.456
Pu ²³⁹	4.766	5.310	7.184	12.20
Pu ²⁴⁰	2.466	2.618	3.380	5.519
Pu ²⁴¹	0.997	1.170	1.671	3.014
Pu ²⁴²	0.712	0.859	1.263	2.352
Np ²³⁷	0.606	0.625	0.644	0.657
Am ²⁴¹	0.366	0.424	0.601	1.084
Oxygen	134.5	134.5	134.5	134.5
Other fission products	47.48	50.42	58.72	80.81

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data

Table C-2.2. Initial individual characteristics of fuel rod # RT2*

Axial coordinate (from lower cap) (mm)	Cladding average outer diameter (mm)	Fuel mass ** (g)	Linear fuel mass** (g/cm)	Gas flow area ^{3)**} (mm ²)	Burnup** (MW d/kg U)
25 ¹⁾	-	0.85	4.07	5.410	47.65
30	-	2.04	4.08	5.310	47.82
35	9.067	2.03	4.06	5.509	47.97
40	9.067	2.02	4.05	5.608	48.03
45	9.064	2.04	4.08	5.310	47.81
50	9.066	2.05	4.10	5.112	47.23
55	9.063	2.09	4.19	4.800	46.90
60	9.064	2.09	4.18	4.800	47.41
65	9.063	2.10	4.20	4.800	47.93
70	9.065	2.05	4.11	5.013	47.53
75	9.066	2.12	4.23	4.800	47.11
80	9.063	2.10	4.20	4.800	47.76
85	9.063	2.06	4.13	4.814	48.63
90	9.063	2.04	4.08	5.310	48.58
95	9.063	2.01	4.02	5.906	48.21
100	9.063	2.06	4.13	4.814	48.36
105	9.062	2.04	4.08	5.310	48.53
110	9.062	2.06	4.12	4.913	48.09
115	9.061	2.04	4.09	5.211	47.73
120	9.063	2.07	4.15	4.800	48.29
125	9.061	2.06	4.11	5.013	48.96
130	9.063	2.01	4.03	5.807	48.74
135	9.060	2.06	4.12	4.913	48.13
140	9.060	2.06	4.12	4.913	47.93
145	9.058	2.08	4.16	4.800	48.12
150	9.058	2.07	4.13	4.814	48.40
155	9.059	2.09	4.19	4.800	48.43
160	9.058	2.08	4.16	4.800	47.99
165	9.061	2.03	4.06	5.509	47.61
170	9.062	2.00	3.99	6.204	47.86
175 ²⁾	-	1.58	4.06	5.509	48.39

* All parameters were determined using results of pre-test examinations

** Average values at the length interval equal to the axial coordinate ± 2.5 mm

¹⁾ Bottom end coordinate of fuel stack is 25.4 mm;

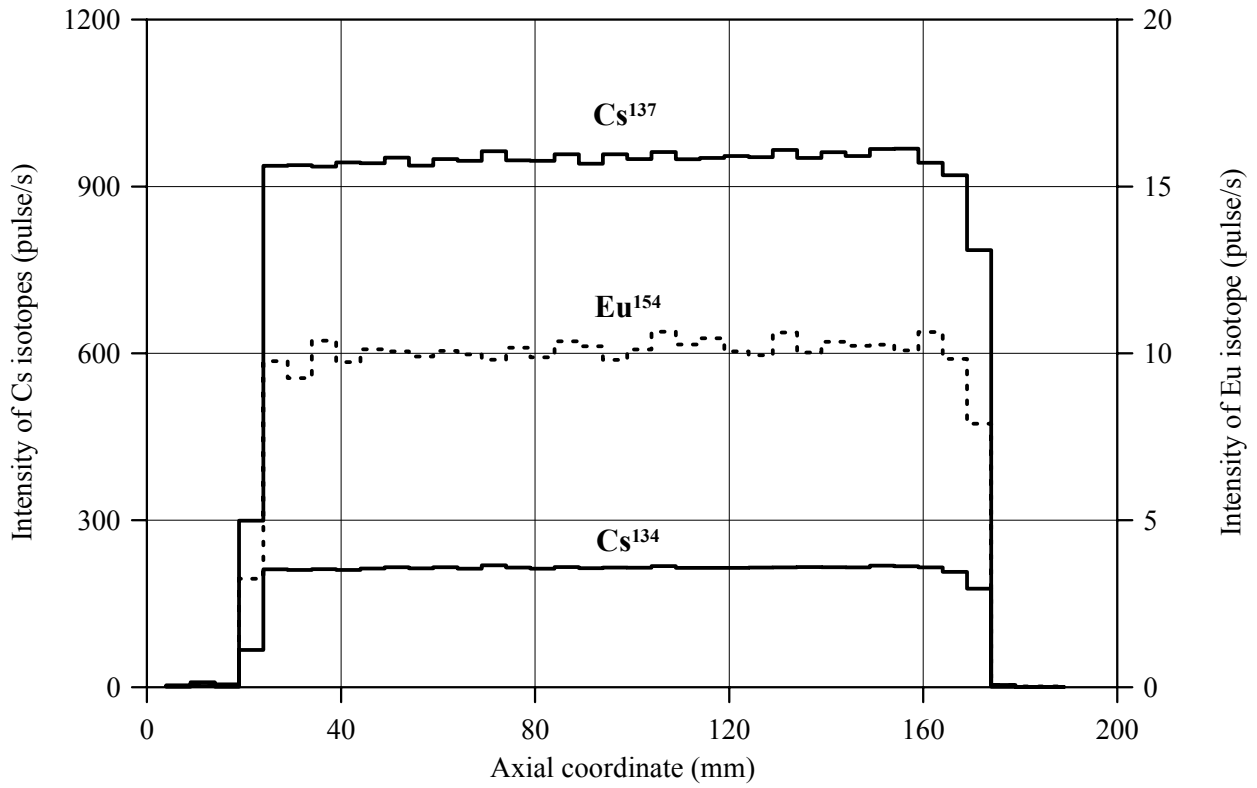
²⁾ Top end coordinate of fuel stack is 176.4 mm

³⁾ Gas flow area beyond the fuel stack (mm²):

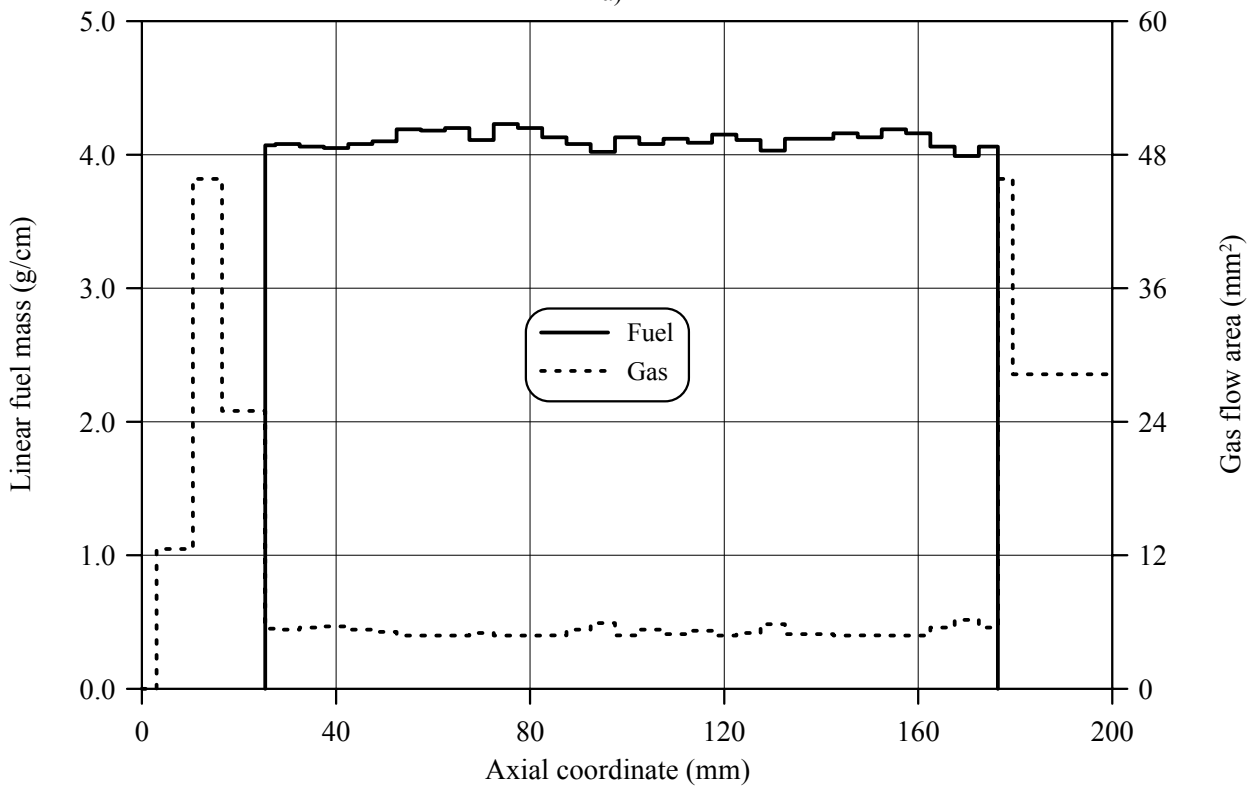
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-16.5mm – 45.82; 15.1-25.4mm – 24.97

Top: 176.4-179.5mm – 45.82; 179.5-205.5mm – 28.26; 205.5-282mm – 45.82; 282-291mm – 28.26; 291-300mm – 0.00

RT2

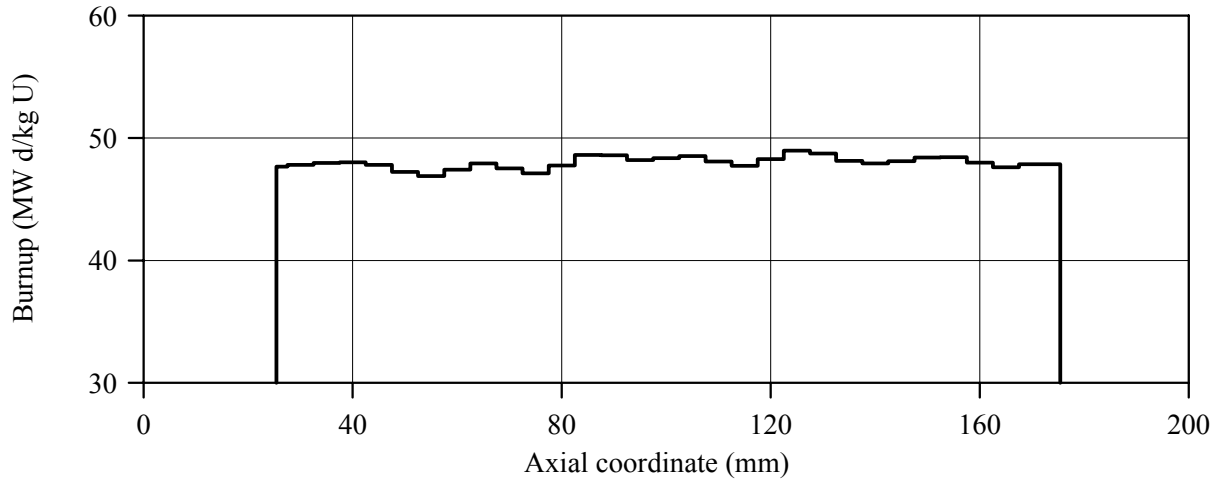


a)

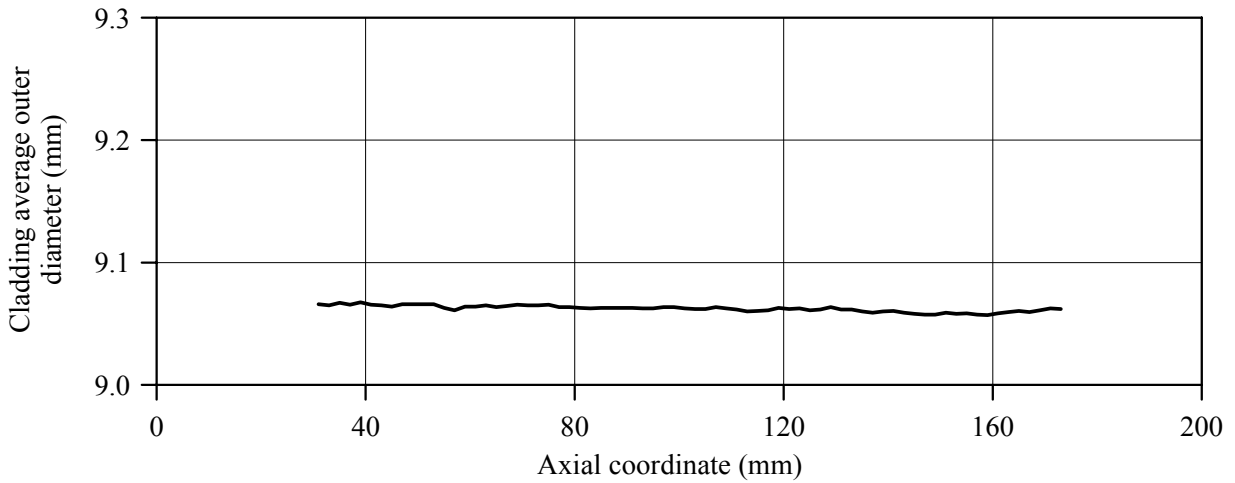


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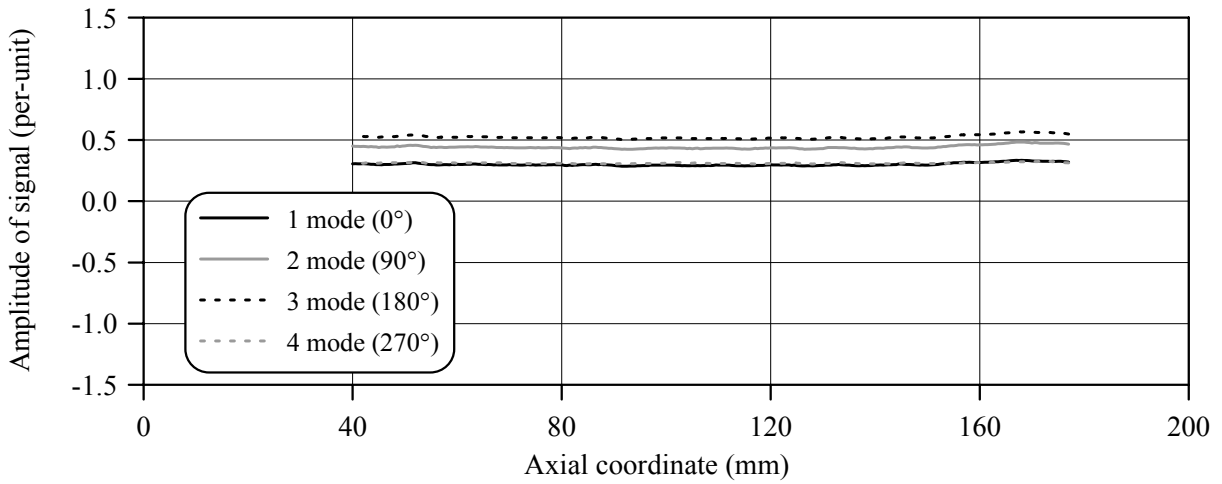
Fig.C-2.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT2



a)



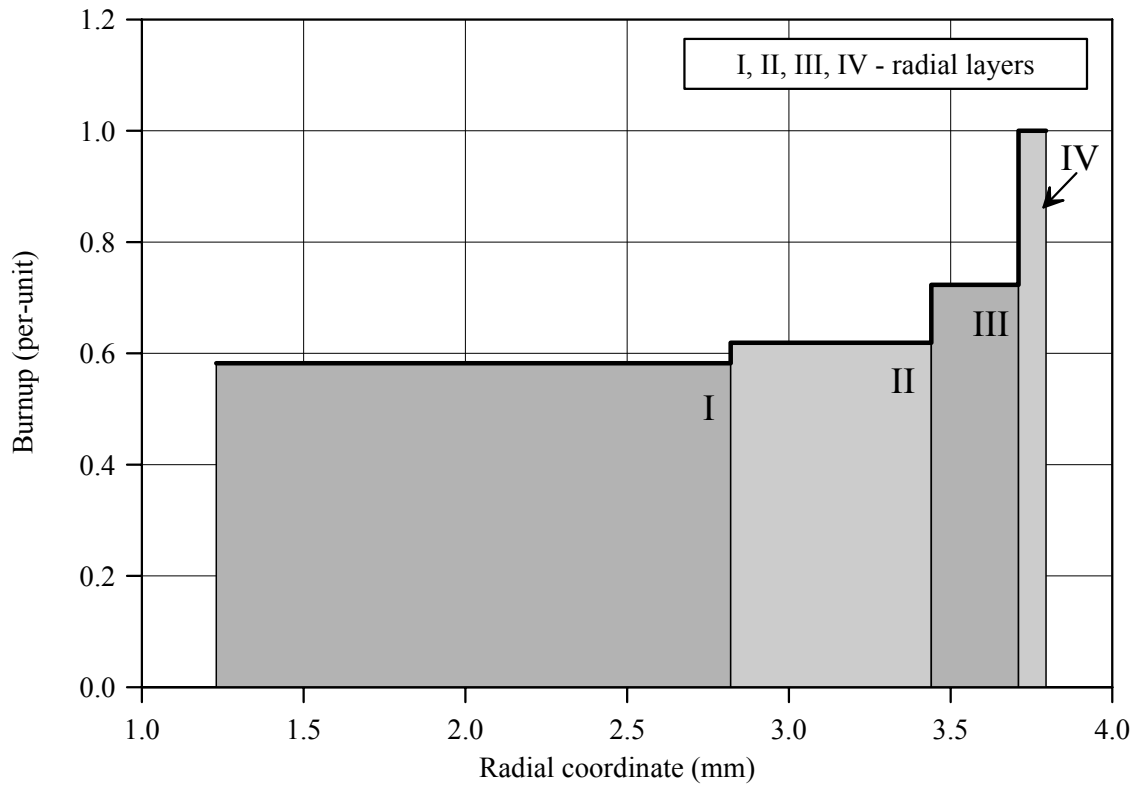
b)



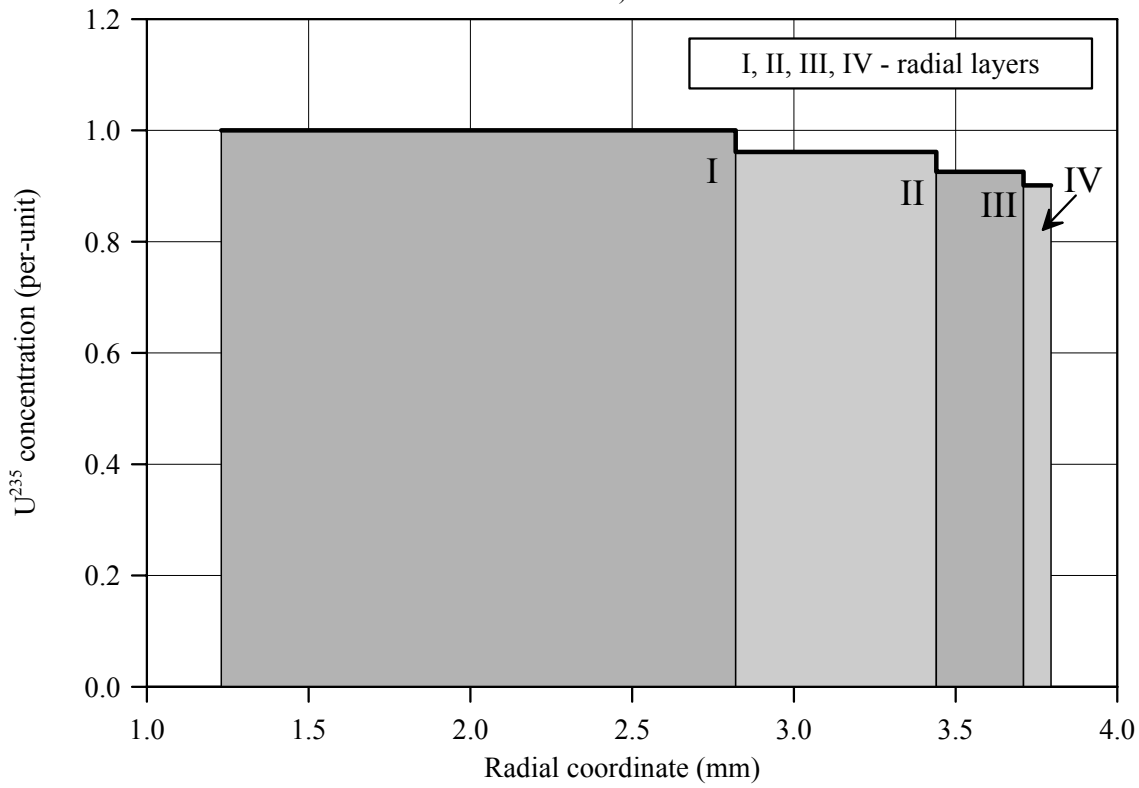
c)

Fig.C-2.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT2

RT2



a)



b)

Fig.C-2.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT2 (calculated values)

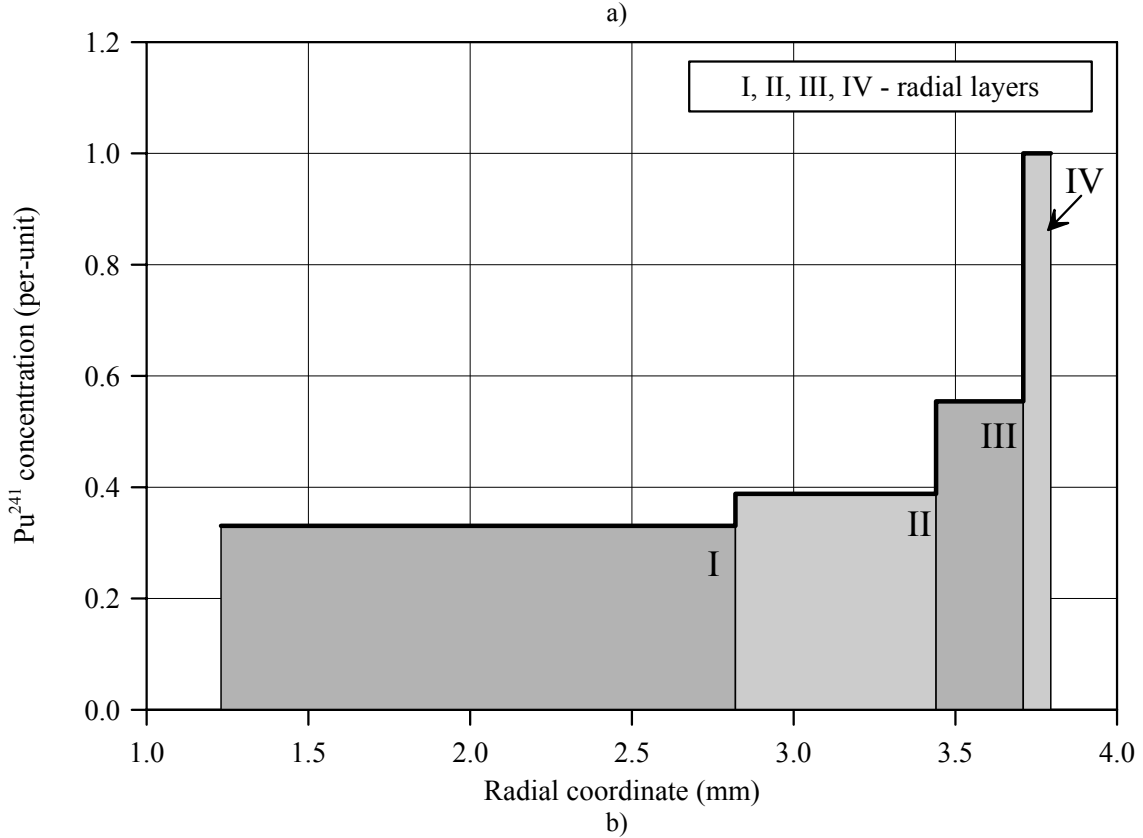
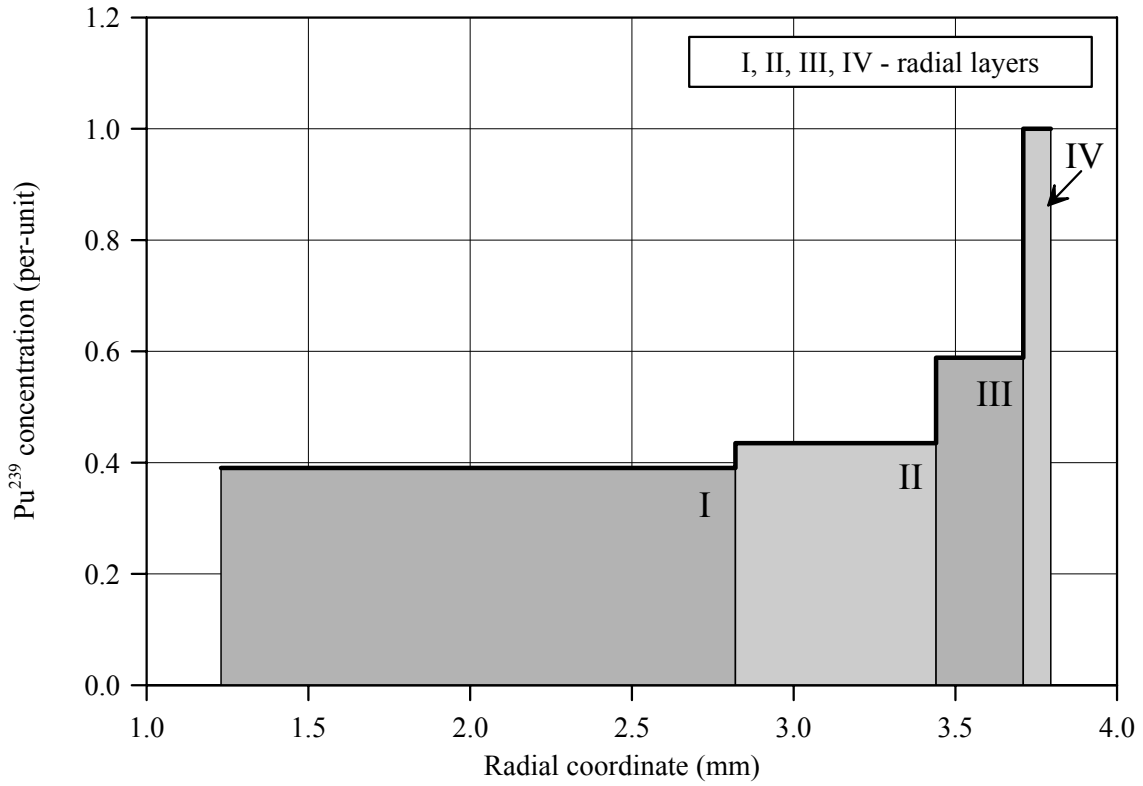


Fig.C-2.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT2 (calculated values)

Appendix C-3
Individual Characteristics
of Fuel Rod # RT3 before the BGR Test

RT3**Table C-3.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT3
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.23-2.82 mm	2.82-3.44 mm	3.44-3.71 mm	3.71-3.795 mm
U ²³⁴	0.202	0.199	0.196	0.193
U ²³⁵	7.828	7.537	7.269	7.085
U ²³⁶	6.220	6.233	6.247	6.262
U ²³⁸	929.1	925.4	913.7	882.1
Pu ²³⁸	0.380	0.401	0.433	0.491
Pu ²³⁹	5.029	5.601	7.576	12.85
Pu ²⁴⁰	2.565	2.722	3.511	5.718
Pu ²⁴¹	1.053	1.236	1.765	3.180
Pu ²⁴²	0.728	0.878	1.290	2.397
Np ²³⁷	0.620	0.640	0.659	0.672
Am ²⁴¹	0.393	0.455	0.643	1.158
Oxygen	134.5	134.5	134.5	134.5
Other fission products	46.83	49.69	58.00	79.91

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data

Table C-3.2. Initial individual characteristics of fuel rod # RT3*

Axial coordinate (from lower cap) (mm)	Cladding average outer diameter (mm)	Fuel mass ** (g)	Linear fuel mass** (g/cm)	Gas flow area ^{3)**} (mm ²)	Burnup** (MW d/kg U)
25 ¹⁾	-	1.58	3.97	5.704	44.35
30	-	2.01	4.03	5.098	44.41
35	9.061	2.05	4.09	4.800	44.59
40	9.063	2.02	4.04	4.997	45.19
45	9.063	2.01	4.01	5.300	46.06
50	9.061	2.00	3.99	5.502	47.09
55	9.062	1.90	3.81	7.321	47.14
60	9.062	1.76	3.51	10.352	46.10
65	9.057	1.87	3.73	8.129	45.83
70	9.060	2.03	4.06	4.795	47.06
75	9.066	2.02	4.04	4.997	48.09
80	9.062	2.05	4.10	4.800	48.08
85	9.059	2.02	4.03	5.098	48.06
90	9.063	2.01	4.02	5.199	48.54
95	9.059	2.04	4.08	4.800	48.64
100	9.064	2.09	4.18	4.800	48.09
105	9.062	2.08	4.16	4.800	47.97
110	9.070	2.02	4.05	4.896	48.65
115	9.061	1.93	3.86	6.816	49.05
120	9.056	1.93	3.86	6.816	48.60
125	9.058	2.05	4.10	4.800	47.94
130	9.054	2.10	4.19	4.800	47.57
135	9.059	2.11	4.21	4.800	47.51
140	9.056	2.11	4.21	4.800	47.75
145	9.052	2.05	4.11	4.800	48.36
150	9.053	2.02	4.04	4.997	49.08
155	9.050	2.08	4.16	4.800	49.09
160	9.049	2.13	4.25	4.800	48.25
165	9.048	2.09	4.19	4.800	47.75
170	9.049	2.07	4.14	4.800	48.14
175 ²⁾	9.054	0.04	4.11	4.800	48.51

* All parameters were determined using results of pre-test examinations

** Average values at the length interval equal to the axial coordinate ± 2.5 mm

¹⁾ Bottom end coordinate of fuel stack is 23.6 mm;

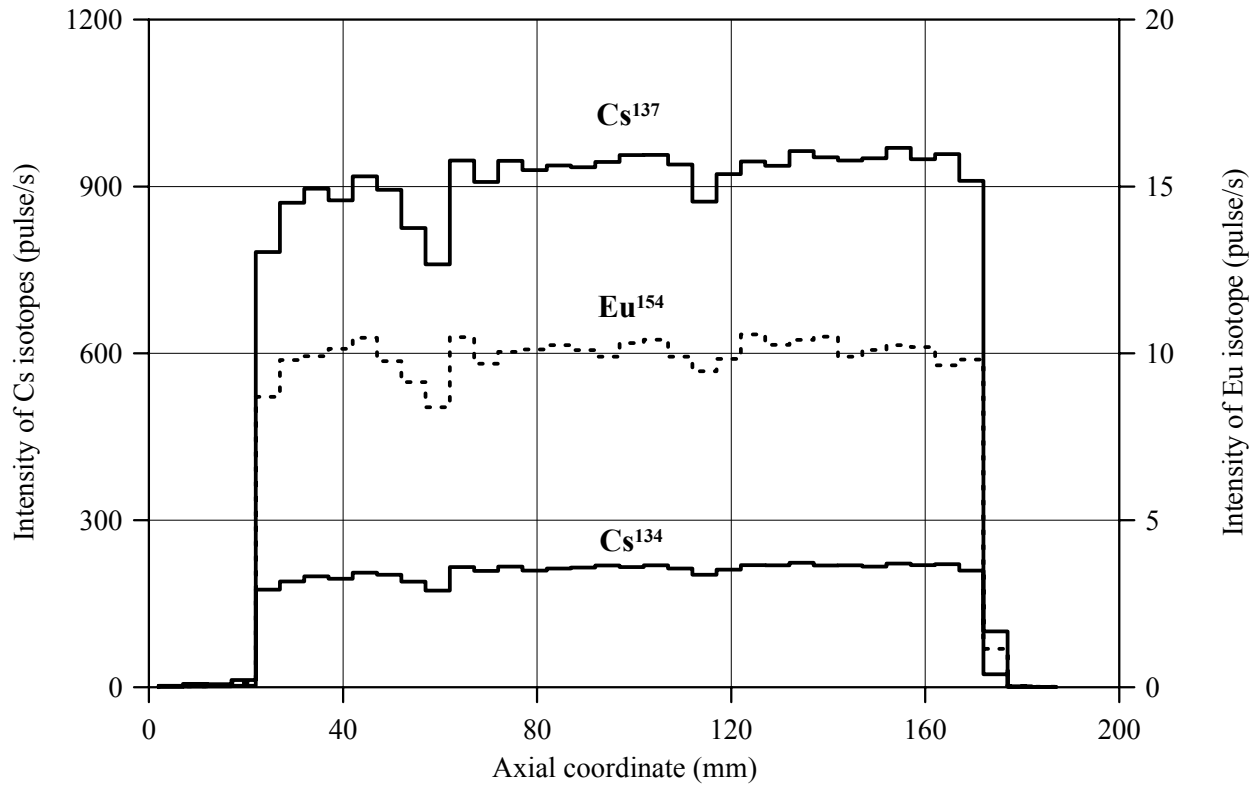
²⁾ Top end coordinate of fuel stack is 172.6 mm

³⁾ Gas flow area beyond the fuel stack (mm²):

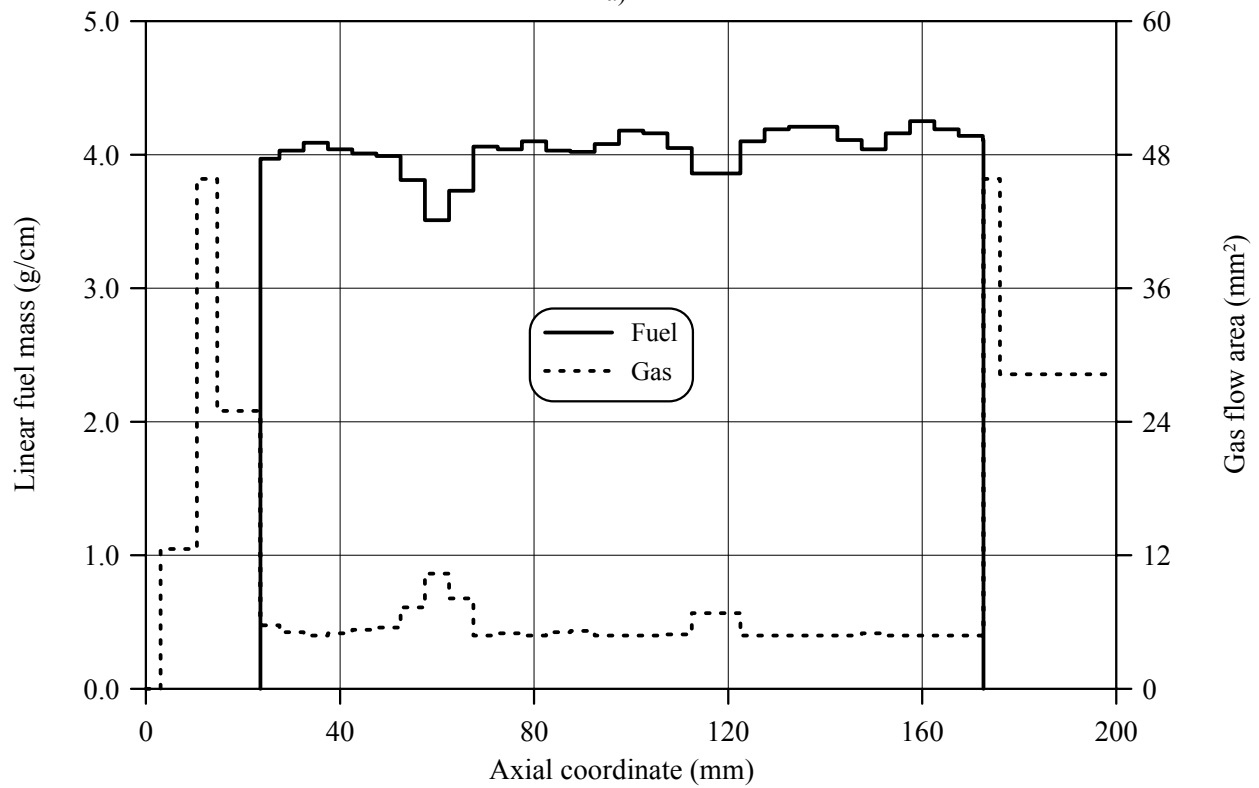
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-14.7mm – 45.82; 14.7-23.6mm – 24.97

Top: 172.6-176mm – 45.82; 176-202mm – 28.26; 202-278.5mm – 45.82; 278.5-287.5mm – 28.26; 287.5-296.5mm – 0.00

RT3

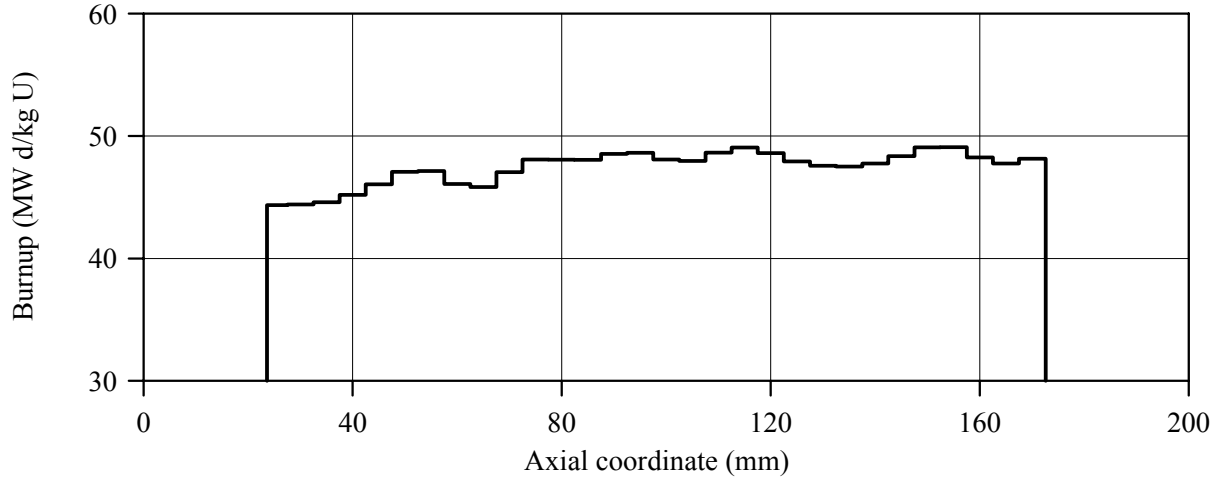


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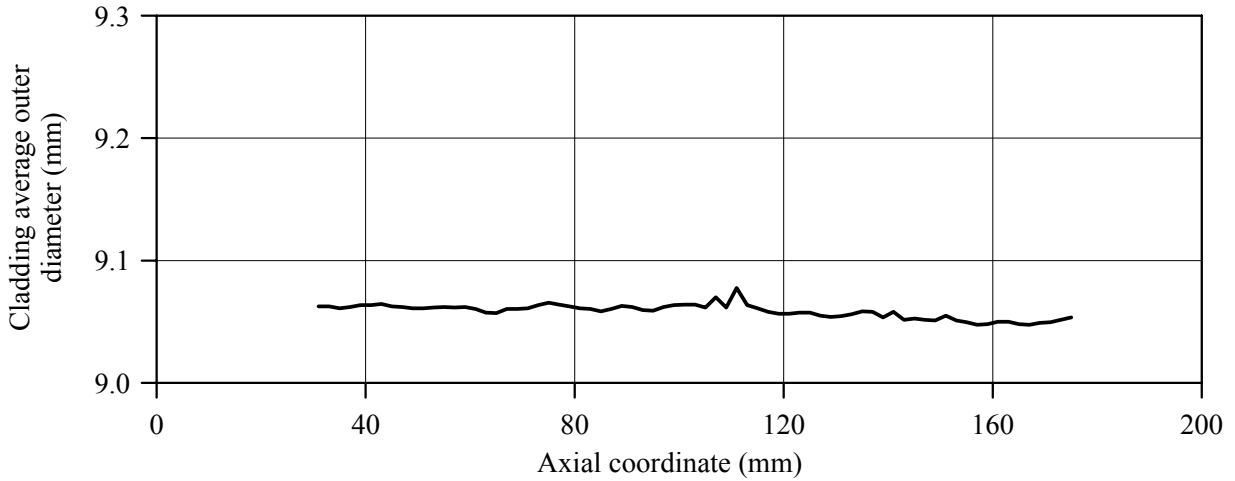


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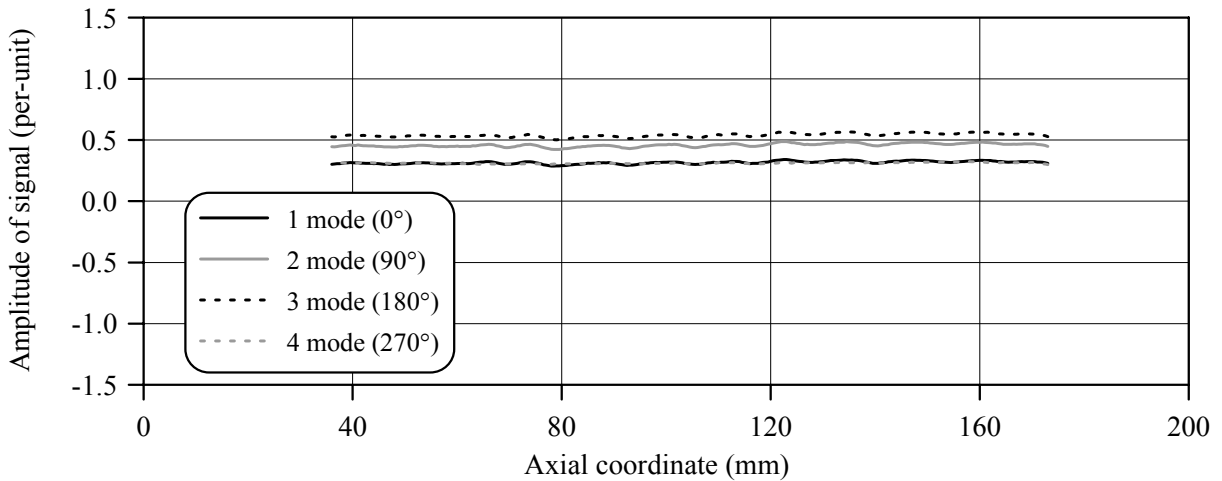
Fig.C-3.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT3



a)



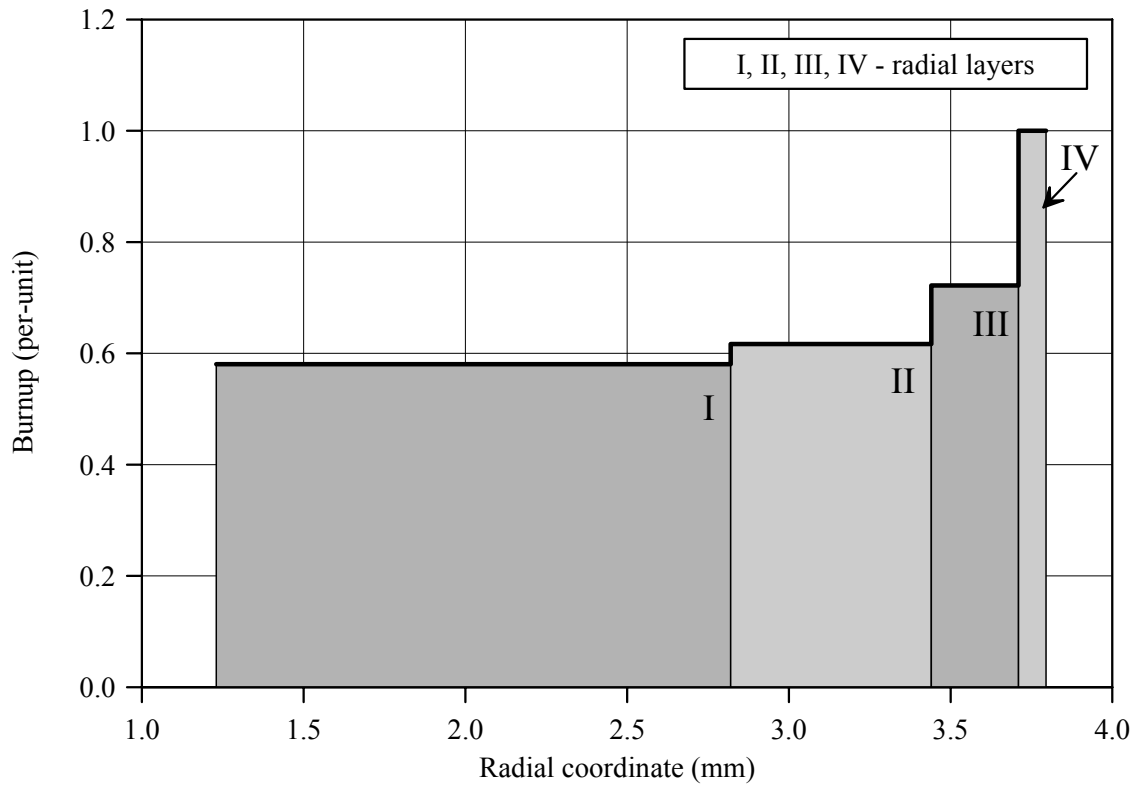
b)



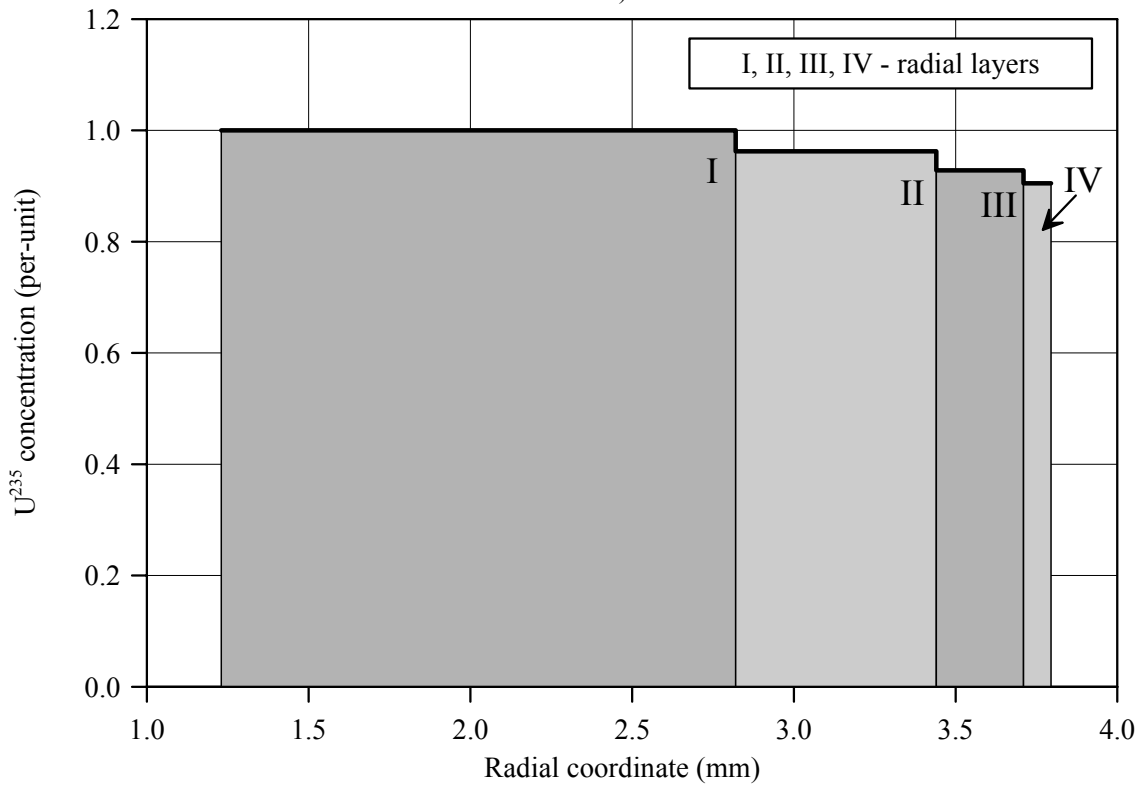
c)

Fig.C-3.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT3

RT3



a)



b)

Fig.C-3.3. (a) Burnup radial distribution and (b) U²³⁵ radial distribution for fuel rod # RT3 (calculated values)

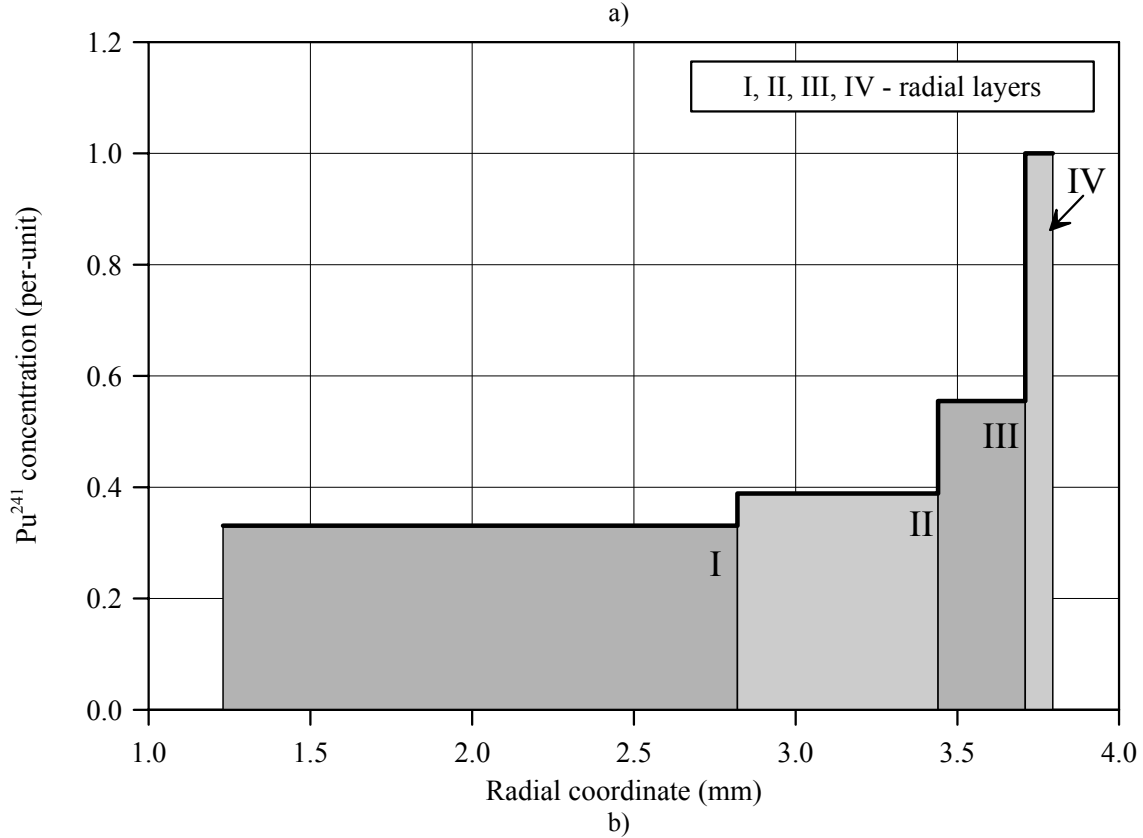
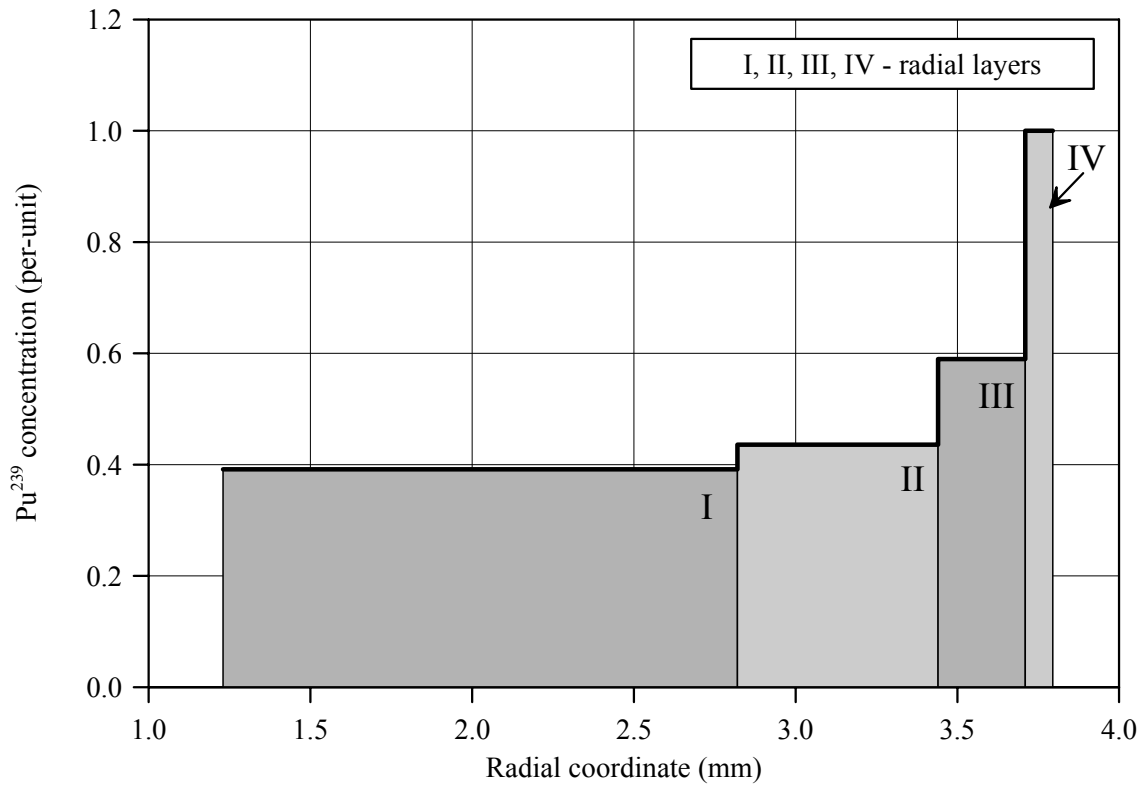


Fig.C-3.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT3 (calculated values)

Appendix C-4
Individual Characteristics
of Fuel Rod # RT4 before the BGR Test

RT4**Table C-4.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT4
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	0.825-2.77 mm	2.77-3.45 mm	3.45-3.75 mm	3.75-3.84 mm
U ²³⁴	0.220	0.219	0.220	0.227
U ²³⁵	4.900	4.626	4.403	4.255
U ²³⁶	6.668	6.642	6.620	6.610
U ²³⁸	922.3	917.6	904.3	865.5
Pu ²³⁸	0.531	0.574	0.648	0.822
Pu ²³⁹	4.923	5.421	7.106	11.97
Pu ²⁴⁰	2.757	2.839	3.487	5.564
Pu ²⁴¹	1.064	1.244	1.728	3.116
Pu ²⁴²	0.985	1.196	1.720	3.217
Np ²³⁷	0.773	0.803	0.828	0.846
Am ²⁴¹	0.903	1.054	1.463	2.639
Oxygen	134.5	134.5	134.5	134.5
Other fission products	55.69	59.58	69.70	98.70

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data

Table C-4.2. Initial individual characteristics of fuel rod # RT4*

Axial coordinate (from lower cap) (mm)	Cladding average outer diameter (mm)	Fuel mass ** (g)	Linear fuel mass** (g/cm)	Gas flow area ^{3)**} (mm ²)	Burnup** (MW d/kg U)
25 ¹⁾	9.066	2.48	4.50	2.270	58.72
30	9.069	2.25	4.49	2.339	59.36
35	9.078	2.27	4.53	2.270	60.53
40	9.073	2.27	4.54	2.270	60.51
45	9.087	2.24	4.48	2.437	60.03
50	9.075	2.22	4.45	2.731	59.74
55	9.087	2.22	4.43	2.927	60.13
60	9.092	2.22	4.43	2.927	60.72
65	9.085	2.24	4.48	2.437	60.41
70	9.077	2.24	4.48	2.437	59.48
75	9.078	2.22	4.45	2.731	59.27
80	9.073	2.22	4.43	2.927	59.74
85	9.077	2.25	4.50	2.270	59.88
90	9.082	2.29	4.57	2.270	59.75
95	9.077	2.28	4.56	2.270	60.14
100	9.083	2.27	4.55	2.270	60.81
105	9.075	2.27	4.54	2.270	60.73
110	9.076	2.27	4.54	2.270	60.15
115	9.067	2.25	4.50	2.270	60.18
120	9.077	2.23	4.46	2.633	60.58
125	9.066	2.24	4.48	2.437	60.18
130	9.082	2.26	4.53	2.270	59.41
135	9.086	2.25	4.50	2.270	59.80
140	9.093	2.23	4.47	2.535	61.00
145	9.080	2.26	4.52	2.270	61.34
150	9.076	2.28	4.56	2.270	60.76
155	9.085	2.26	4.52	2.270	60.42
160	9.085	2.22	4.44	2.829	60.44
165	9.083	2.22	4.44	2.829	60.17
170	9.080	2.25	4.49	2.339	59.57
175 ²⁾	9.086	1.98	4.40	3.221	59.10

* All parameters were determined using results of pre-test examinations

** Average values at the length interval equal to the axial coordinate ± 2.5 mm

¹⁾ Bottom end coordinate of fuel stack is 22 mm;

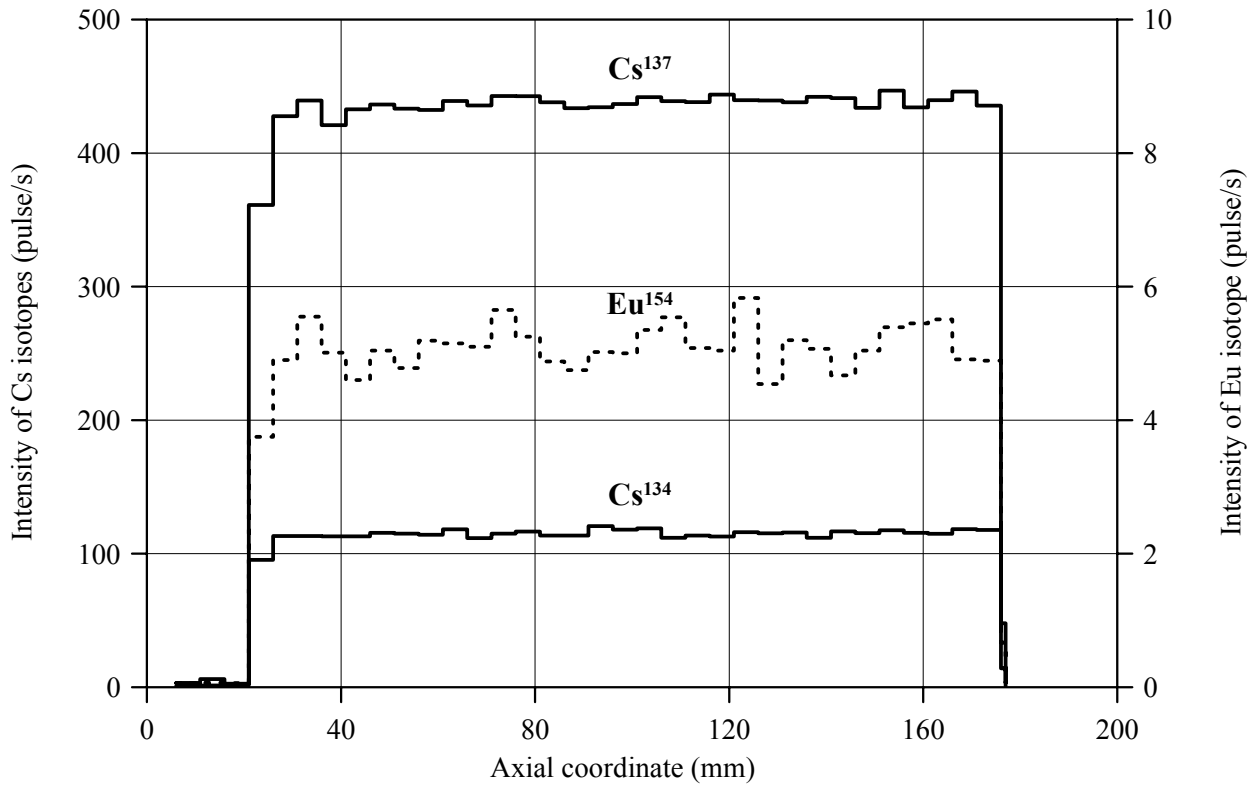
²⁾ Top end coordinate of fuel stack is 177 mm

³⁾ Gas flow area beyond the fuel stack (mm²):

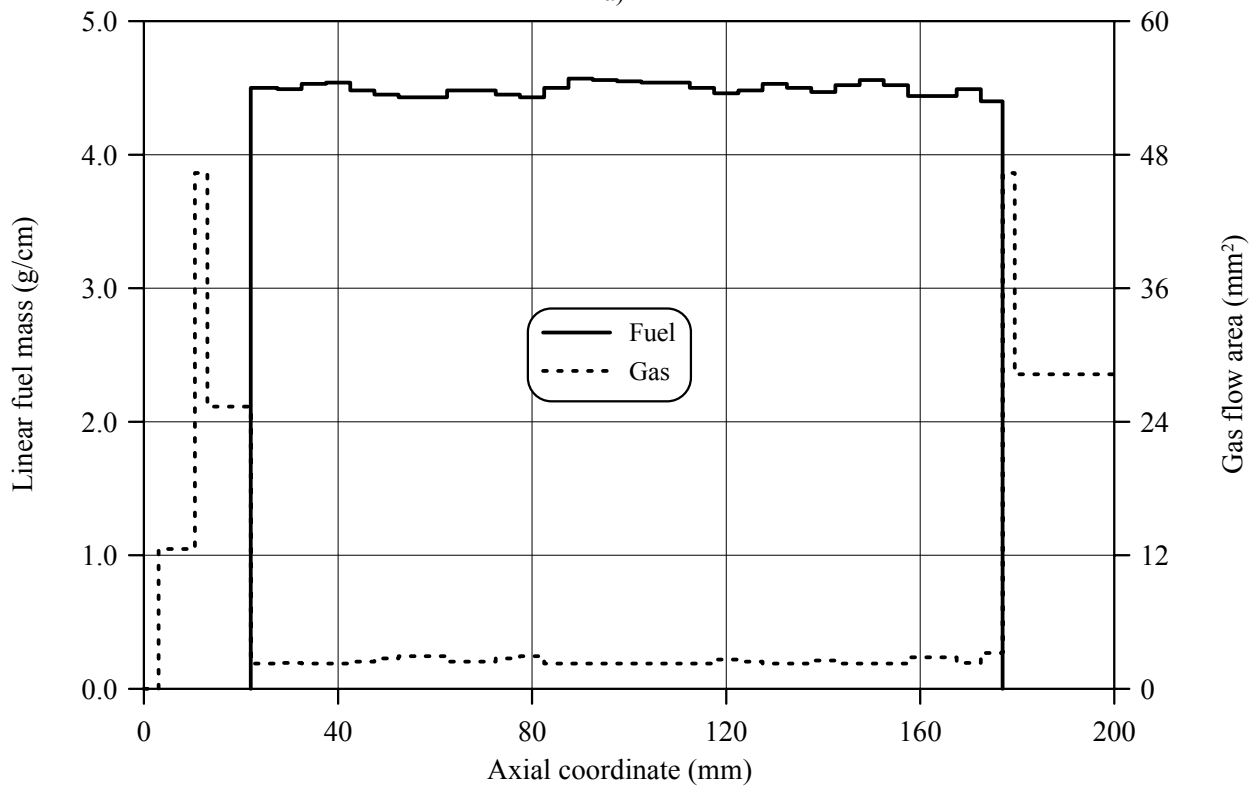
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-13.1mm – 46.35; 13.1-22.0mm – 25.36

Top: 177-179.5mm – 46.35; 179.5-205.5mm – 28.26; 205.5-282mm – 46.35; 282-291mm – 28.26; 291-300mm – 0.00

RT4

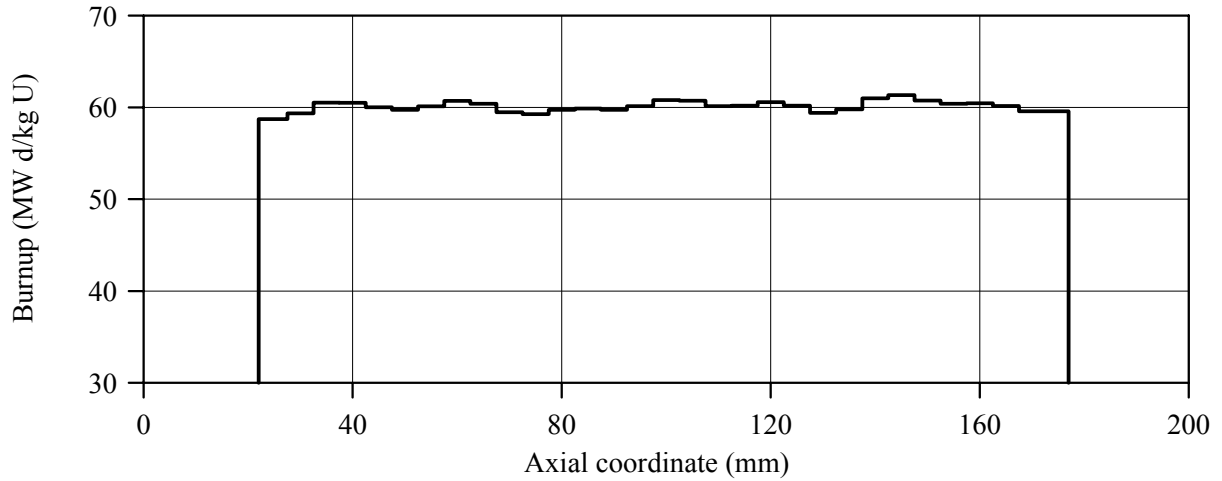


a)

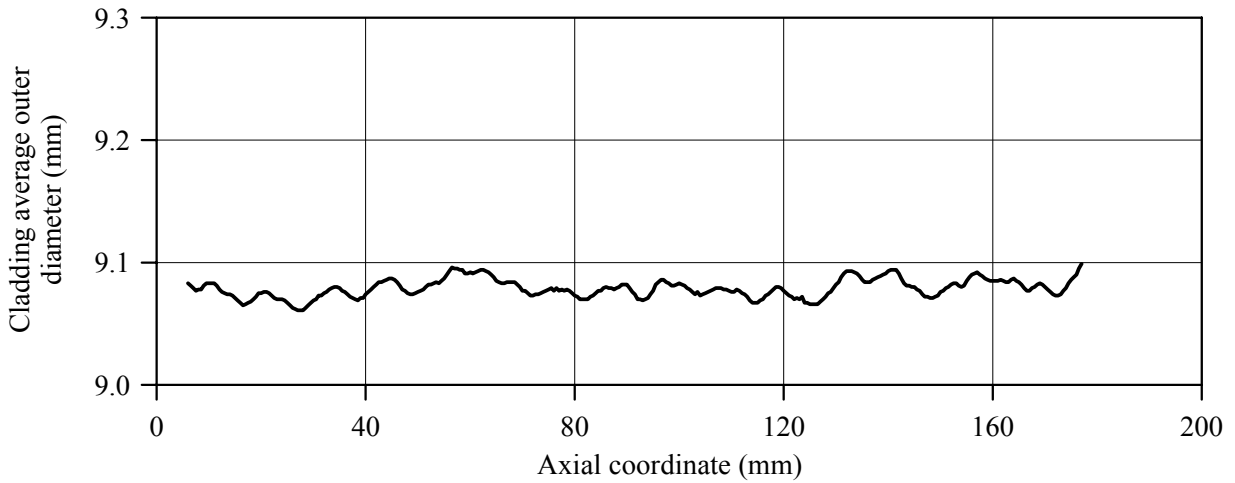


b)

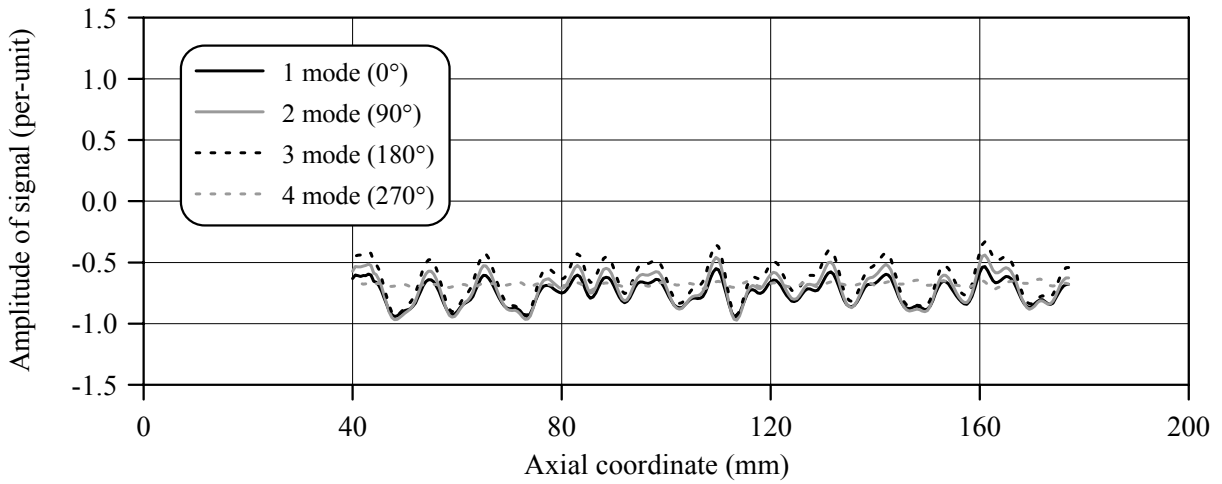
Fig.C-4.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT4



a)



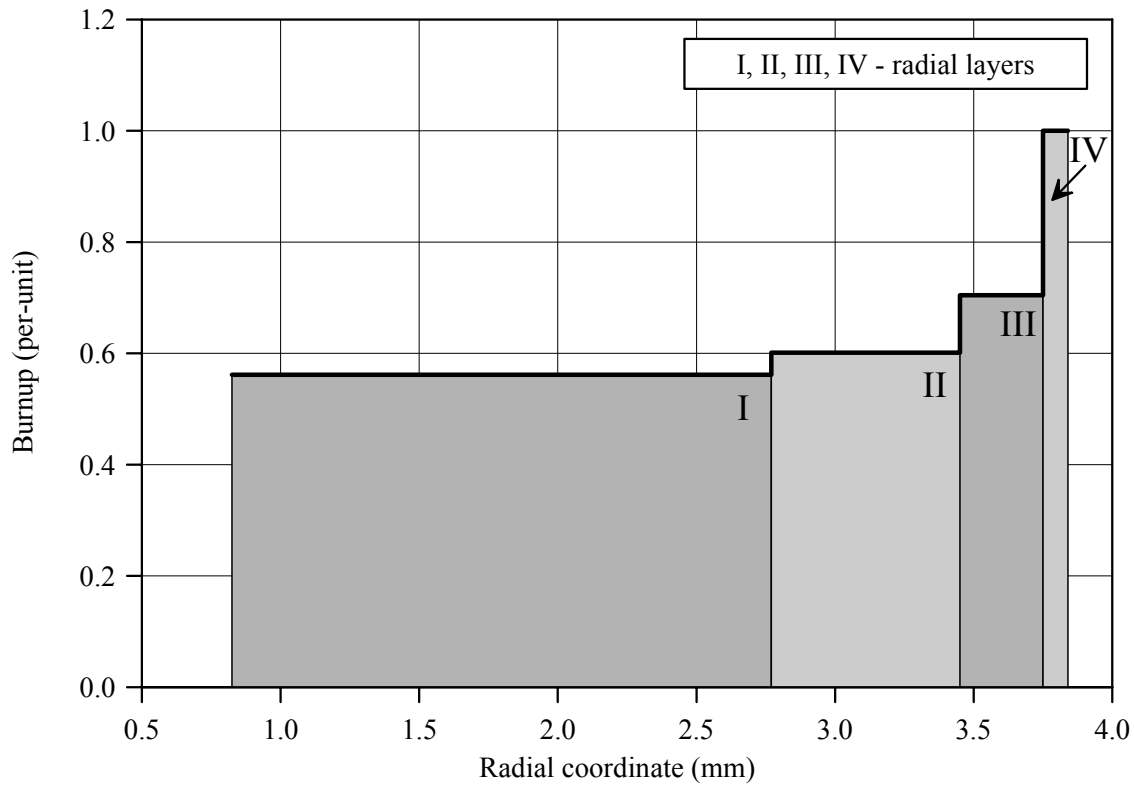
b)



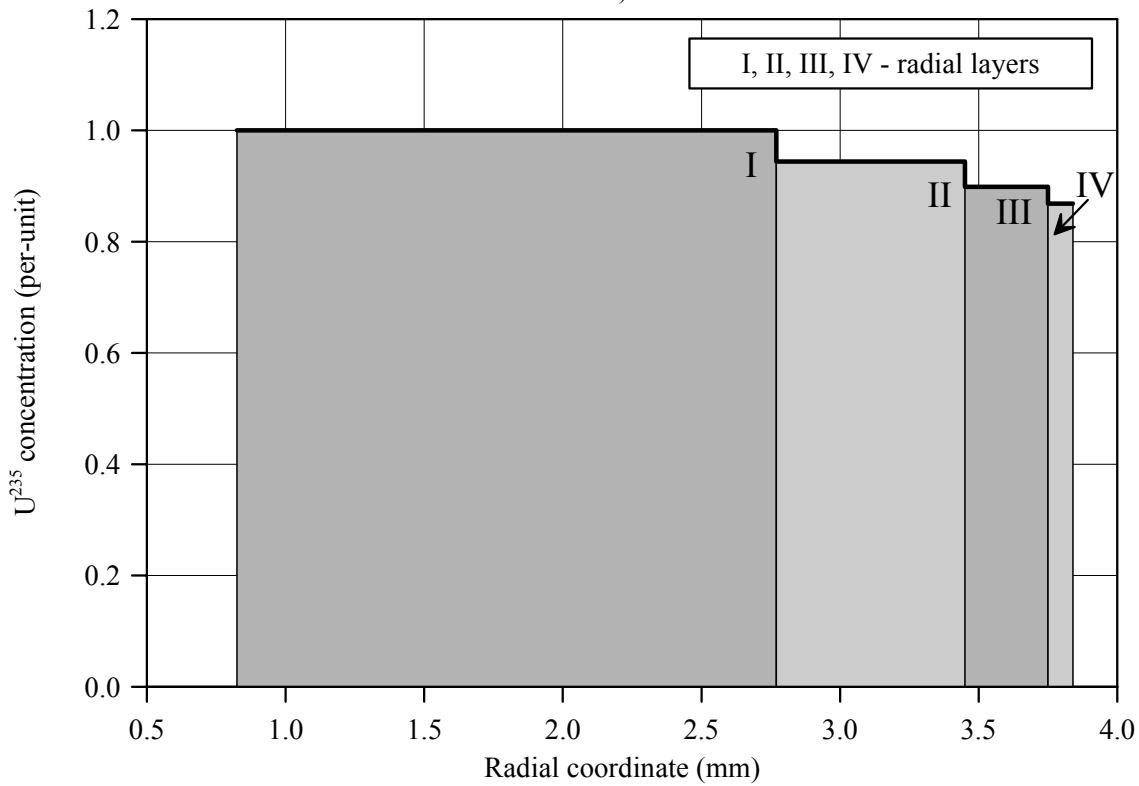
c)

Fig.C-4.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT4

RT4



a)



b)

Fig.C-4.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT4 (calculated values)

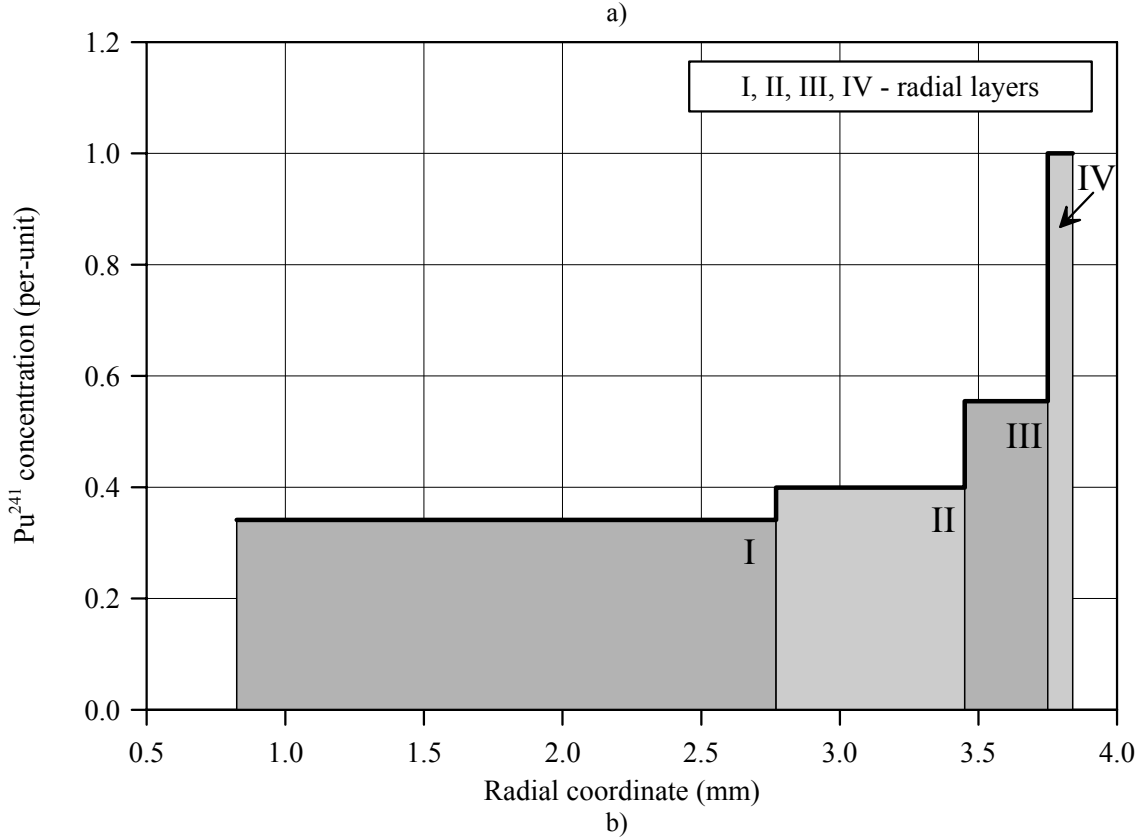
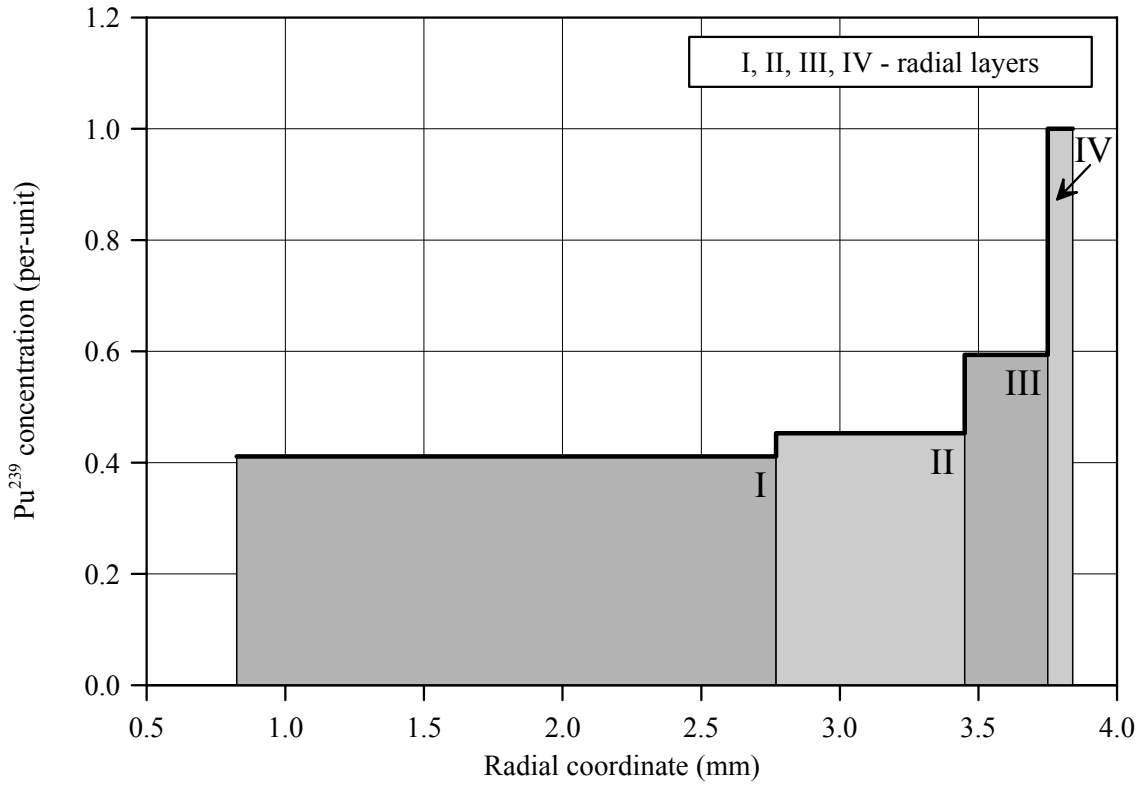


Fig.C-4.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT4 (calculated values)

Appendix C-5
Individual Characteristics
of Fuel Rod # RT5 before the BGR Test

RT5**Table C-5.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT5
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.25-2.84 mm	2.84-3.47 mm	3.47-3.74 mm	3.74-3.808 mm
U ²³⁴	0.293	0.289	0.284	0.280
U ²³⁵	8.104	7.783	7.488	7.286
U ²³⁶	6.275	6.281	6.288	6.298
U ²³⁸	925.6	921.8	909.3	876.0
Pu ²³⁸	0.406	0.428	0.463	0.526
Pu ²³⁹	5.032	5.598	7.550	12.74
Pu ²⁴⁰	2.661	2.807	3.592	5.795
Pu ²⁴¹	0.999	1.170	1.664	2.980
Pu ²⁴²	0.804	0.969	1.421	2.630
Np ²³⁷	0.659	0.679	0.698	0.712
Am ²⁴¹	0.514	0.595	0.839	1.503
Oxygen	134.5	134.5	134.5	134.5
Other fission products	49.77	52.91	61.98	85.83

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data

Table C-5.2. Initial individual characteristics of fuel rod # RT5*

Axial coordinate (from lower cap) (mm)	Cladding average outer diameter (mm)	Fuel mass ** (g)	Linear fuel mass** (g/cm)	Gas flow area ^{3)**} (mm ²)	Burnup** (MW d/kg U)
25 ¹⁾	9.059	1.42	4.05	5.898	47.81
30	9.059	2.04	4.09	5.503	49.16
35	9.060	2.09	4.18	4.910	48.76
40	9.056	2.11	4.23	4.910	48.28
45	9.056	2.09	4.18	4.910	48.85
50	9.055	2.05	4.10	5.404	49.27
55	9.055	2.03	4.06	5.799	48.80
60	9.054	2.02	4.05	5.898	48.48
65	9.056	2.04	4.08	5.602	48.88
70	9.056	2.05	4.09	5.503	48.98
75	9.056	2.05	4.10	5.404	48.27
80	9.061	2.06	4.12	5.206	47.80
85	9.059	2.05	4.10	5.404	48.26
90	9.060	2.07	4.13	5.107	49.02
95	9.059	2.08	4.17	4.910	49.47
100	9.061	2.09	4.19	4.910	49.48
105	9.062	2.08	4.16	4.910	49.14
110	9.062	2.07	4.13	5.107	48.98
115	9.063	2.04	4.08	5.602	49.25
120	9.063	2.01	4.02	6.195	49.53
125	9.064	2.03	4.07	5.701	49.45
130	9.057	2.03	4.06	5.799	49.05
135	9.057	2.05	4.10	5.404	48.44
140	9.051	2.07	4.14	5.008	47.83
145	9.056	2.06	4.12	5.206	47.39
150	9.055	2.06	4.12	5.206	47.26
155	9.053	2.07	4.14	5.008	47.46
160	9.054	2.09	4.18	4.910	47.88
165	9.053	2.06	4.12	5.206	48.38
170	9.058	2.04	4.08	5.602	48.88
175 ²⁾	9.037	1.85	4.10	5.404	49.33

* All parameters were determined using results of pre-test examinations

** Average values at the length interval equal to the axial coordinate ± 2.5 mm

¹⁾ Bottom end coordinate of fuel stack is 24 mm;

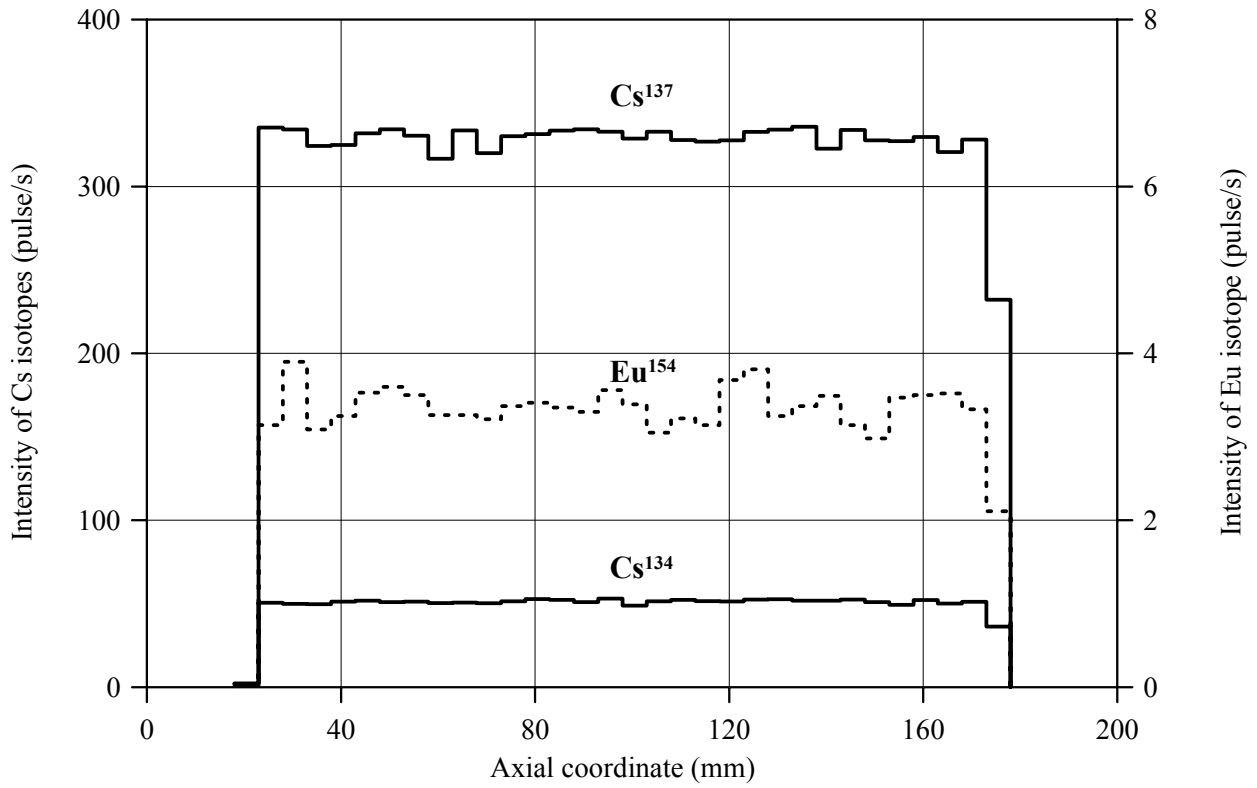
²⁾ Top end coordinate of fuel stack is 177 mm

³⁾ Gas flow area beyond the fuel stack (mm²):

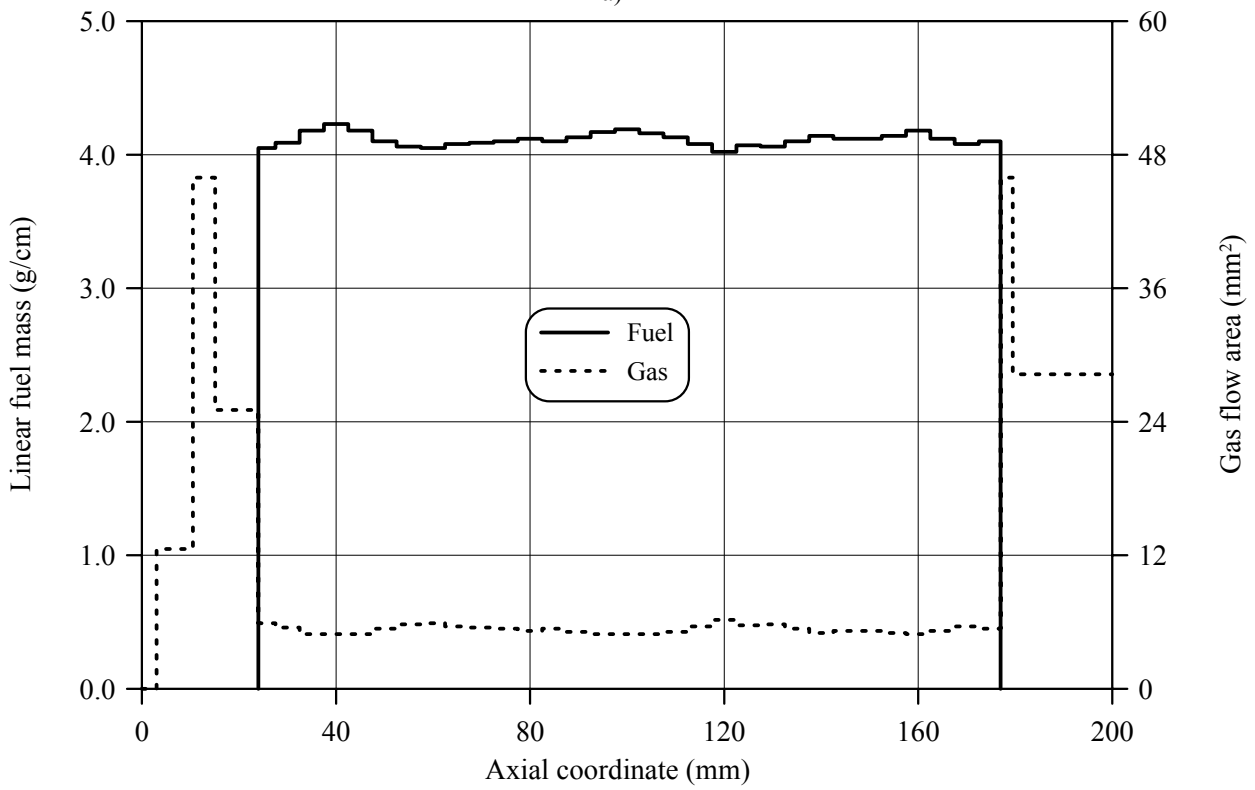
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-15.1mm – 45.94; 15.1-24.0mm – 25.06

Top: 177.0-179.5mm – 45.94; 179.5-205.5mm – 28.26; 205.5-282.0mm – 45.94; 282-291mm – 28.26; 291-300mm – 0.00

RT5

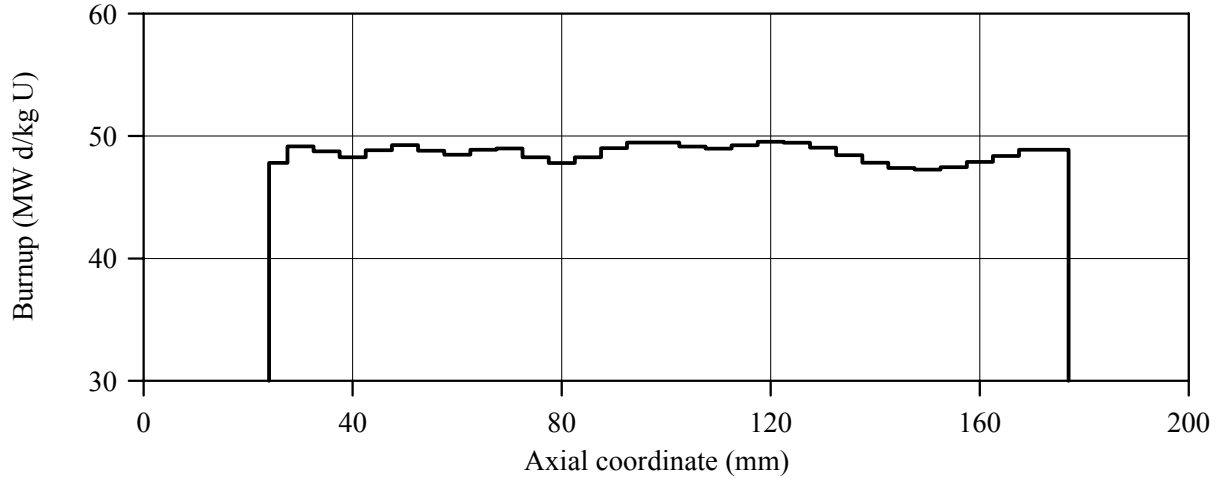


a)

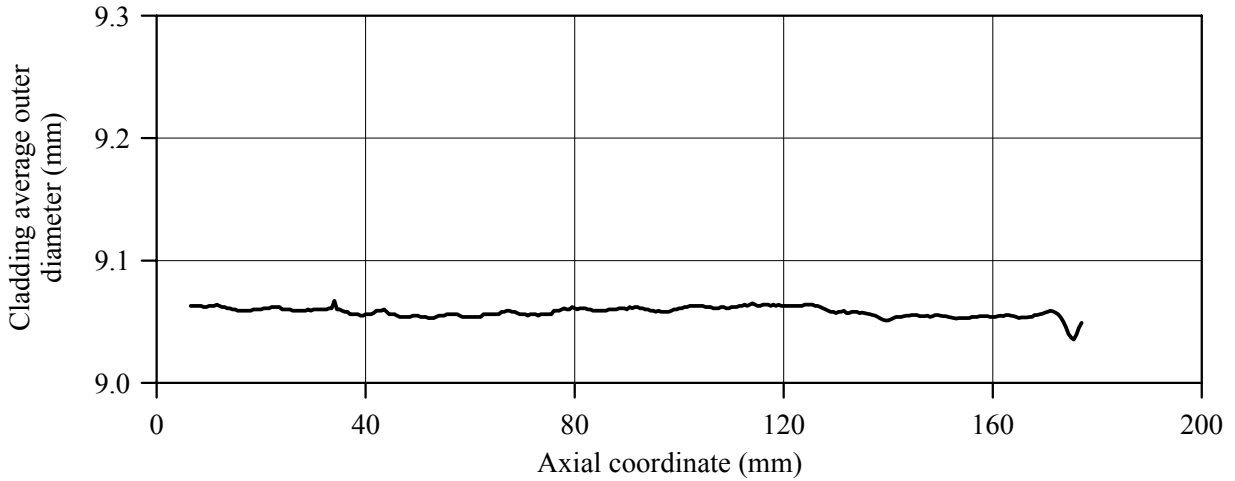


b)

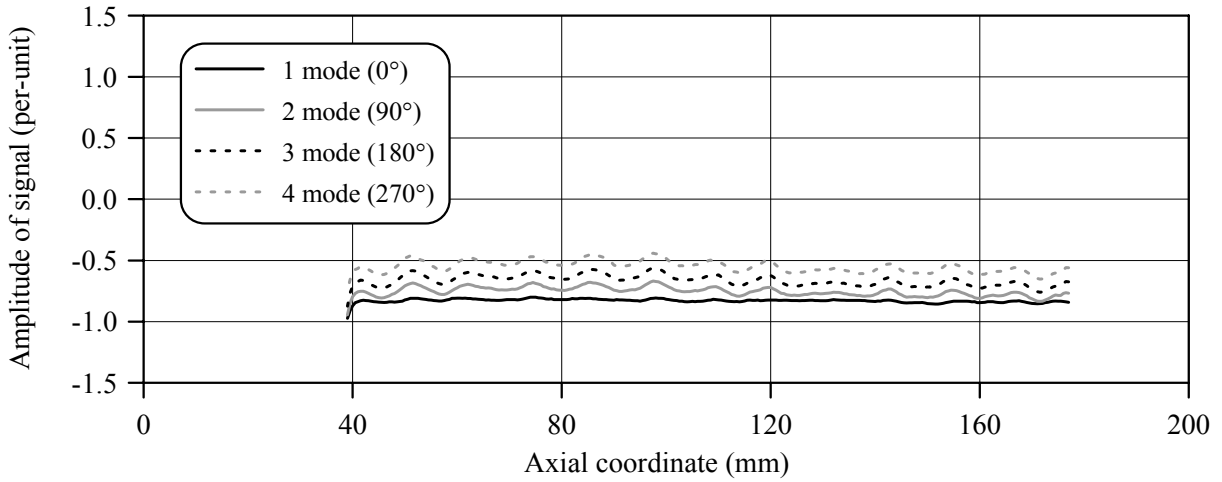
Fig.C-5.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT5



a)



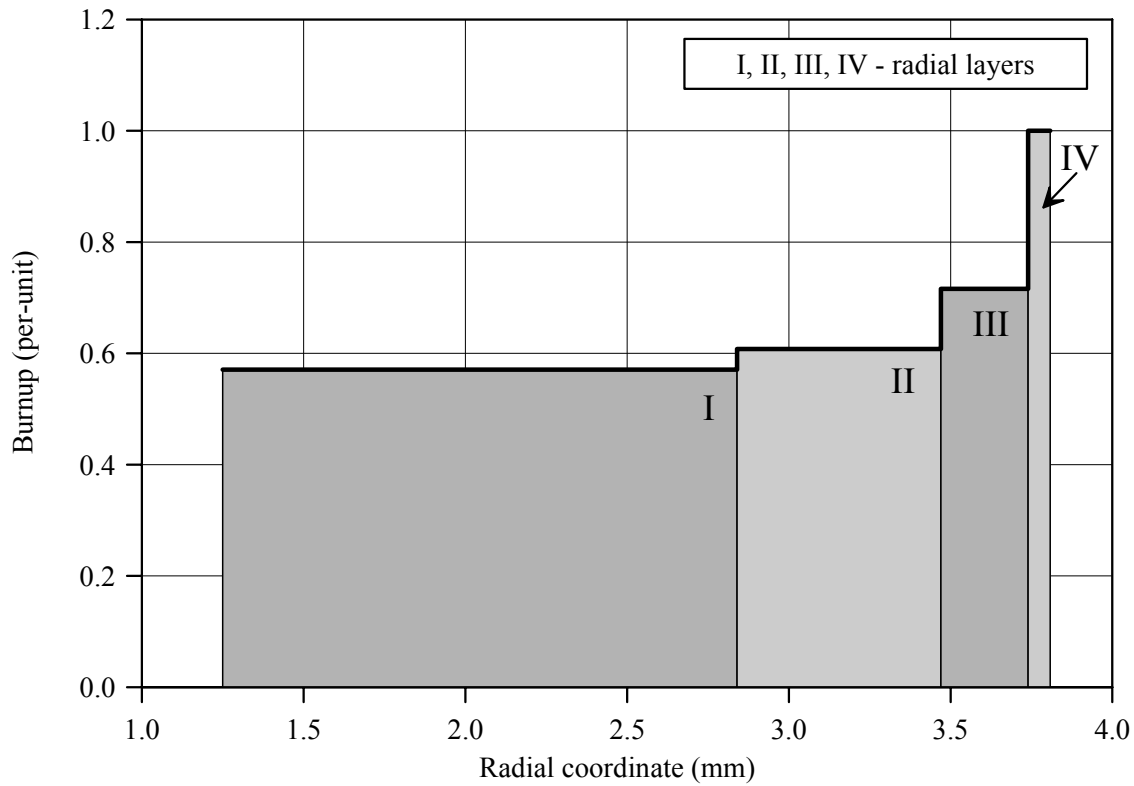
b)



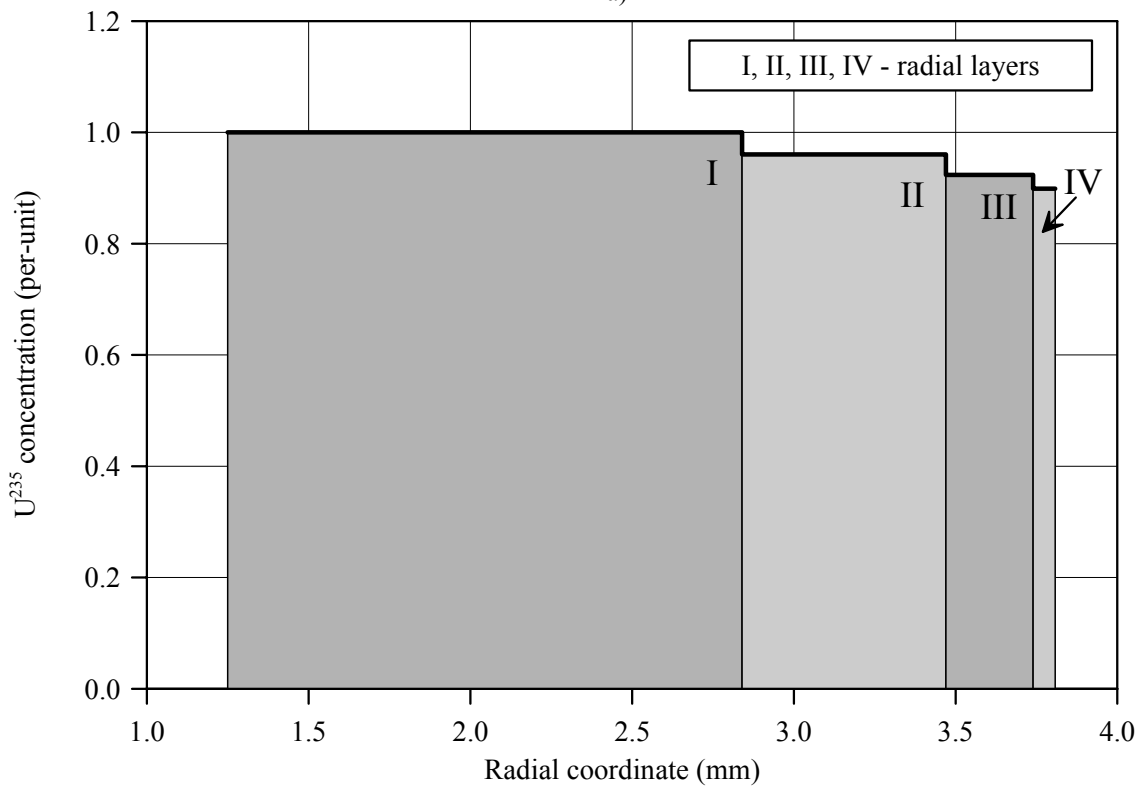
c)

Fig.C-5.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT5

RT5



a)



b)

Fig.C-5.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT5 (calculated values)

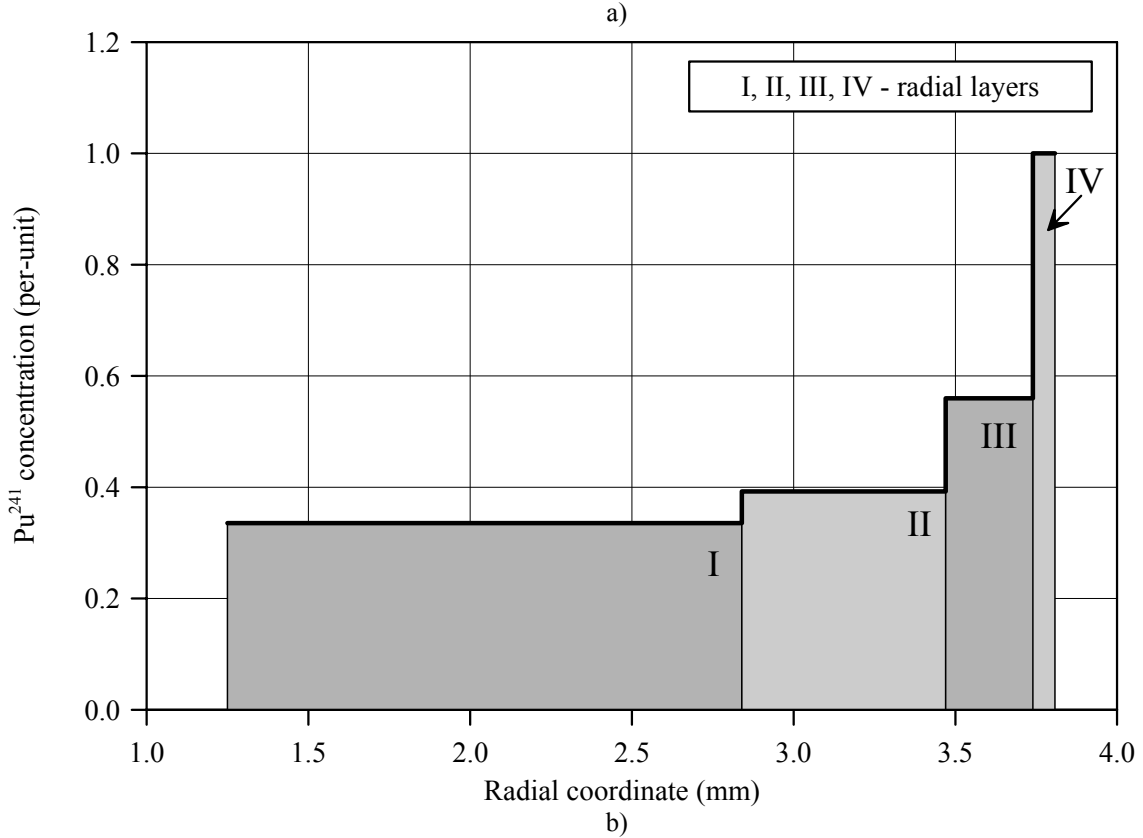
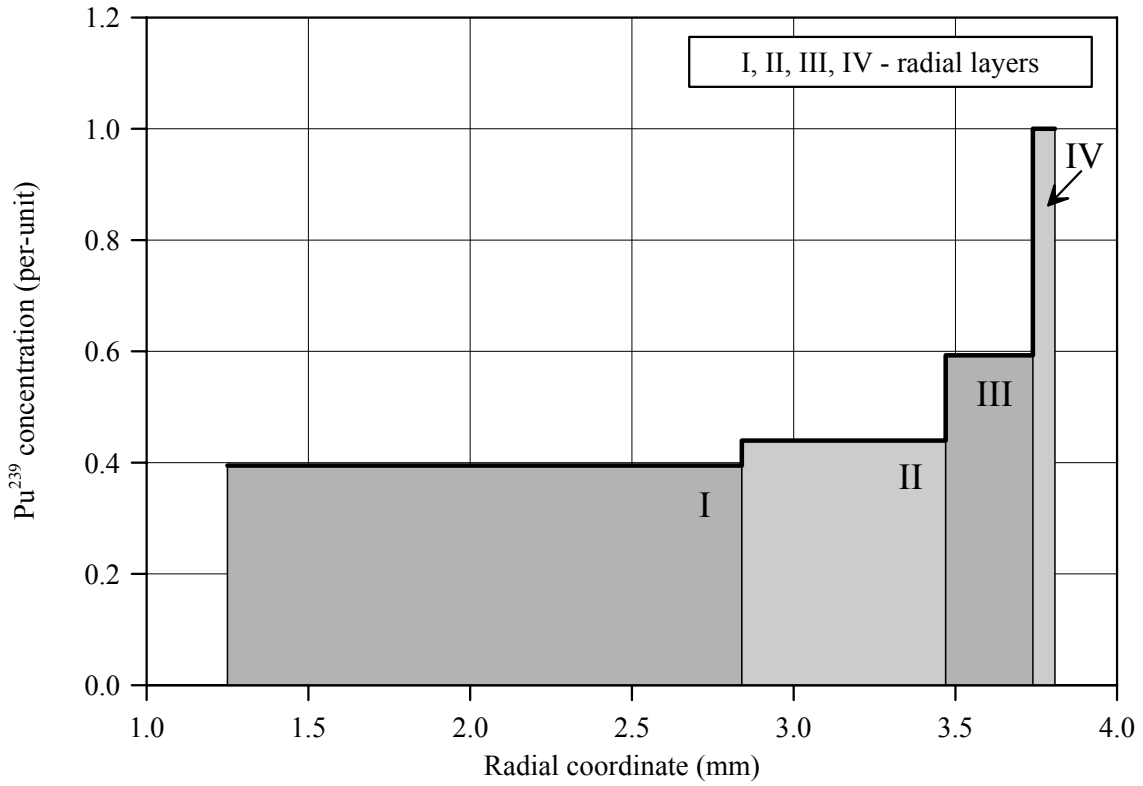


Fig.C-5.4. Radial distribution of (a) Pu²³⁹ and (b) Pu²⁴¹ for fuel rod # RT5 (calculated values)

Appendix C-6
Individual Characteristics
of Fuel Rod # RT6 before the BGR Test

RT6**Table C-6.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT6
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.25-2.82 mm	2.82-3.44 mm	3.44-3.71 mm	3.71-3.795 mm
U ²³⁴	0.273	0.269	0.265	0.261
U ²³⁵	8.512	8.188	7.891	7.687
U ²³⁶	6.251	6.263	6.275	6.290
U ²³⁸	928.4	924.6	912.9	881.2
Pu ²³⁸	0.370	0.390	0.421	0.479
Pu ²³⁹	4.856	5.410	7.320	12.43
Pu ²⁴⁰	2.485	2.636	3.400	5.540
Pu ²⁴¹	0.908	1.067	1.523	2.746
Pu ²⁴²	0.681	0.821	1.207	2.245
Np ²³⁷	0.618	0.637	0.656	0.669
Am ²⁴¹	0.480	0.556	0.787	1.419
Oxygen	134.5	134.5	134.5	134.5
Other fission products	47.25	50.28	58.81	81.35

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data

Table C-6.2. Initial individual characteristics of fuel rod # RT6*

Axial coordinate (from lower cap) (mm)	Cladding average outer diameter (mm)	Fuel mass ** (g)	Linear fuel mass** (g/cm)	Gas flow area ^{3)**} (mm ²)	Burnup** (MW d/kg U)
25 ¹⁾	9.072	1.82	4.04	6.139	48.06
30	9.068	2.05	4.10	5.548	47.99
35	9.062	2.05	4.11	5.449	48.09
40	9.061	2.05	4.09	5.646	48.33
45	9.060	2.04	4.09	5.646	48.37
50	9.060	2.01	4.02	6.336	48.19
55	9.061	2.04	4.07	5.843	48.15
60	9.065	2.06	4.13	5.252	48.33
65	9.070	2.05	4.09	5.646	48.31
70	9.072	2.08	4.15	5.055	48.06
75	9.073	2.05	4.09	5.646	48.05
80	9.075	2.04	4.09	5.646	48.38
85	9.075	2.05	4.09	5.646	48.56
90	9.071	2.11	4.21	4.910	48.43
95	9.069	2.05	4.11	5.449	48.24
100	9.069	2.03	4.07	5.843	48.14
105	9.068	2.03	4.07	5.843	48.08
110	9.068	2.02	4.03	6.237	48.02
115	9.066	2.05	4.09	5.646	47.89
120	9.069	2.05	4.11	5.449	47.77
125	9.071	2.05	4.09	5.646	47.85
130	9.073	2.04	4.08	5.745	48.08
135	9.073	2.07	4.15	5.055	48.06
140	9.075	2.10	4.19	4.910	47.77
145	9.077	2.08	4.17	4.910	47.70
150	9.080	2.07	4.14	5.154	47.85
155	9.075	2.08	4.16	4.957	47.57
160	9.075	2.09	4.17	4.910	46.78
165	9.076	2.03	4.06	5.942	46.16
170	9.078	1.96	3.92	7.321	45.95
175 ²⁾	-	0.58	3.88	7.715	45.71

* All parameters were determined using results of pre-test examinations

** Average values at the length interval equal to the axial coordinate ± 2.5 mm

¹⁾ Bottom end coordinate of fuel stack is 23 mm;

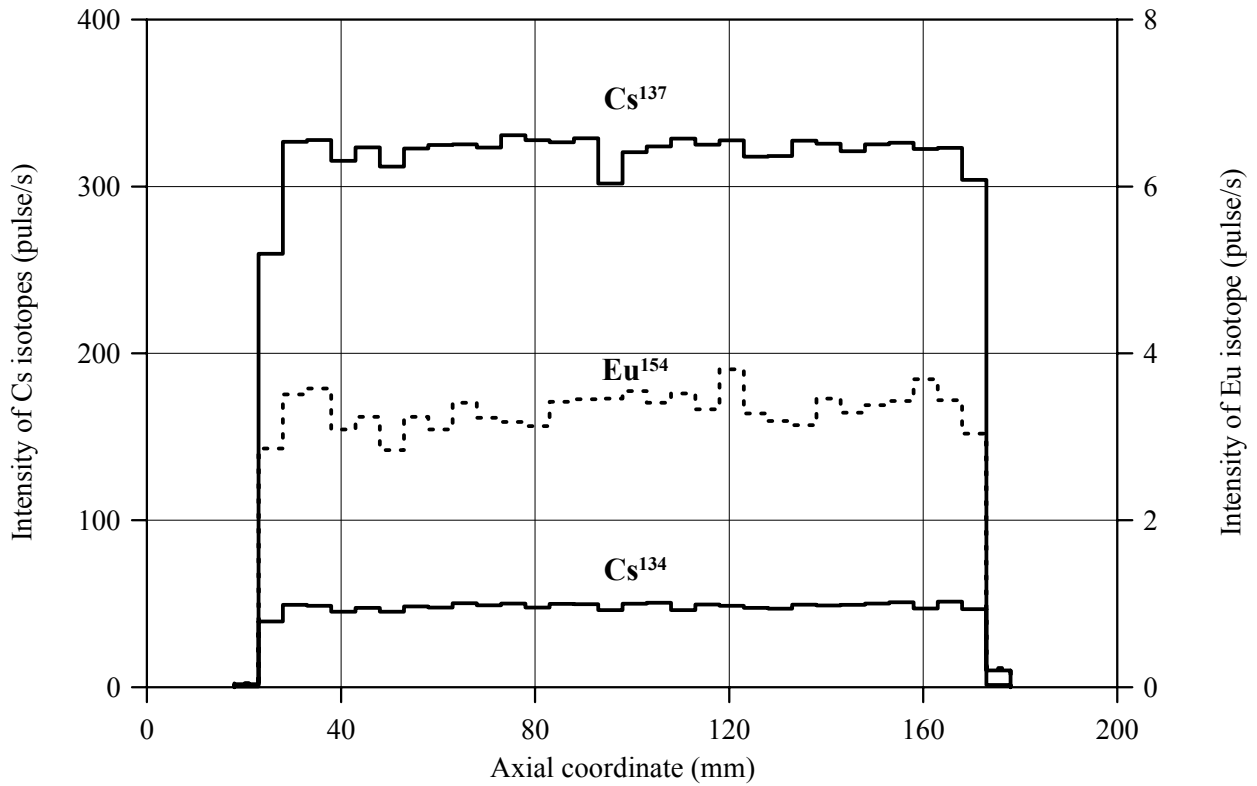
²⁾ Top end coordinate of fuel stack is 174 mm

³⁾ Gas flow area beyond the fuel stack (mm²):

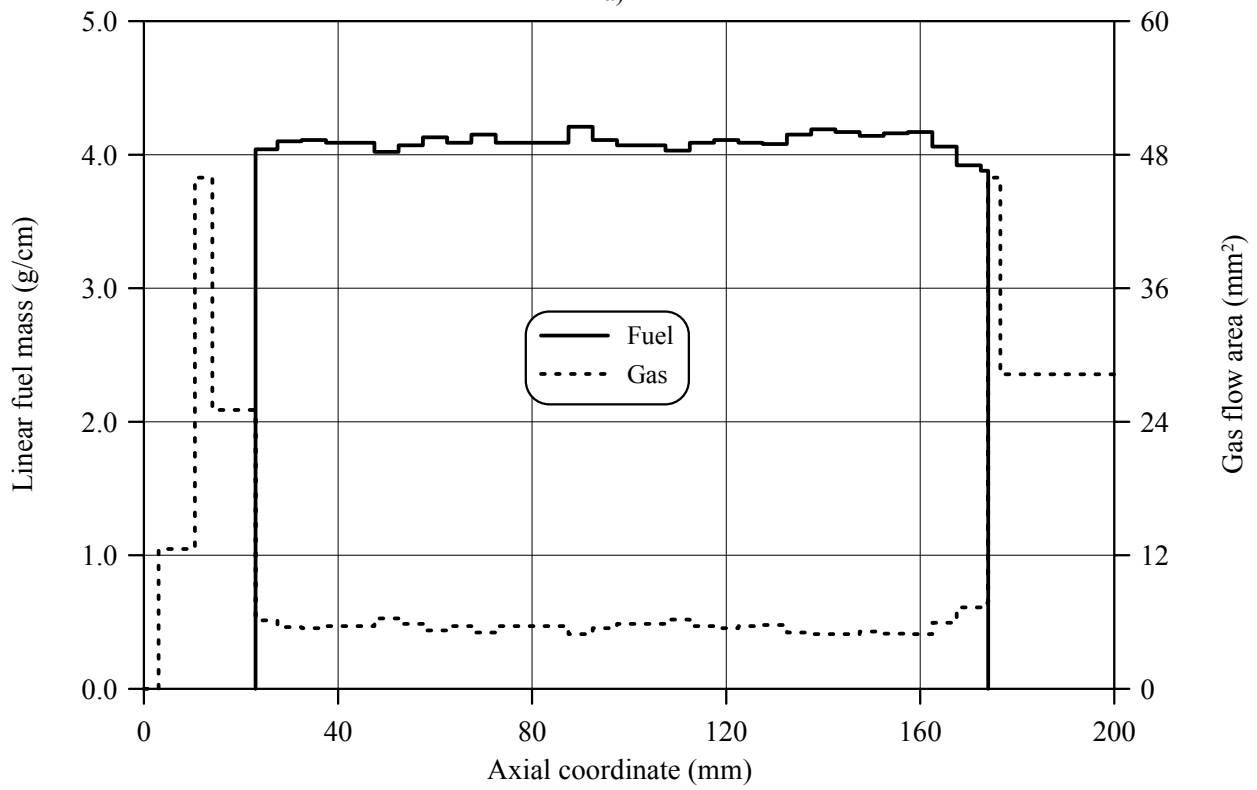
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-14.1mm – 45.94; 14.1-23.0mm – 25.06

Top: 174.0-176.5mm – 45.94; 176.5-202.5mm – 28.26; 202.5-279mm – 45.94; 279-288mm – 28.26; 288-297mm – 0.00

RT6

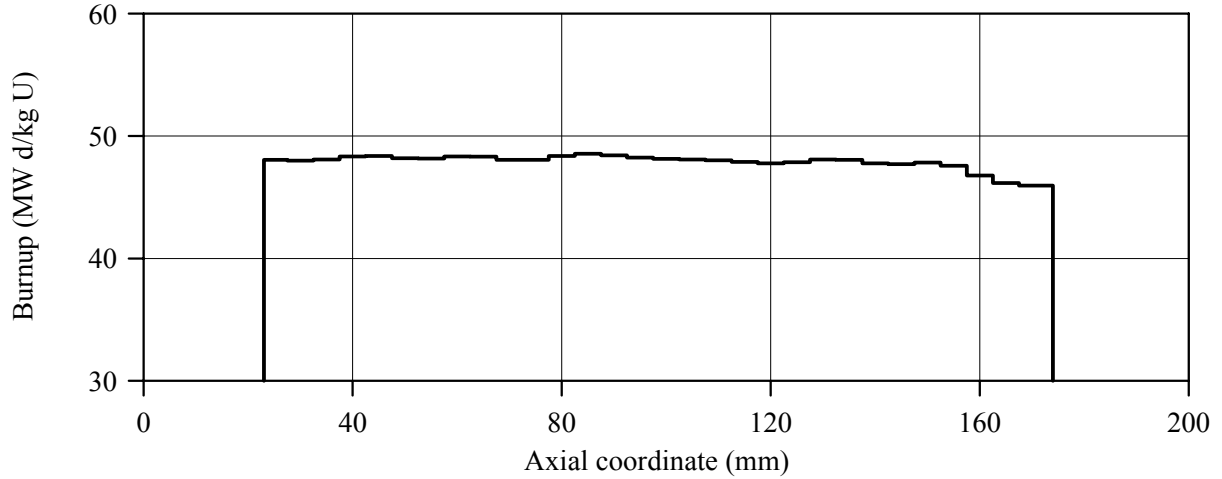


a)

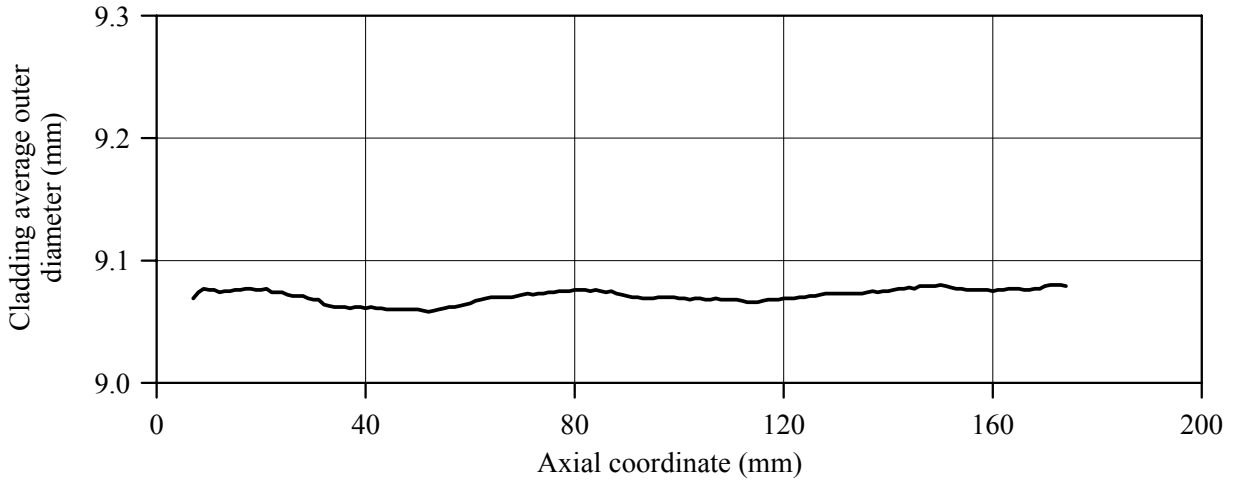


b)

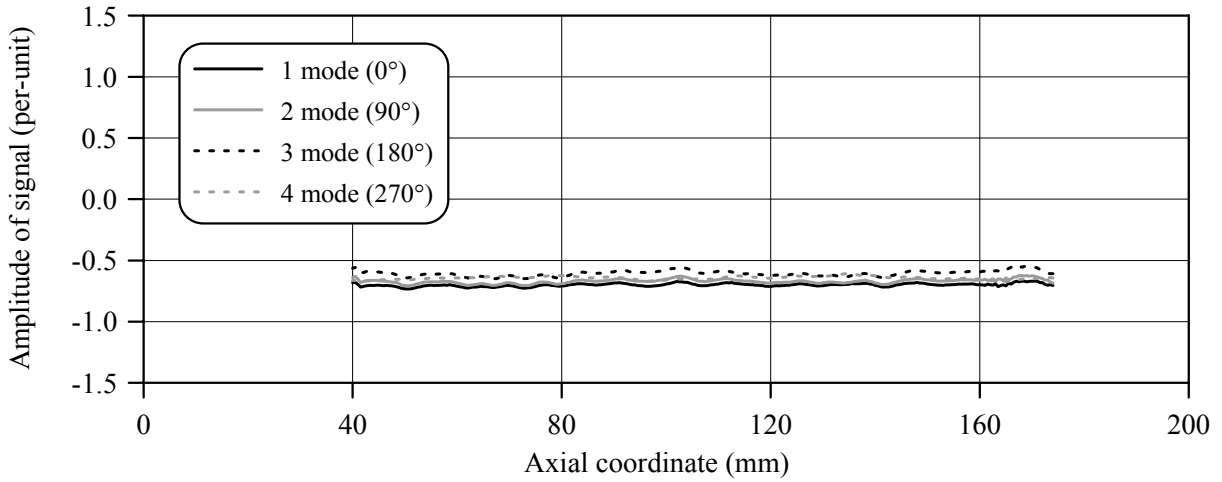
Fig.C-6.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT6



a)



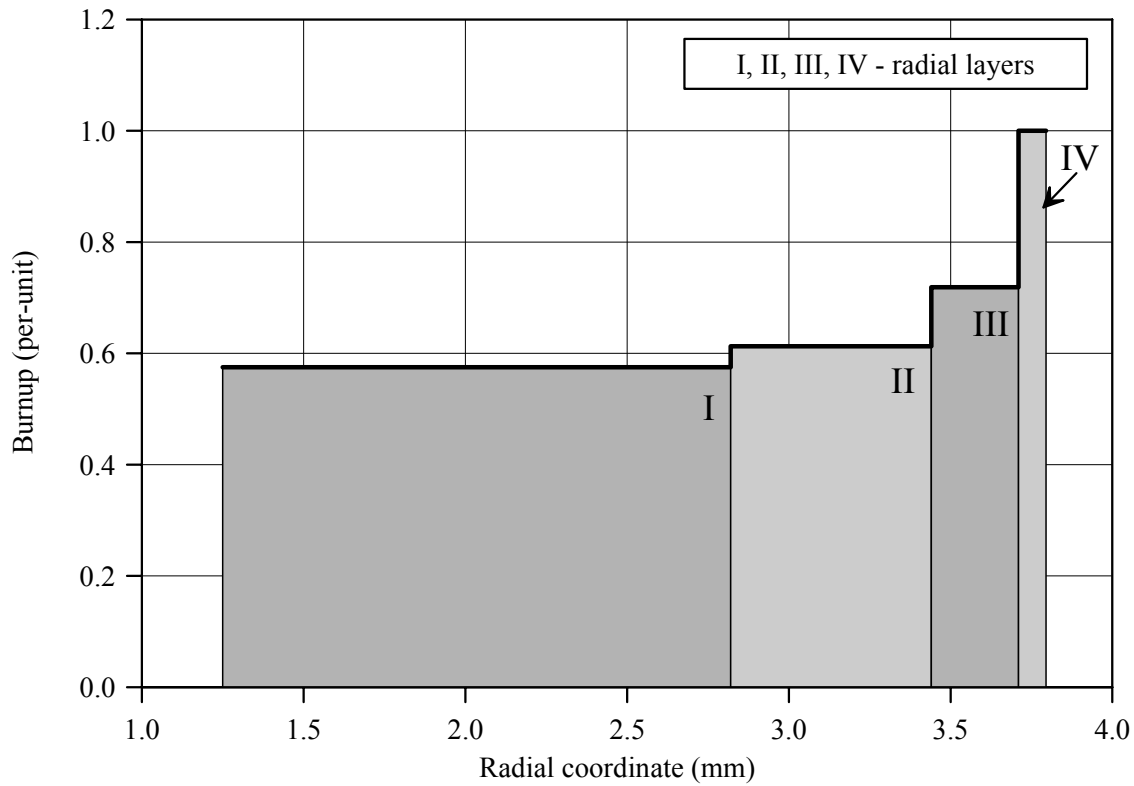
b)



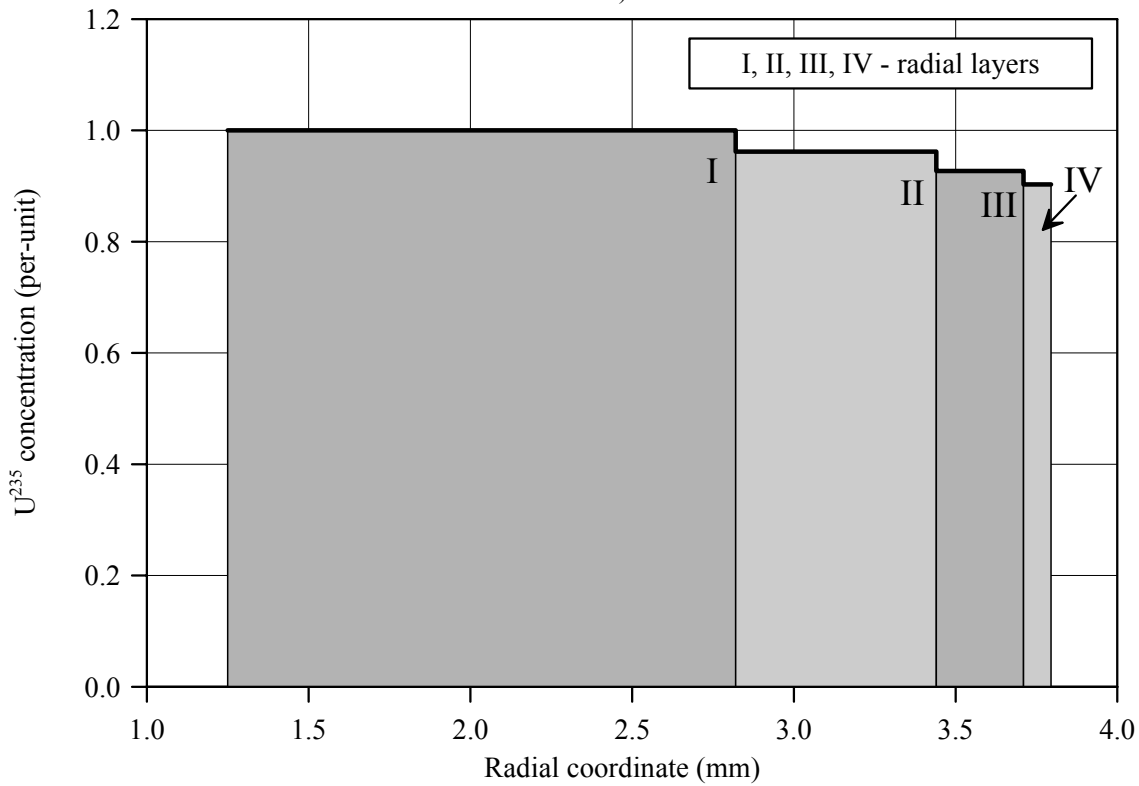
c)

Fig.C-6.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT6

RT6



a)



b)

Fig.C-6.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT6 (calculated values)

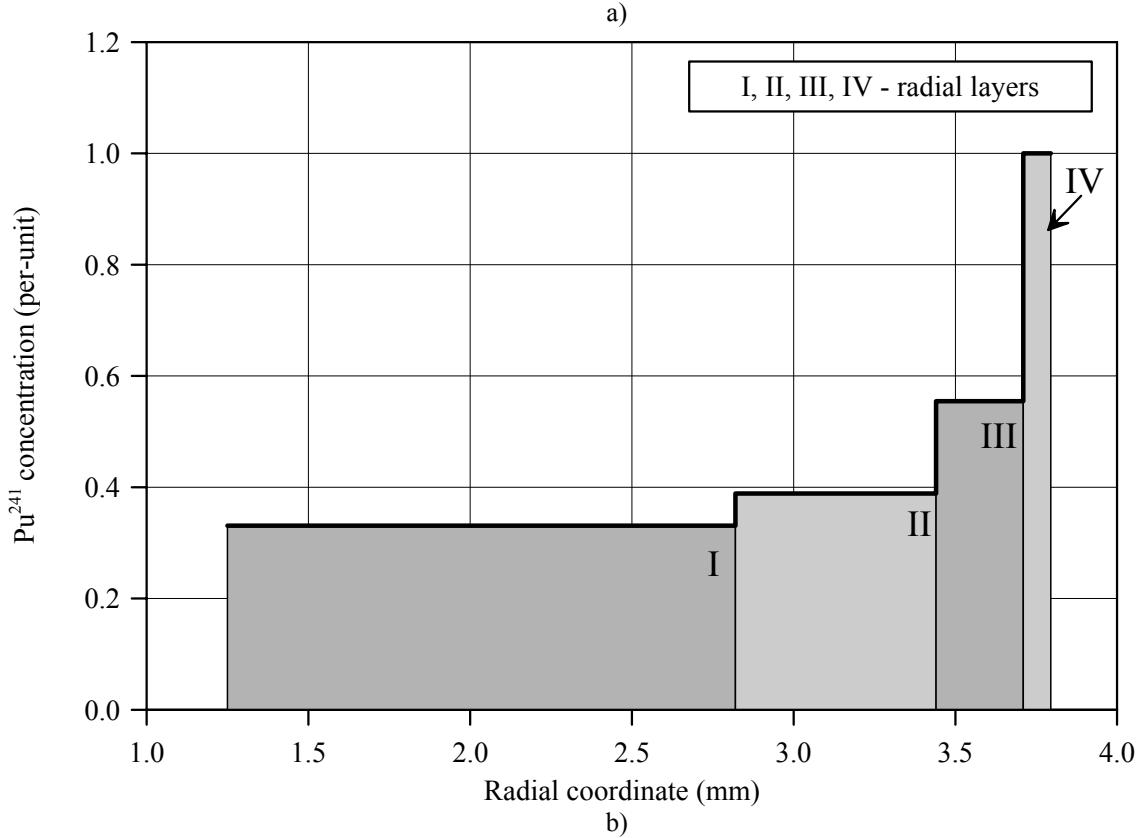
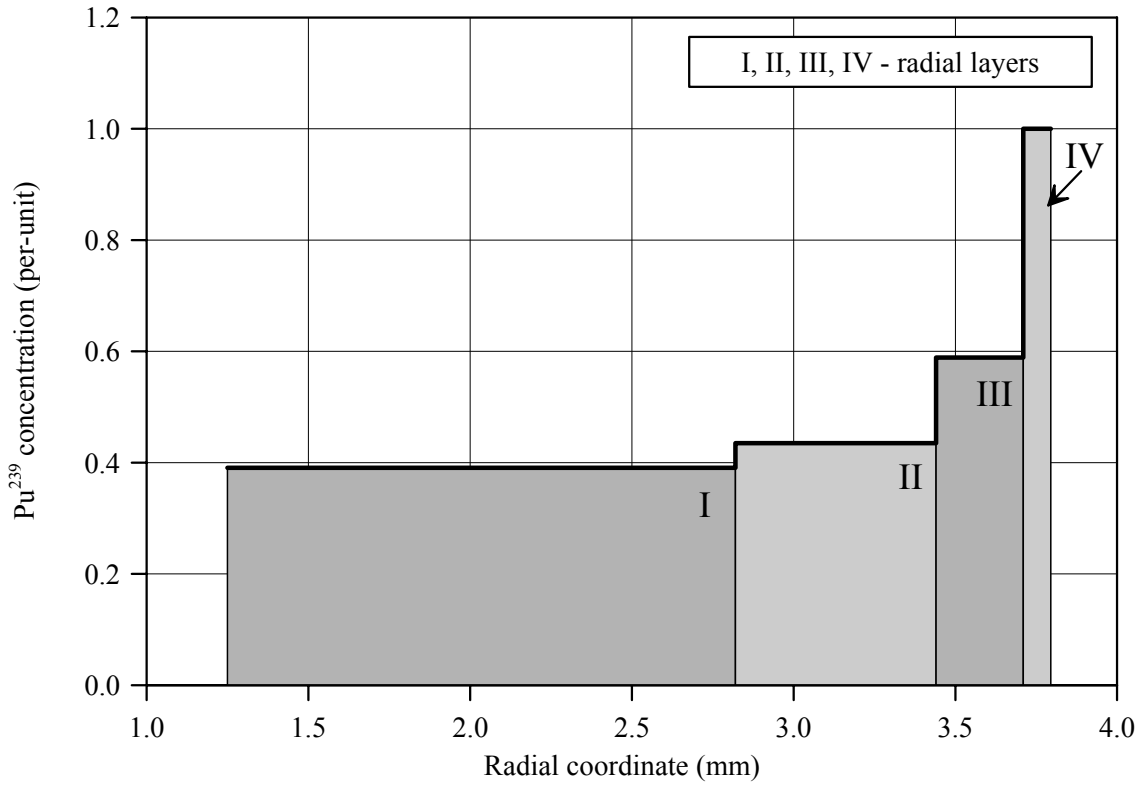


Fig.C-6.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT6 (calculated values)

Appendix C-7
Individual Characteristics
of Fuel Rod # RT7 before the BGR Test

RT7**Table C-7.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT7
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	0.825-2.777 mm	2.777-3.454 mm	3.454-3.747 mm	3.747-3.840 mm
U ²³⁴	0.190	0.189	0.190	0.197
U ²³⁵	2.435	2.297	2.185	2.111
U ²³⁶	5.767	5.743	5.721	5.712
U ²³⁸	923.5	918.8	905.4	866.0
Pu ²³⁸	0.378	0.408	0.461	0.586
Pu ²³⁹	4.744	5.223	6.840	11.50
Pu ²⁴⁰	2.978	3.063	3.755	5.978
Pu ²⁴¹	1.324	1.545	2.144	3.859
Pu ²⁴²	1.335	1.619	2.328	4.349
Np ²³⁷	0.000	0.000	0.000	0.000
Am ²⁴¹	0.162	0.188	0.261	0.470
Oxygen	134.5	134.5	134.5	134.5
Other fission products	57.00	60.68	70.43	98.62

* Measured averaged concentrations and calculated relative radial distributions of isotopes (TRIFOB code) were used to develop these data