

Table C-7.2. Initial individual characteristics of fuel rod # RT7*

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⁾	9.063	2.03	4.51	2.14	58.94
30	9.054	2.17	4.34	3.80	59.75
35	9.064	2.14	4.28	4.39	61.75
40	9.059	2.16	4.33	3.90	60.24
45	9.059	2.18	4.36	3.61	60.34
50	9.052	2.19	4.39	3.31	59.58
55	9.064	2.16	4.32	4.00	59.87
60	9.066	2.17	4.34	3.80	61.50
65	9.063	2.12	4.25	4.68	60.79
70	9.062	2.17	4.34	3.80	59.33
75	9.056	2.19	4.37	3.51	60.91
80	9.059	2.19	4.38	3.41	59.23
85	9.051	2.20	4.40	3.21	59.31
90	9.062	2.20	4.40	3.21	60.73
95	9.051	2.21	4.41	3.12	59.03
100	9.057	2.21	4.41	3.12	60.93
105	9.056	2.22	4.44	2.82	59.04
110	9.070	2.20	4.41	3.12	60.63
115	9.073	2.20	4.39	3.31	60.96
120	9.063	2.16	4.32	4.00	59.31
125	9.064	2.18	4.36	3.61	61.62
130	9.063	2.16	4.31	4.10	61.89
135	9.071	2.17	4.35	3.70	60.11
140	9.057	2.19	4.38	3.41	61.07
145	9.075	2.17	4.34	3.80	60.52
150	9.063	2.17	4.34	3.80	59.56
155	9.072	2.15	4.30	4.19	61.62
160	9.064	2.18	4.36	3.61	60.18
165	9.069	2.22	4.44	2.82	61.60
170	9.069	2.19	4.39	3.31	60.14
175 ²⁾	9.056	1.55	4.29	4.29	59.81

* 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;

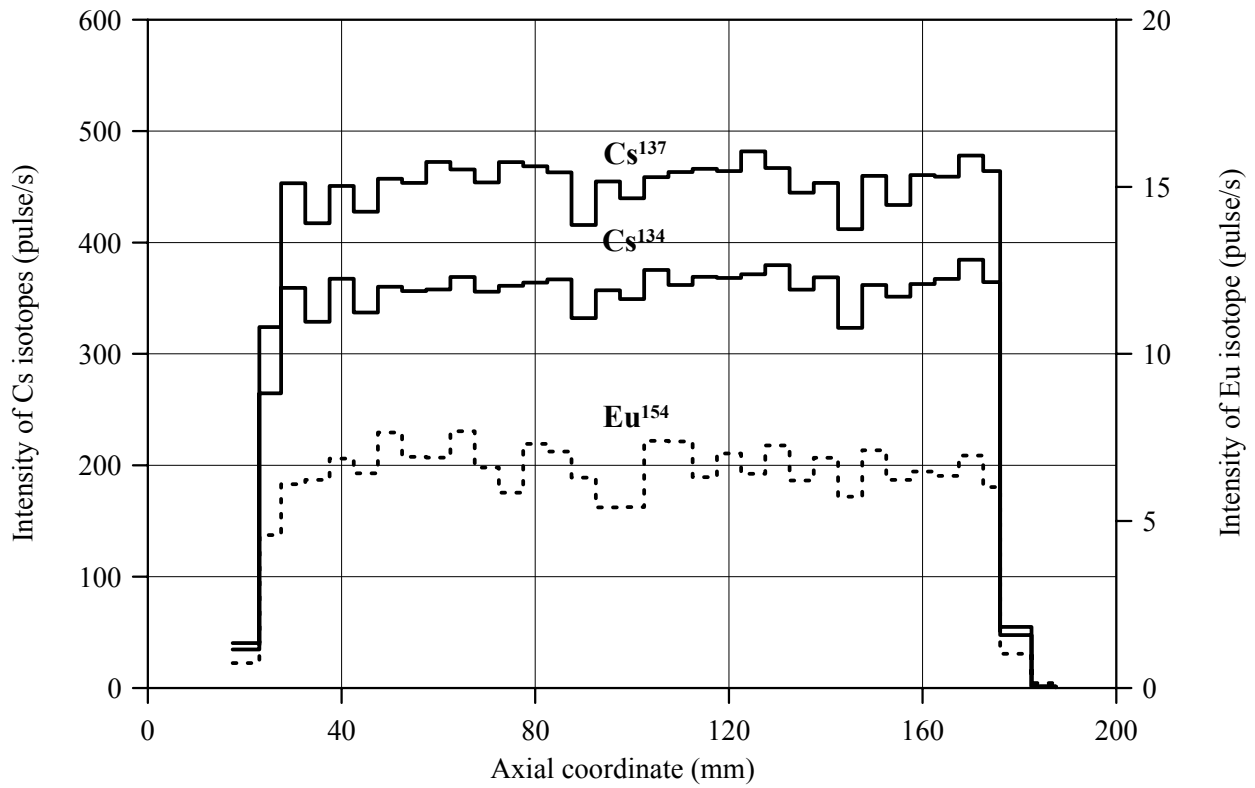
²⁾ Top end coordinate of fuel stack is 176.1 mm

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

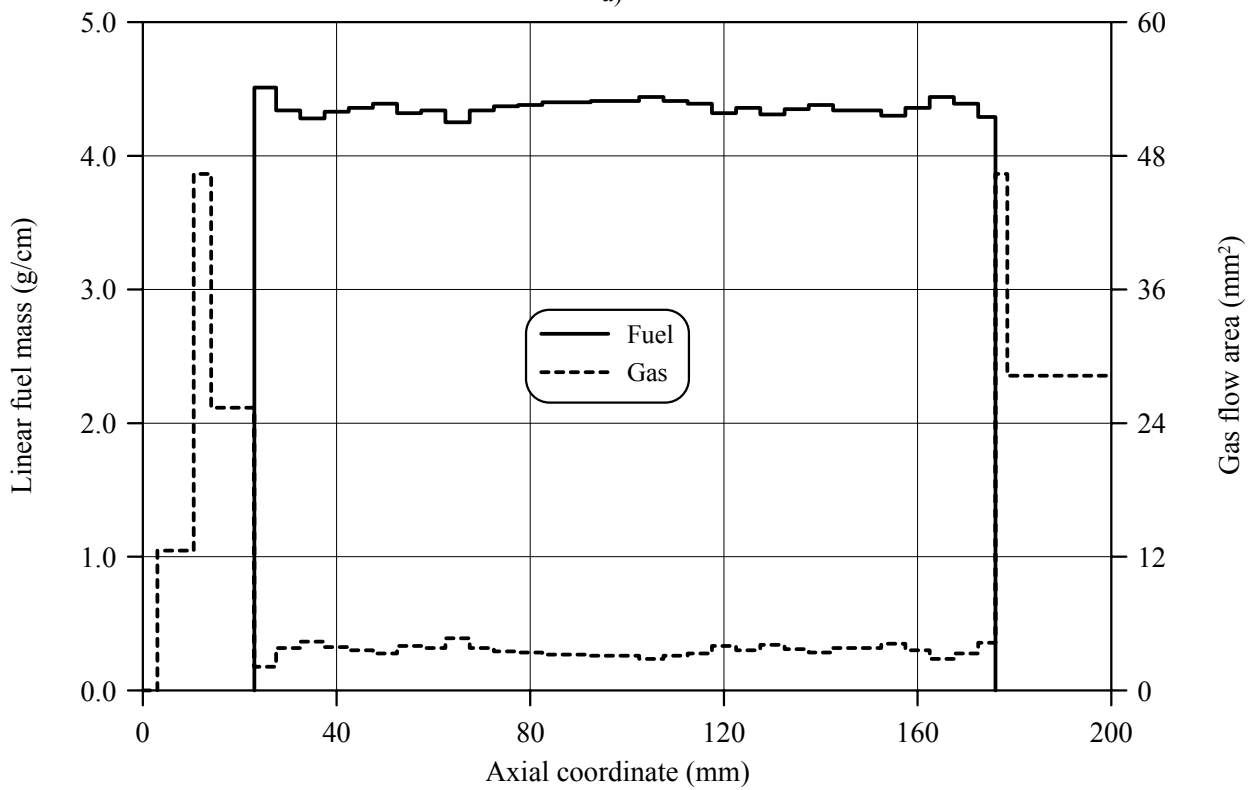
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-14.1mm – 46.37; 14.1-23.0mm – 25.38

Top: 176.1-178.5mm – 46.37; 178.5-204.5mm – 28.26; 204.5-281mm – 47.27; 281-290mm – 28.26; 290-299mm – 0.00

RT7

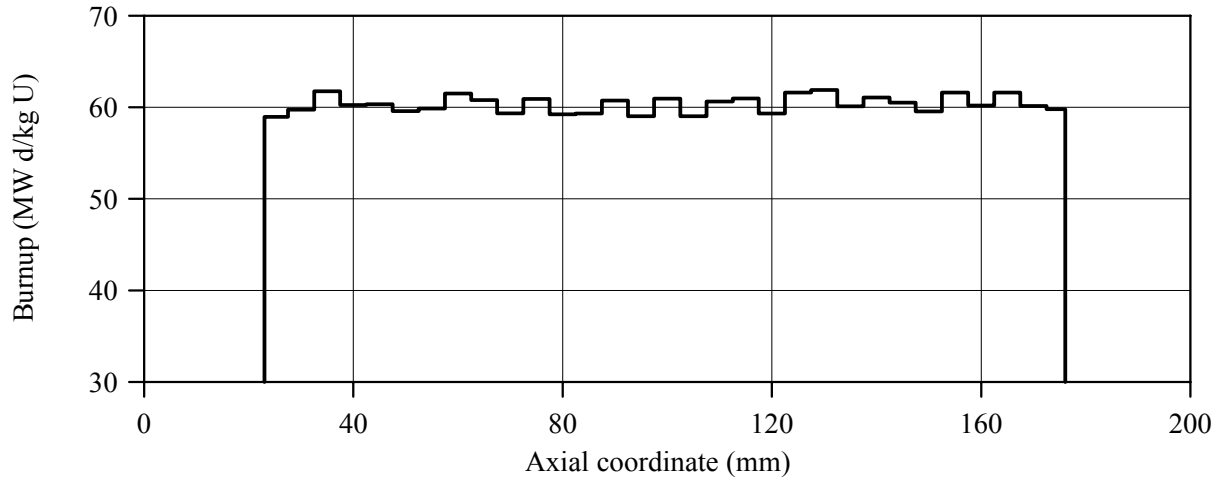


a)

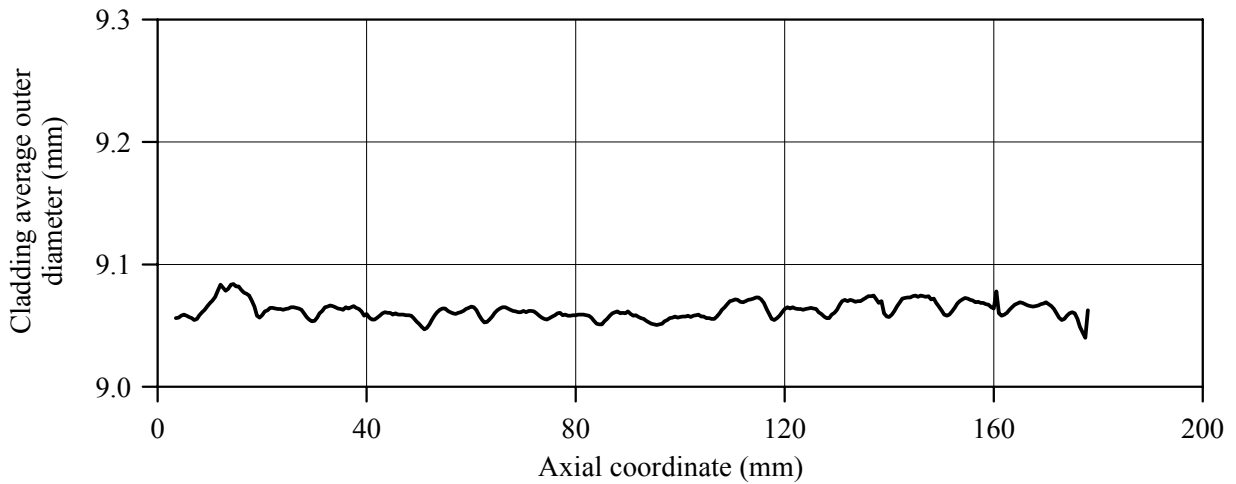


b)

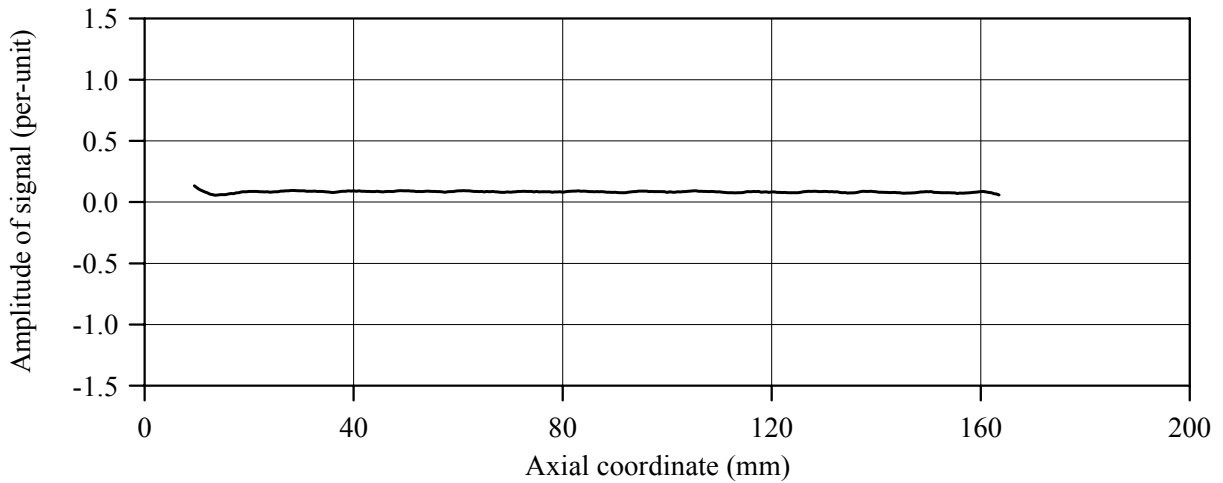
Fig.C-7.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT7



a)



b)



c)

Fig.C-7.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT7

RT7

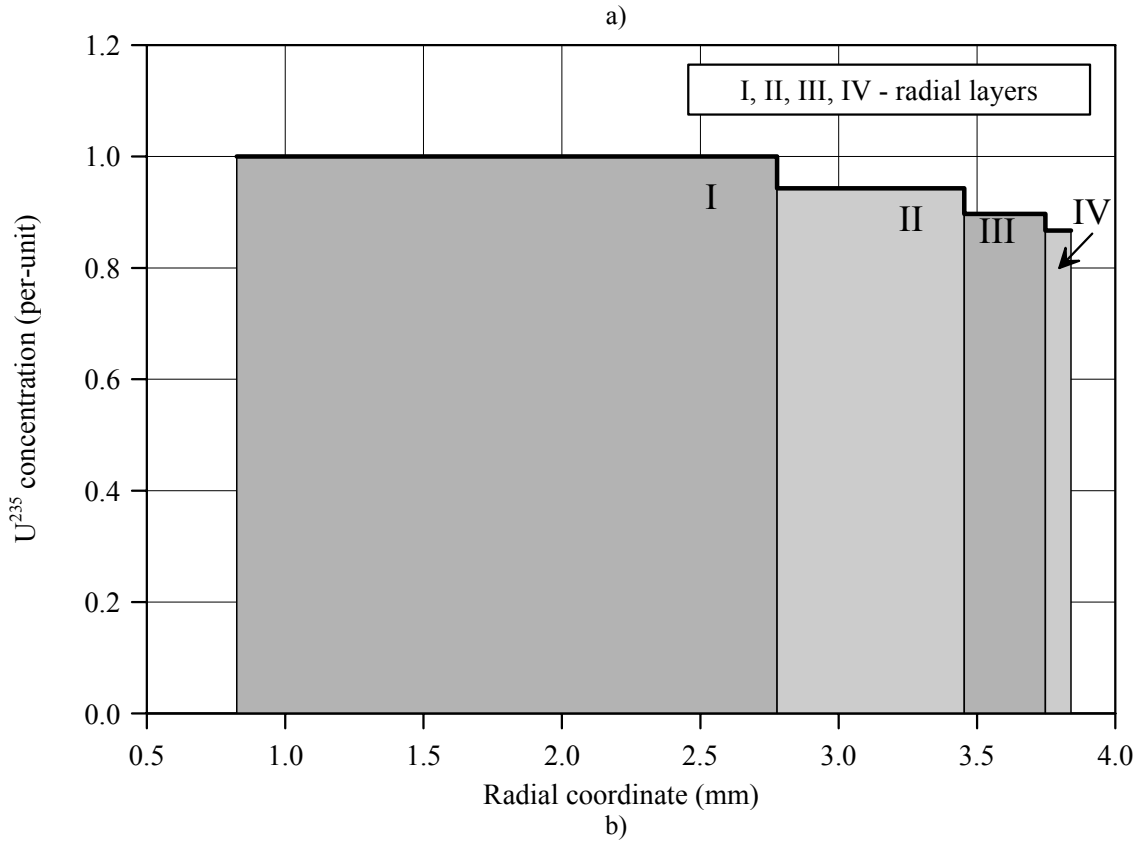
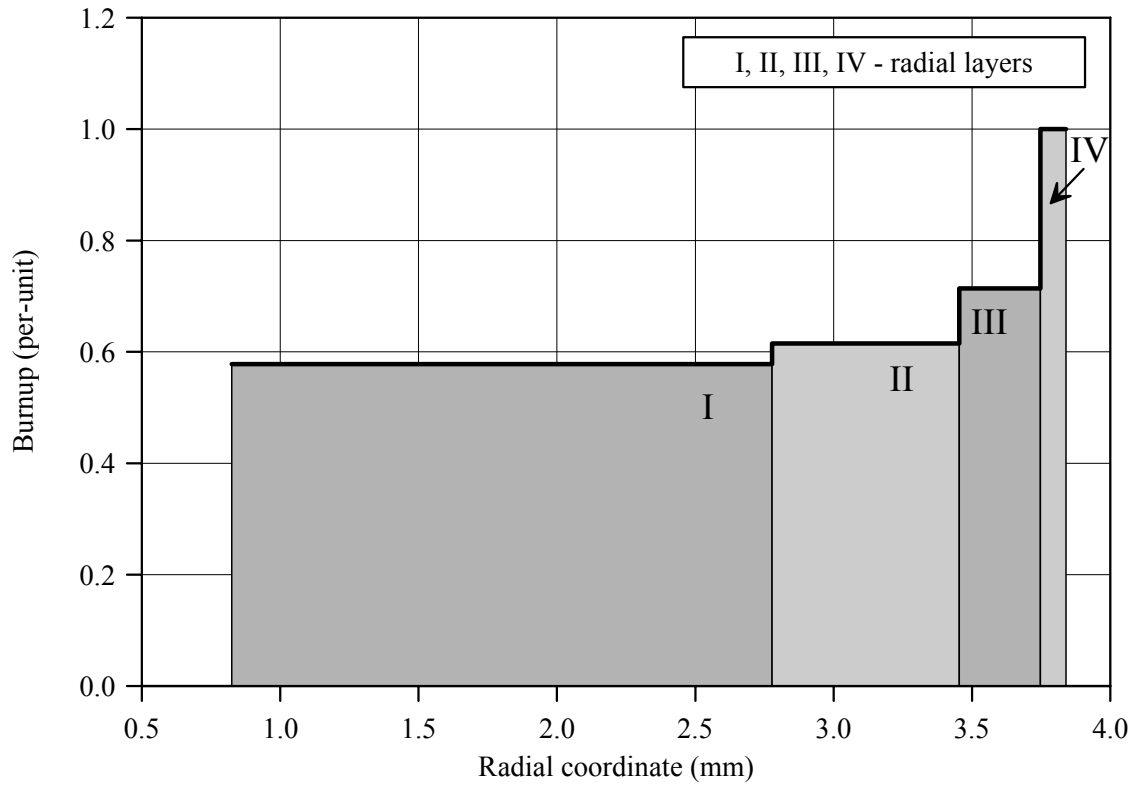
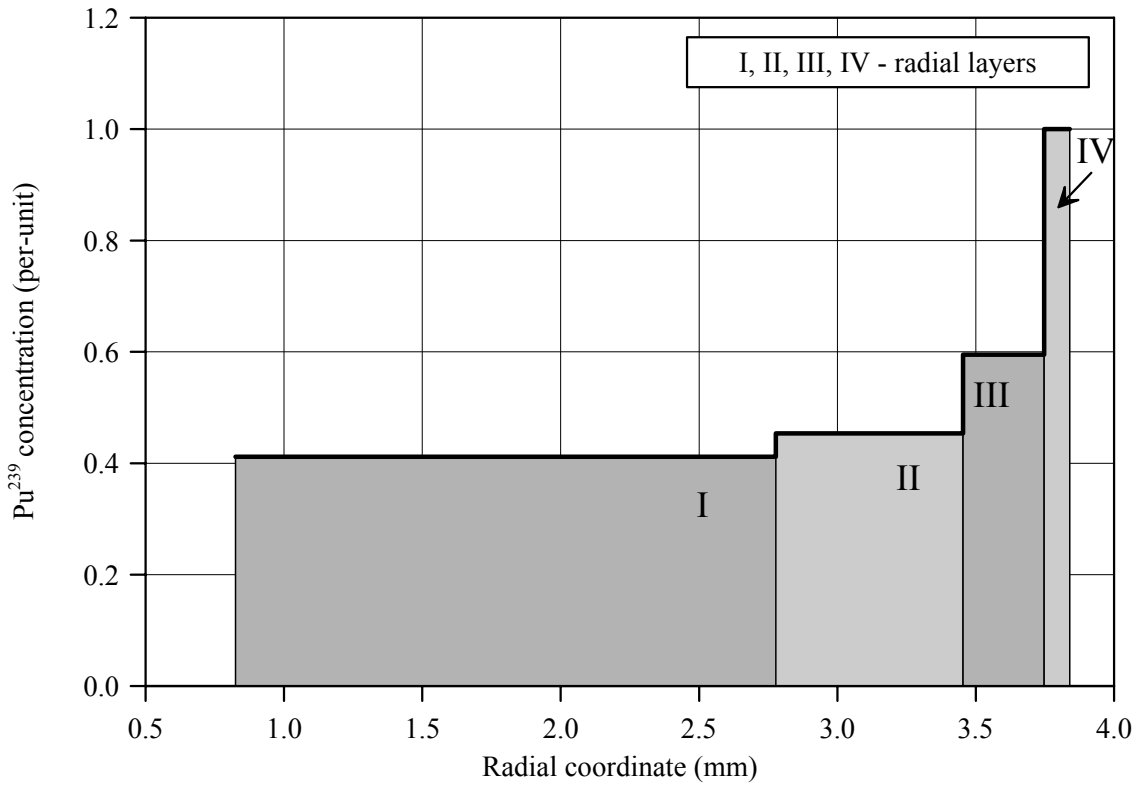
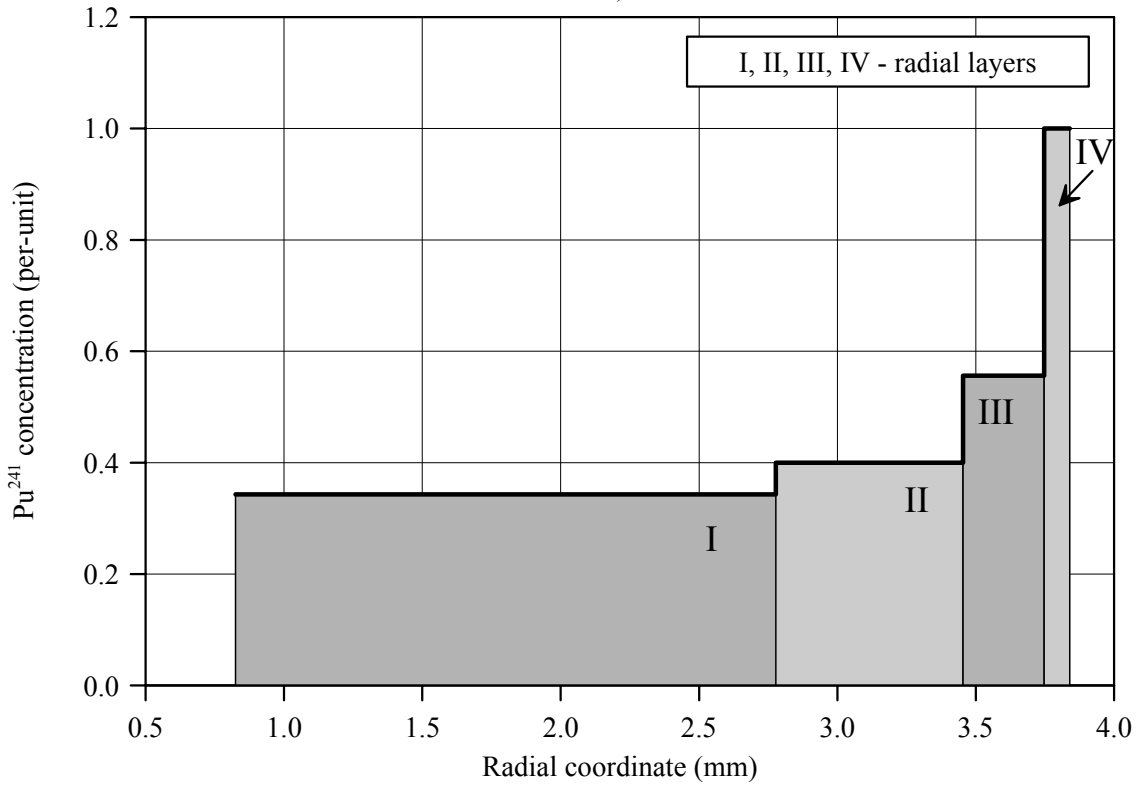


Fig.C-7.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT7 (calculated values)



a)



b)

Fig.C-7.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT7 (calculated values)

Appendix C-8
Individual Characteristics
of Fuel Rod # RT8 before the BGR Test

RT8**Table C-8.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT8
(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	0.220	0.219	0.220	0.227
U ²³⁵	4.898	4.625	4.403	4.255
U ²³⁶	6.668	6.642	6.620	6.611
U ²³⁸	922.3	917.7	904.4	865.6
Pu ²³⁸	0.523	0.565	0.638	0.810
Pu ²³⁹	4.920	5.419	7.104	11.97
Pu ²⁴⁰	2.755	2.838	3.487	5.565
Pu ²⁴¹	0.967	1.131	1.571	2.833
Pu ²⁴²	0.985	1.196	1.720	3.217
Np ²³⁷	1.406	1.460	1.507	1.538
Am ²⁴¹	0.052	0.060	0.084	0.151
Oxygen	134.5	134.5	134.5	134.5
Other fission products	55.63	59.53	69.78	99.19

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

Table C-8.2. Initial individual characteristics of fuel rod # RT8*

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)
10 ¹⁾	9.087	0.16	3.23	15.22	60.37
15	9.087	1.68	3.35	14.06	60.50
20	9.081	2.25	4.49	3.10	59.88
25	9.083	2.26	4.52	2.81	59.16
30	9.073	2.25	4.50	3.00	59.80
35	9.083	2.24	4.48	3.20	60.92
40	9.082	2.28	4.56	2.43	60.06
45	9.085	2.30	4.59	2.14	58.18
50	9.080	2.29	4.57	2.33	58.69
55	9.092	2.26	4.52	2.81	60.98
60	9.097	2.23	4.45	3.48	61.60
65	9.104	2.22	4.44	3.58	60.40
70	9.085	2.25	4.51	2.91	59.78
75	9.095	2.25	4.50	3.00	60.21
80	9.093	2.24	4.47	3.29	60.72
85	9.105	2.23	4.46	3.39	60.94
90	9.089	2.23	4.46	3.39	60.96
95	9.080	2.23	4.46	3.39	60.86
100	9.083	2.24	4.47	3.29	60.67
105	9.078	2.24	4.48	3.20	60.46
110	9.087	2.24	4.48	3.20	60.32
115	9.084	2.24	4.48	3.20	60.26
120	9.086	2.24	4.48	3.20	60.21
125	9.073	2.24	4.49	3.10	60.17
130	9.085	2.25	4.49	3.10	60.12
135	9.084	2.26	4.51	2.91	59.99
140	9.096	2.26	4.52	2.81	59.65
145	9.088	2.26	4.52	2.81	59.39
150	9.094	2.26	4.52	2.81	59.79
155	9.091	2.13	4.25	5.41	60.69
160 ²⁾	9.091	1.51	3.36	13.97	61.03

* 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 10.5 mm;

²⁾ Top end coordinate of fuel stack is 160.5 mm

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

Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56

Bepx: 160.5-169.4mm – 25.36; 169.4-178.5mm – 46.35; 178.5-204.5mm – 28.26; 204.5-281mm – 47.27; 281-290mm – 28.26; 290-299mm – 0

RT8

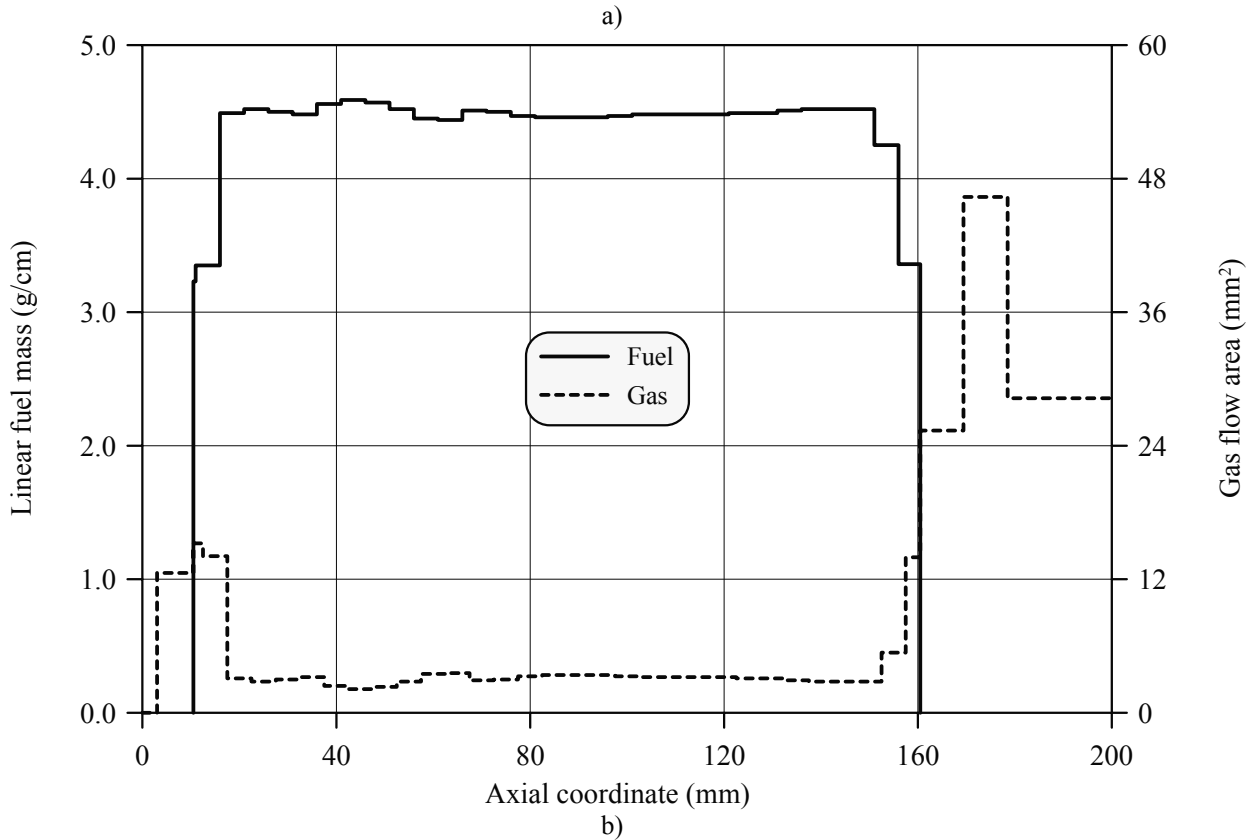
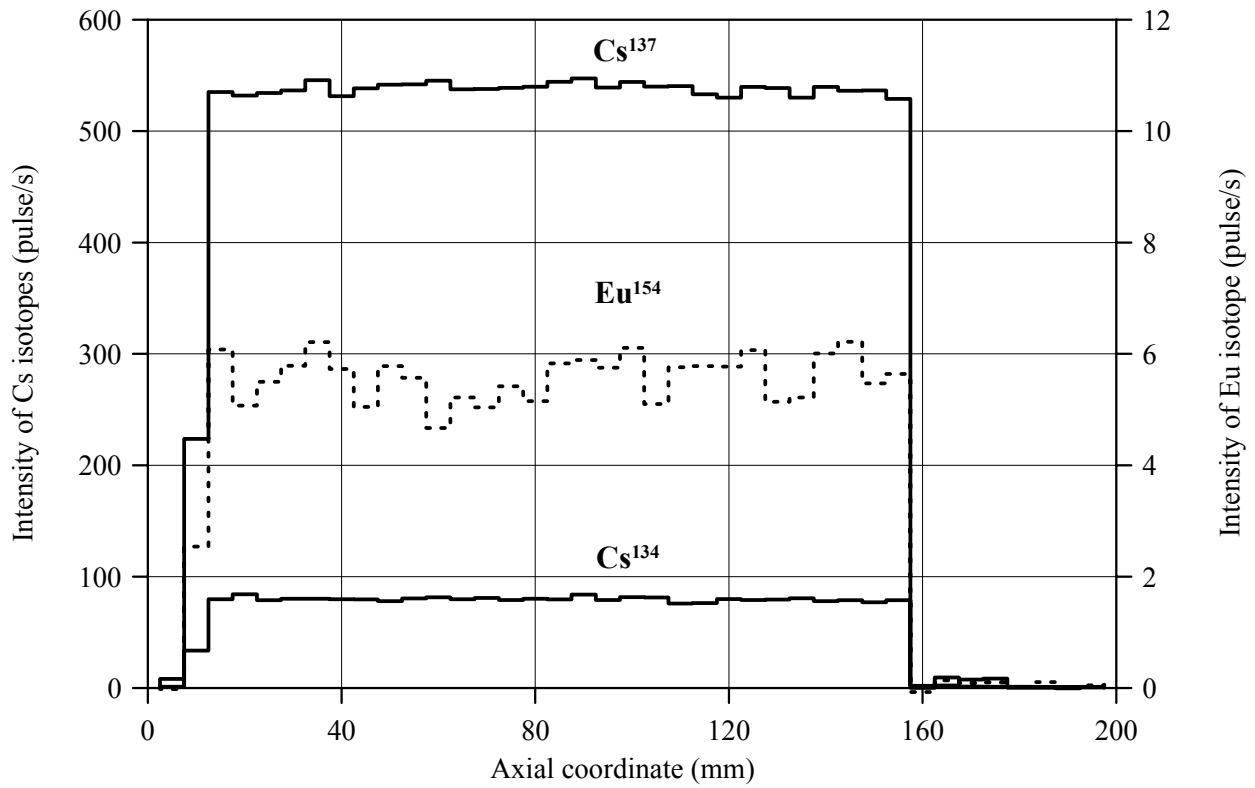
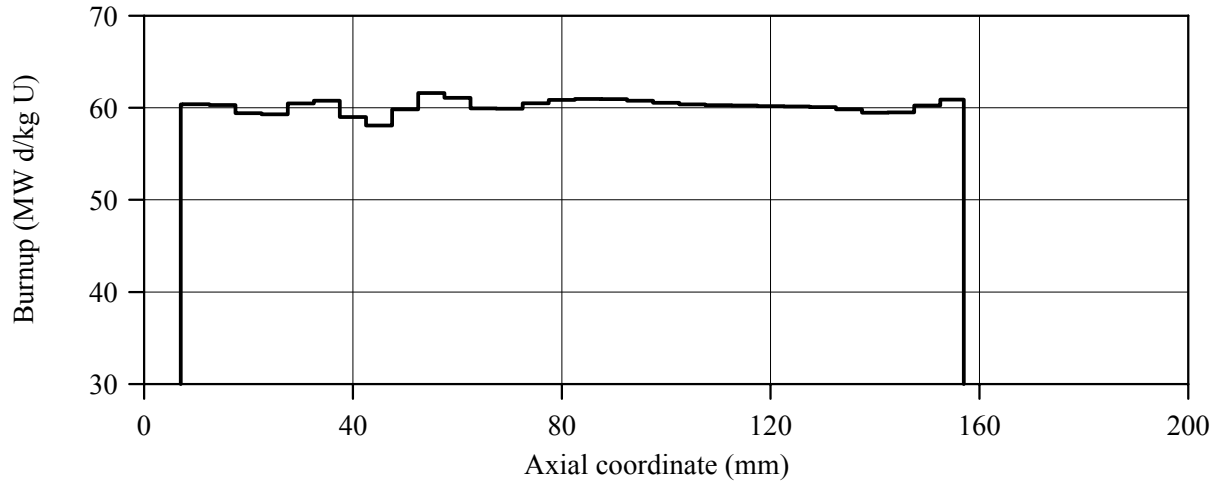
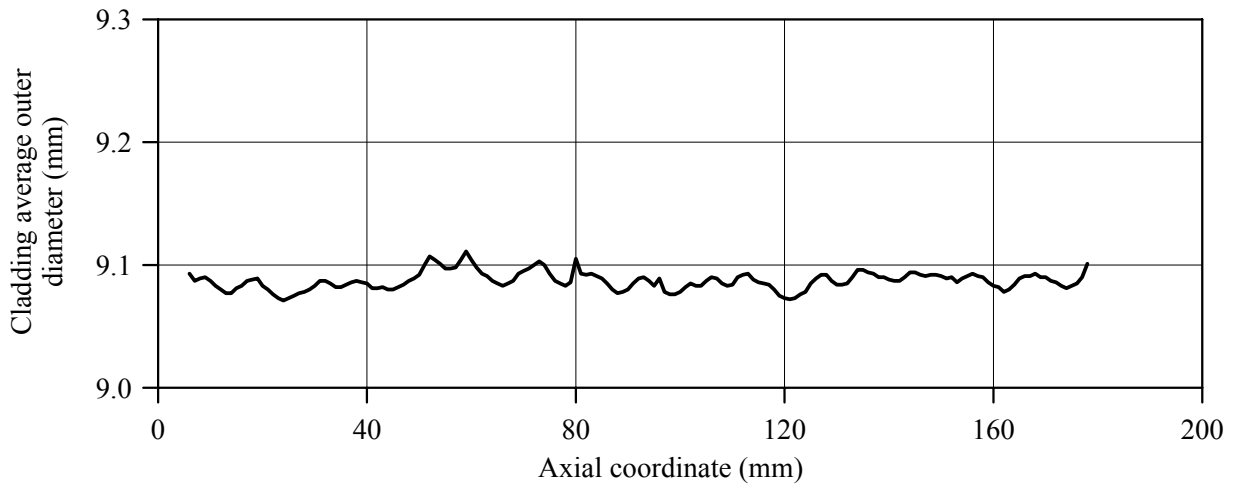


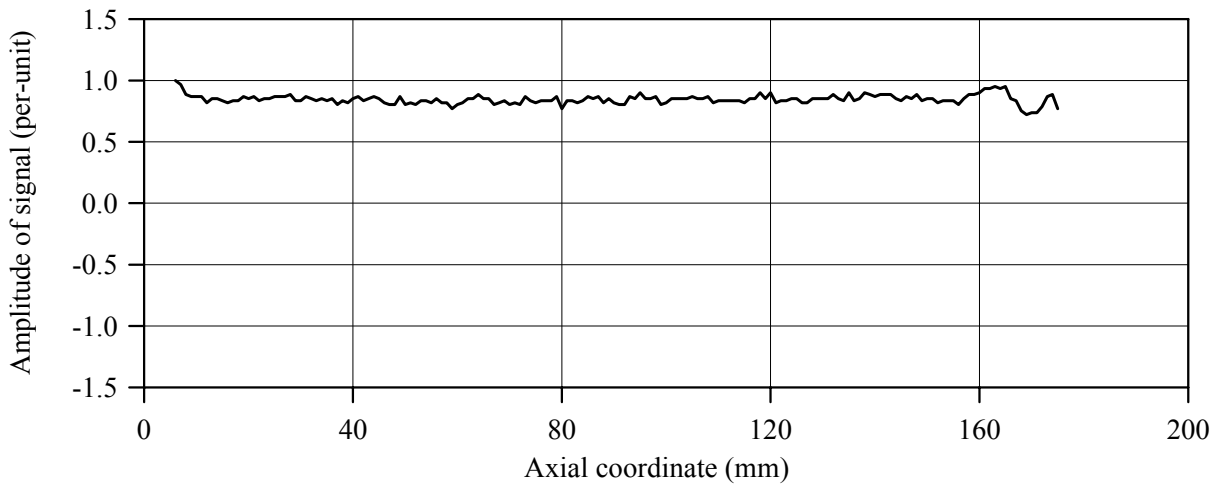
Fig.C-8.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT8



a)



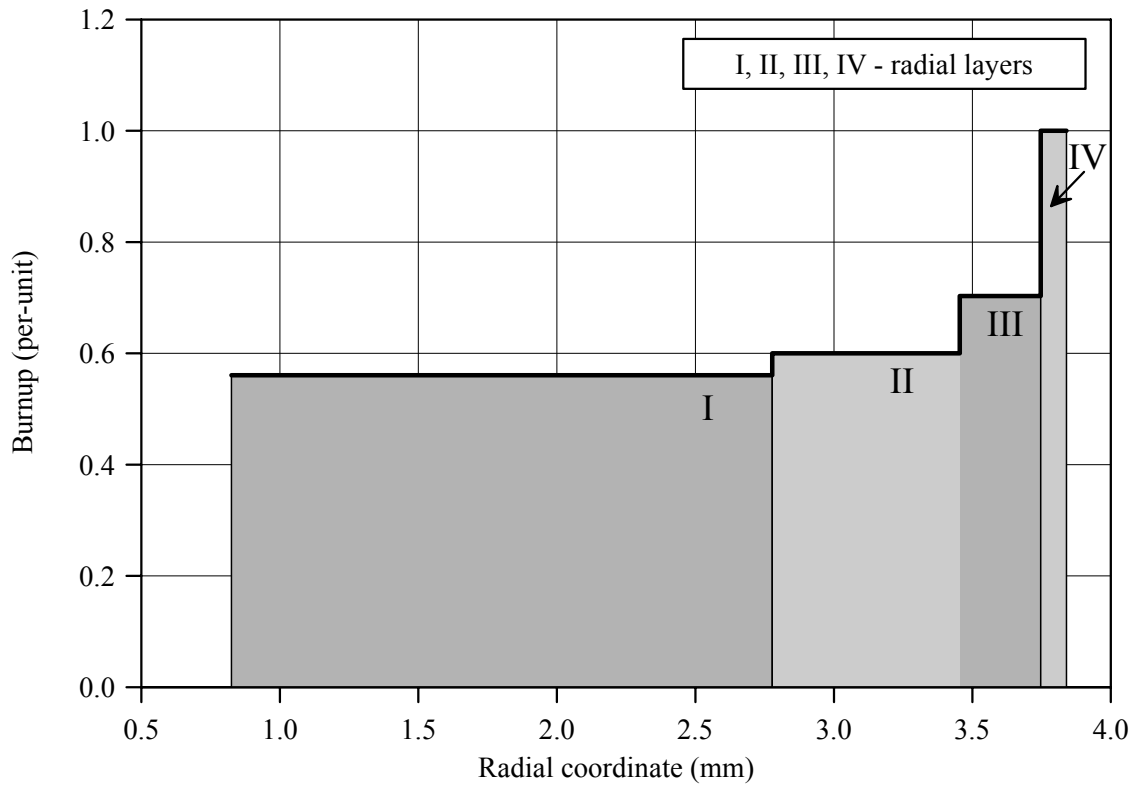
b)



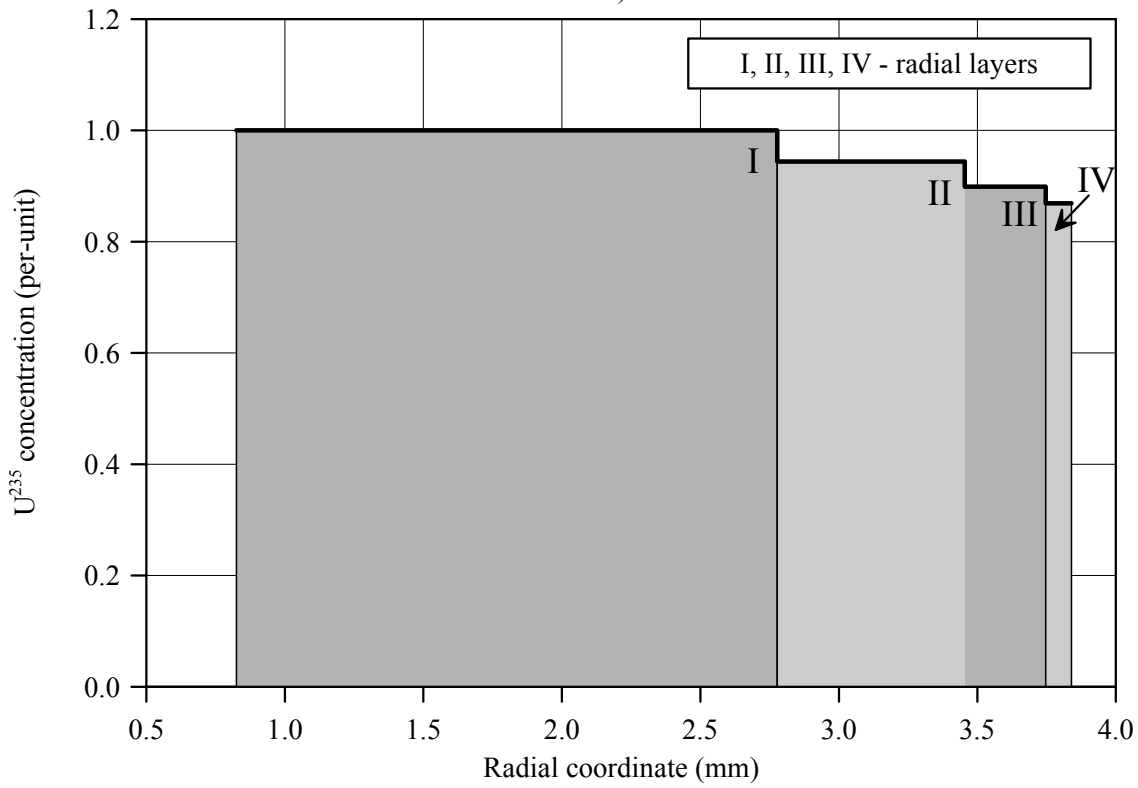
c)

Fig.C-8.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT8

RT8



a)



b)

Fig.C-8.3. (a) Burnup radial distribution and (b) U²³⁵ radial distribution for fuel rod # RT8 (calculated values)

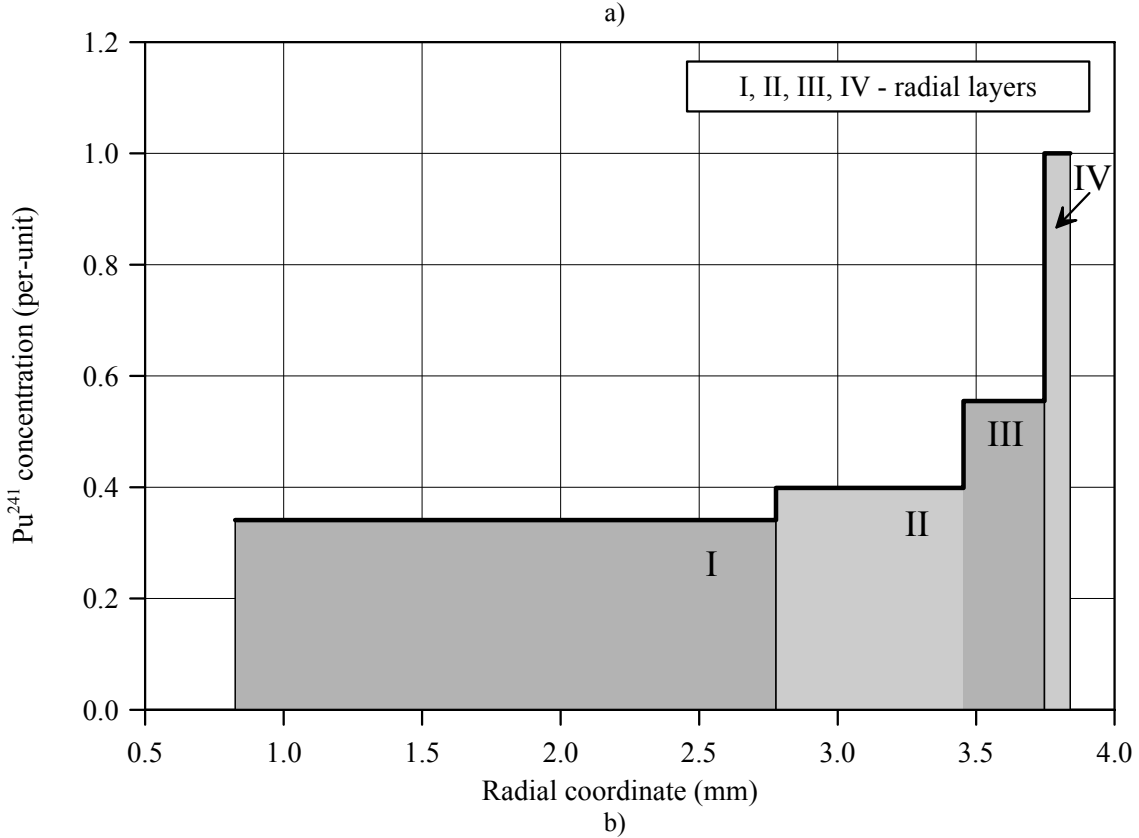
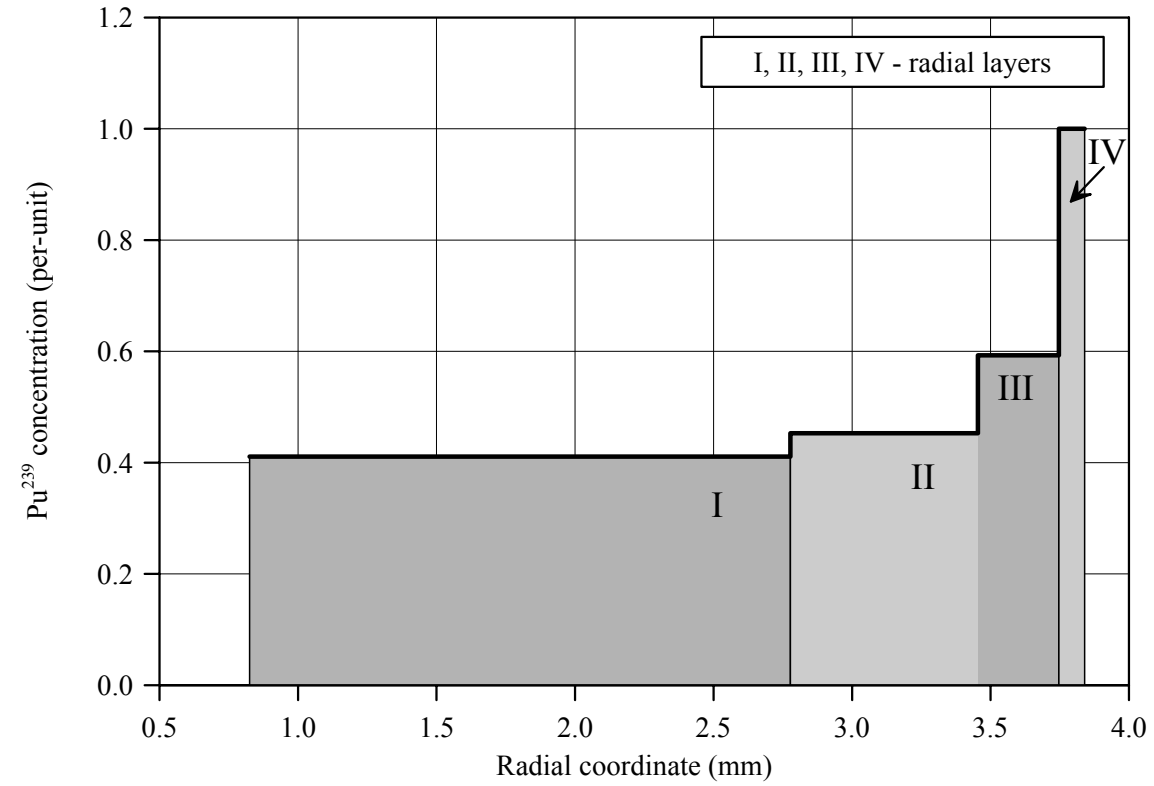


Fig.C-8.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT8 (calculated values)

Appendix C-9
Individual Characteristics
of Fuel Rod # RT9 before the BGR Test

RT9**Table C-9.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT9
(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	0.220	0.219	0.220	0.227
U ²³⁵	4.898	4.625	4.403	4.255
U ²³⁶	6.668	6.642	6.620	6.611
U ²³⁸	922.3	917.7	904.4	865.6
Pu ²³⁸	0.523	0.565	0.638	0.810
Pu ²³⁹	4.920	5.419	7.104	11.97
Pu ²⁴⁰	2.755	2.838	3.487	5.565
Pu ²⁴¹	0.967	1.131	1.571	2.833
Pu ²⁴²	0.985	1.196	1.720	3.217
Np ²³⁷	1.406	1.460	1.507	1.538
Am ²⁴¹	0.052	0.060	0.084	0.151
Oxygen	134.5	134.5	134.5	134.5
Other fission products	55.63	59.53	69.78	99.19

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

Table C-9.2. Initial individual characteristics of fuel rod # RT9*

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)
10 ¹⁾	9.068	1.88	4.20	5.62	58.98
15	9.072	2.28	4.56	2.14	59.33
20	9.073	2.25	4.51	2.62	59.75
25	9.062	2.23	4.46	3.11	59.99
30	9.070	2.21	4.42	3.49	60.03
35	9.051	2.20	4.41	3.59	60.10
40	9.059	2.20	4.41	3.59	60.24
45	9.063	2.21	4.43	3.40	60.19
50	9.071	2.22	4.45	3.20	59.92
55	9.068	2.23	4.45	3.20	59.75
60	9.073	2.22	4.44	3.30	59.79
65	9.073	2.22	4.44	3.30	59.93
70	9.075	2.21	4.42	3.49	60.15
75	9.076	2.20	4.39	3.78	60.57
80	9.068	2.19	4.37	3.98	61.05
85	9.076	2.19	4.38	3.88	61.06
90	9.078	2.20	4.39	3.78	60.64
95	9.073	2.20	4.41	3.59	60.52
100	9.073	2.21	4.43	3.40	60.77
105	9.072	2.22	4.45	3.20	60.59
110	9.073	2.24	4.47	3.01	59.82
115	9.080	2.25	4.50	2.72	59.27
120	9.068	2.25	4.50	2.72	59.22
125	9.069	2.24	4.48	2.91	59.14
130	9.066	2.24	4.48	2.91	58.87
135	9.067	2.25	4.50	2.72	58.73
140	9.066	2.26	4.52	2.52	58.87
145	9.069	2.27	4.54	2.33	59.15
150	9.068	2.27	4.54	2.33	59.47
155	9.063	1.90	4.27	4.95	59.78
160 ²⁾	9.072	1.94	4.29	4.75	60.05

* 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 10.5 mm;

²⁾ Top end coordinate of fuel stack is 159.5 mm

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

Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56

Top: 159.5-159.4mm–25.34; 159.4-178.5mm–46.35; 178.5-204.5mm–28.26; 204.5-281mm–47.27; 281-290mm–28.26; 290-299mm–0

RT9

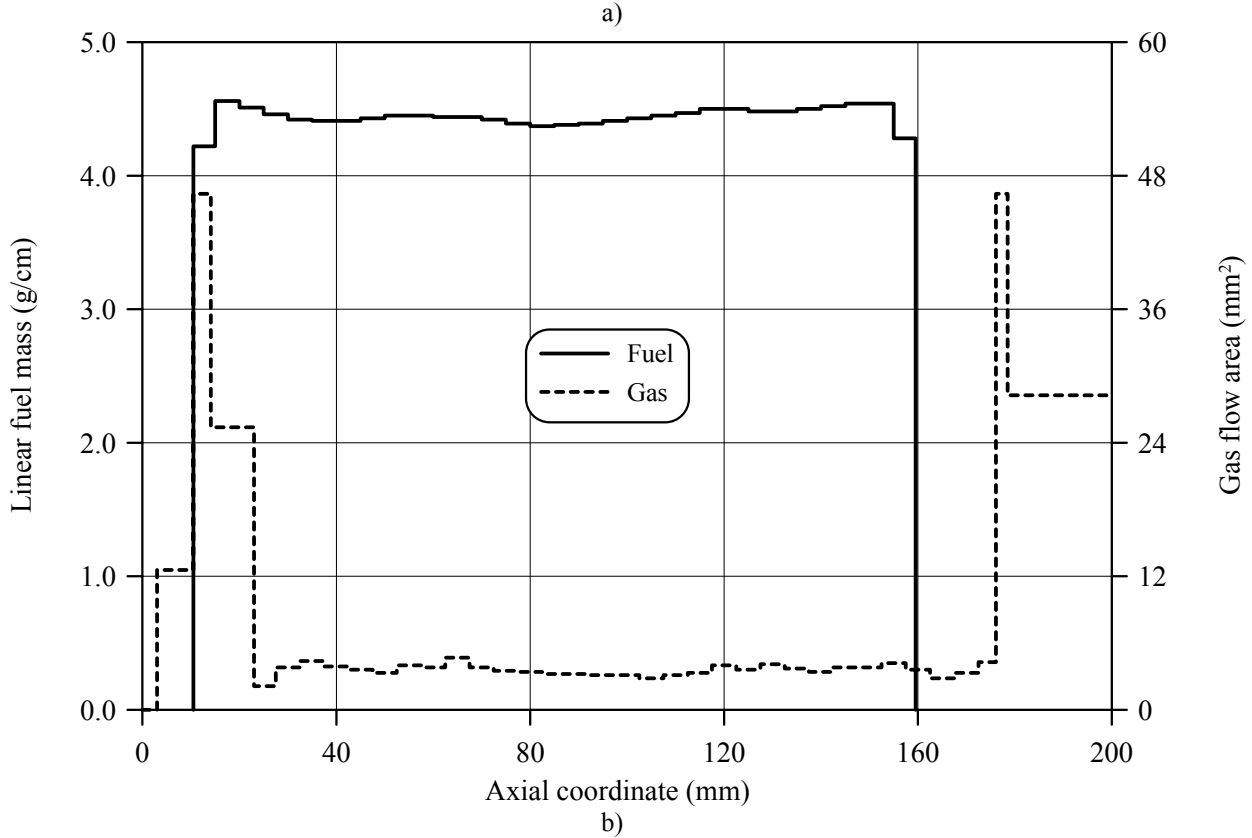
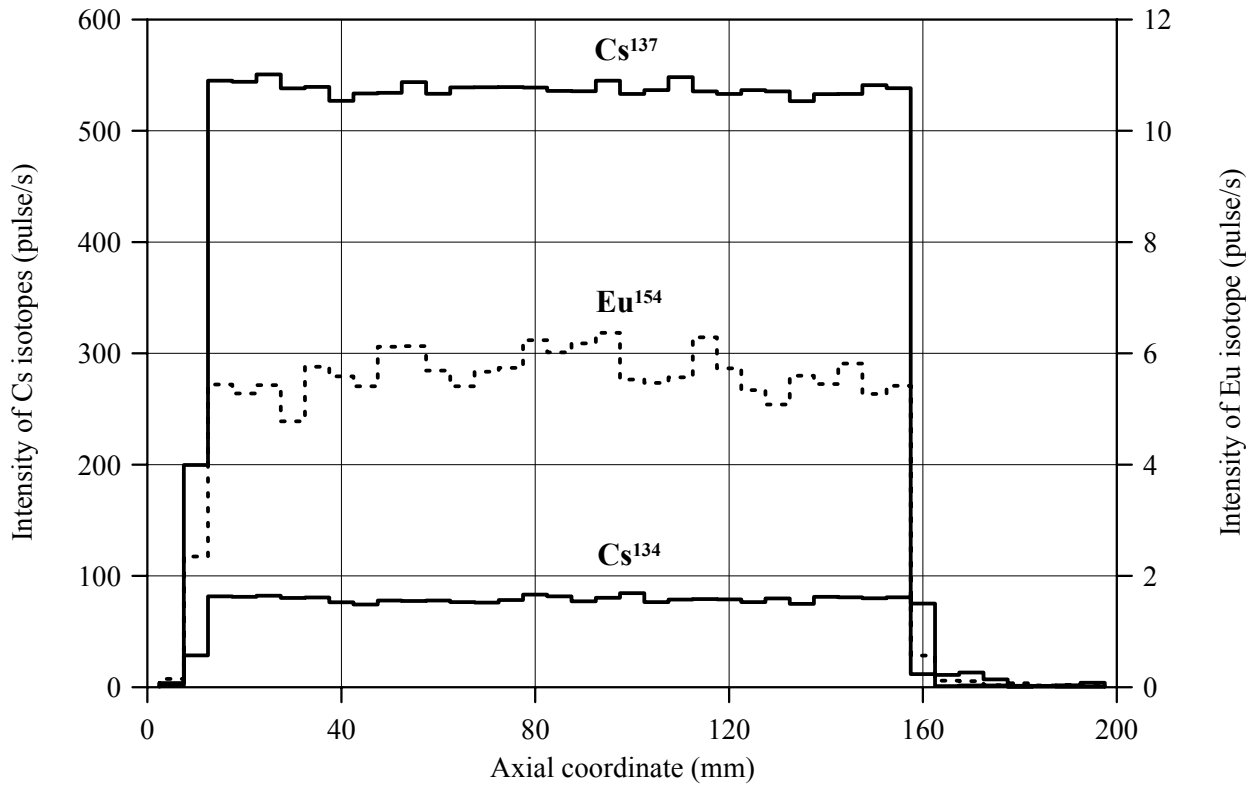
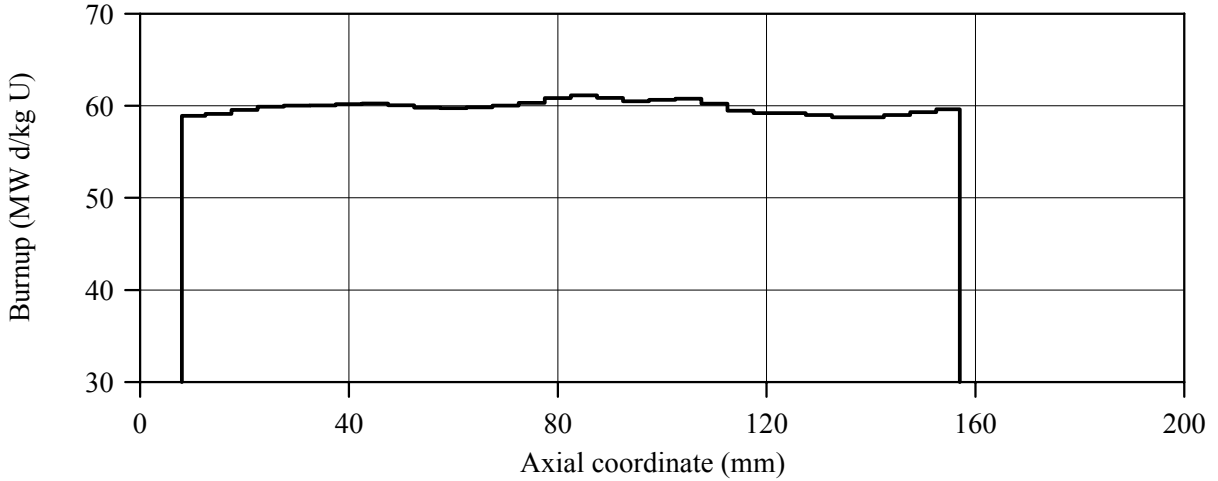
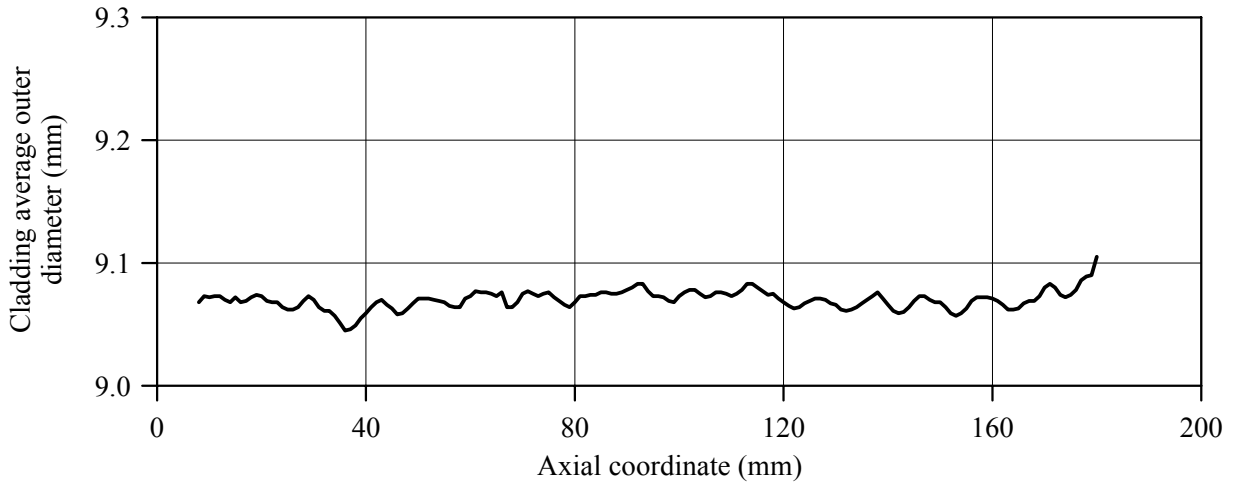


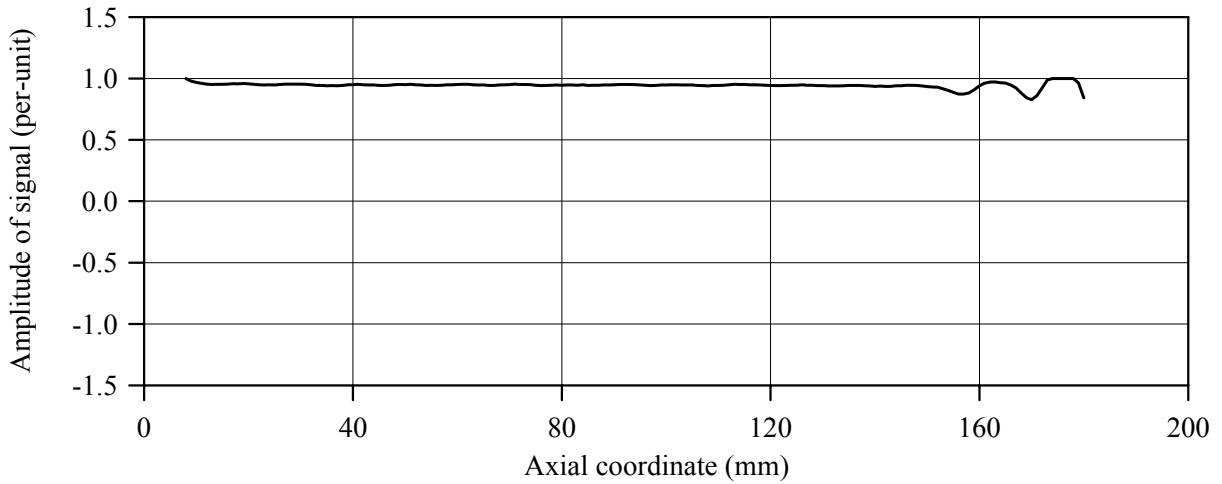
Fig.C-9.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT9



a)



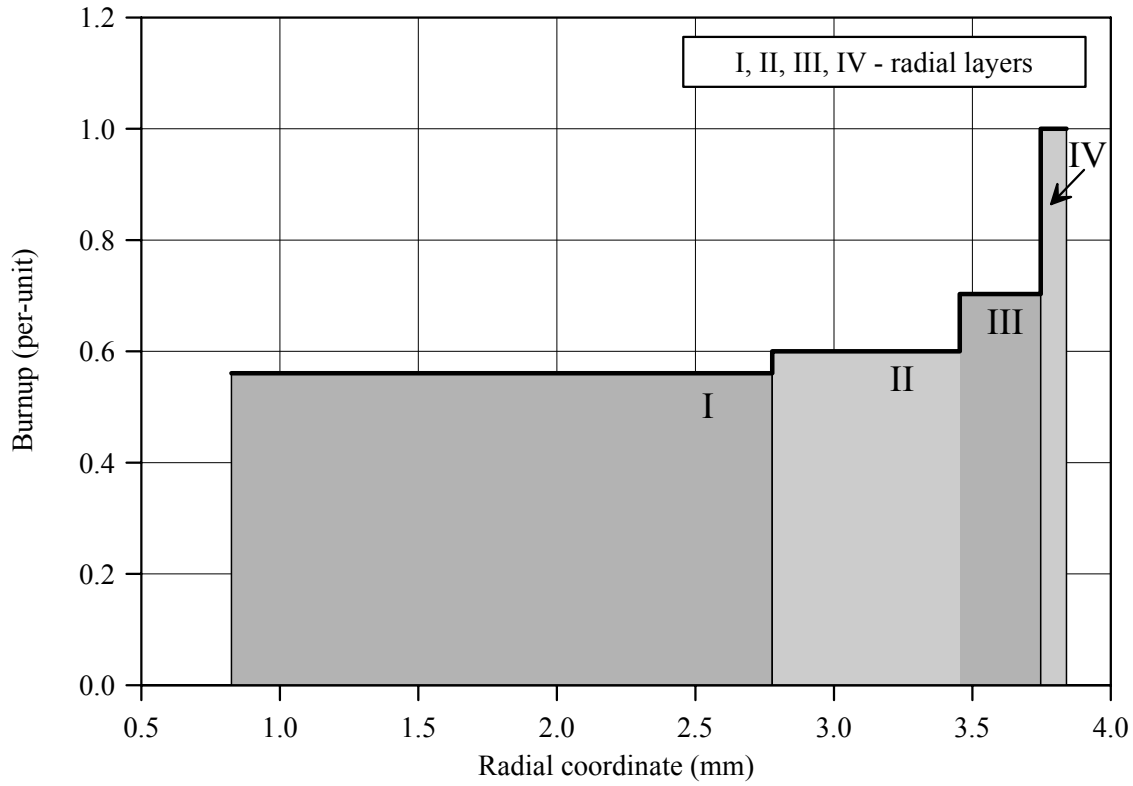
b)



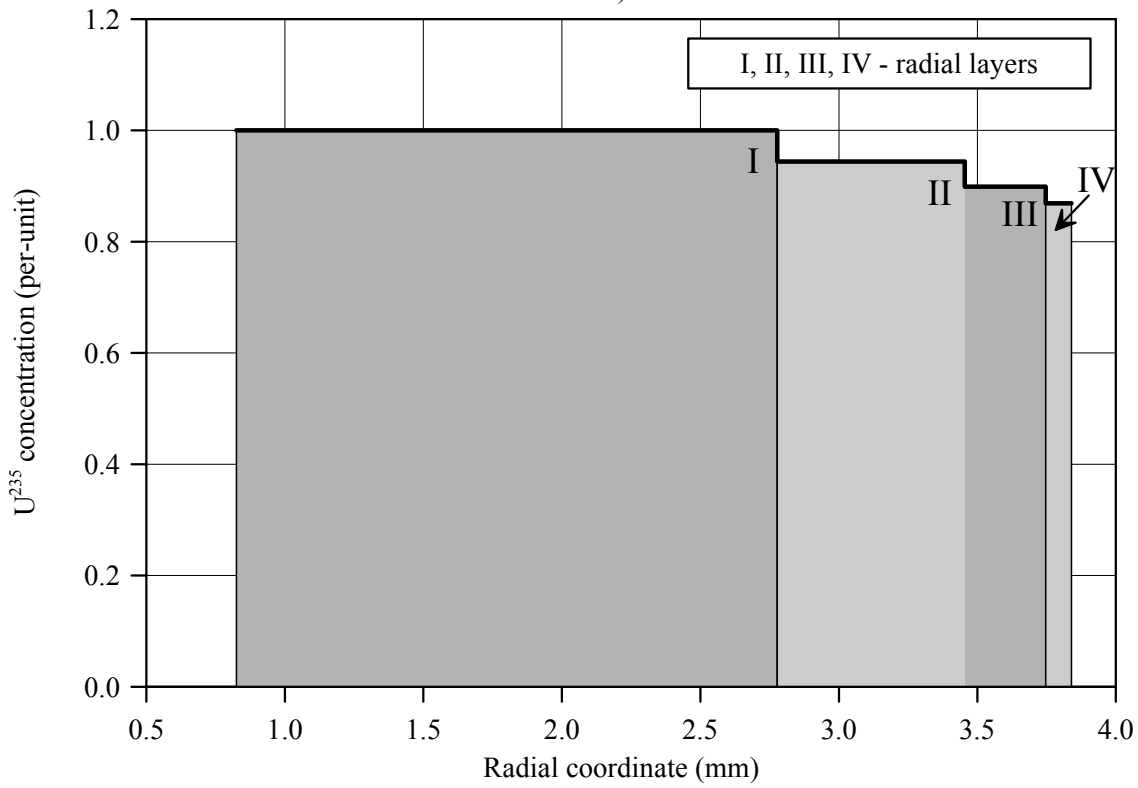
c)

Fig.C-9.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT9

RT9



a)



b)

Fig.C-9.3. (a) Burnup radial distribution and (b) U²³⁵ radial distribution for fuel rod # RT9 (calculated values)

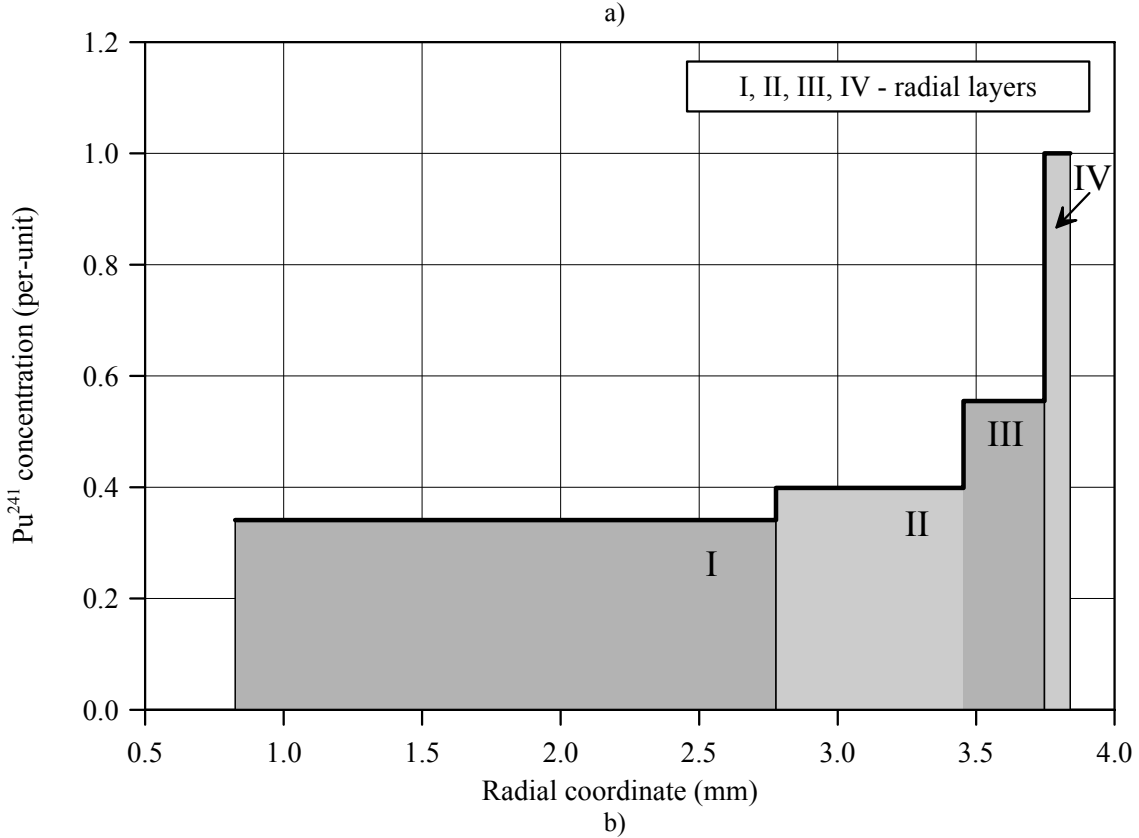
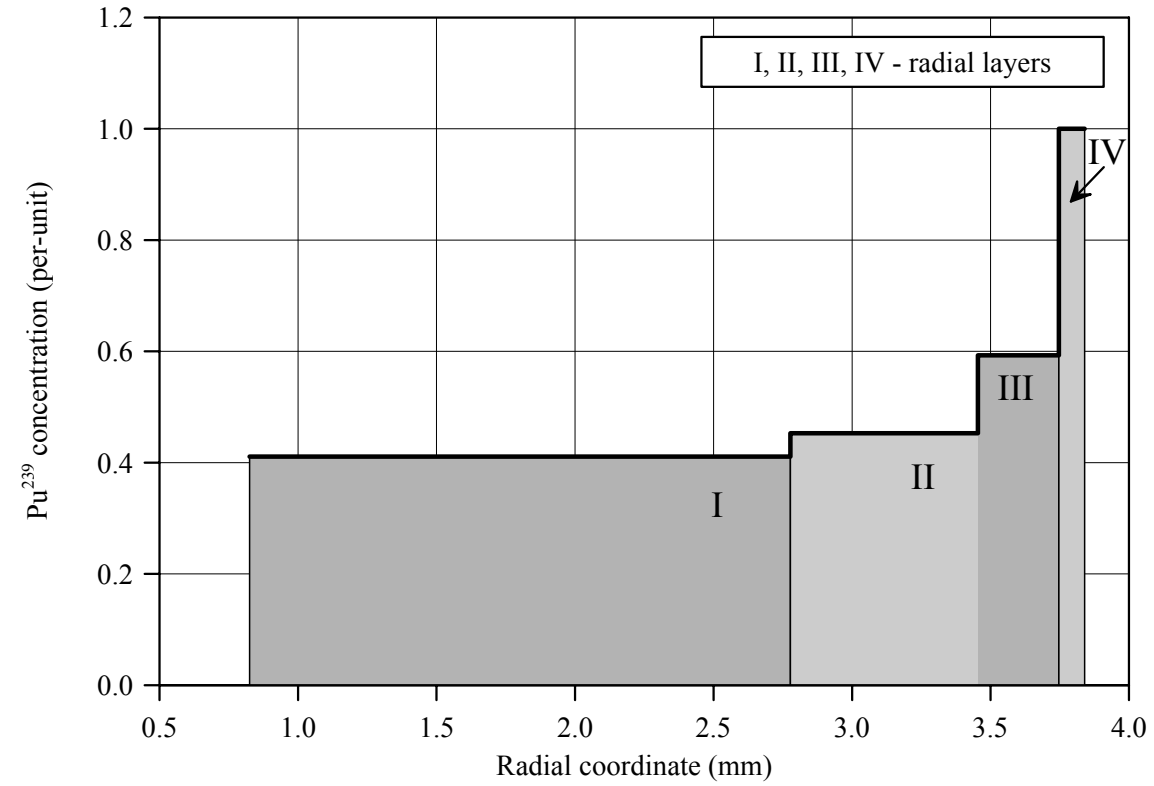


Fig.C-9.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT9 (calculated values)

Appendix C-10
Individual Characteristics
of Fuel Rod # RT10 before the BGR Test

RT10**Table C-10.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT10
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.250-2.834 mm	2.834-3.452 mm	3.452-3.722 mm	3.722-3.808 mm
U ²³⁴	0.212	0.209	0.206	0.203
U ²³⁵	8.058	7.767	7.500	7.316
U ²³⁶	6.746	6.765	6.783	6.802
U ²³⁸	928.2	924.7	913.3	882.7
Pu ²³⁸	0.266	0.281	0.303	0.343
Pu ²³⁹	4.835	5.389	7.299	12.42
Pu ²⁴⁰	2.546	2.711	3.509	5.742
Pu ²⁴¹	0.867	1.020	1.459	2.635
Pu ²⁴²	0.719	0.868	1.277	2.375
Np ²³⁷	1.290	1.331	1.371	1.399
Am ²⁴¹	0.990	1.149	1.625	2.932
Oxygen	134.5	134.5	134.5	134.5
Other fission products	46.19	48.79	56.35	76.27

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

Table C-10.2. Initial individual characteristics of fuel rod # RT10*

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)
20 ¹⁾	9.076	0.45	4.11	5.68	46.87
25	9.075	2.07	4.13	5.49	46.93
30	9.073	2.09	4.18	5.00	46.60
35	9.073	2.10	4.19	4.91	46.31
40	9.074	2.09	4.18	5.00	46.65
45	9.074	2.07	4.15	5.29	47.25
50	9.075	2.06	4.12	5.58	47.36
55	9.073	2.05	4.10	5.78	47.10
60	9.073	2.06	4.11	5.68	47.02
65	9.076	2.07	4.15	5.29	47.06
70	9.075	2.07	4.15	5.29	46.85
75	9.075	2.07	4.14	5.39	46.60
80	9.073	2.07	4.13	5.49	46.77
85	9.071	2.06	4.12	5.58	47.08
90	9.080	2.08	4.15	5.29	46.91
95	9.072	2.08	4.16	5.20	46.61
100	9.072	2.07	4.13	5.49	46.97
105	9.068	2.06	4.11	5.68	47.56
110	9.066	2.04	4.08	5.97	47.44
115	9.071	2.04	4.08	5.97	46.91
120	9.071	2.05	4.10	5.78	46.84
125	9.070	2.06	4.11	5.68	47.08
130	9.069	2.06	4.13	5.49	47.02
135	9.071	2.07	4.13	5.49	46.84
140	9.069	2.06	4.11	5.68	47.13
145	9.069	2.05	4.11	5.68	47.54
150	9.069	2.05	4.10	5.78	47.36
155	9.068	2.05	4.11	5.68	46.82
160	9.071	2.03	4.06	6.17	46.65
165	9.068	1.99	3.99	6.85	46.83
170	9.070	2.01	4.02	6.55	46.91
175 ²⁾	9.069	0.37	4.11	5.68	46.89

* 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 21.4 mm;

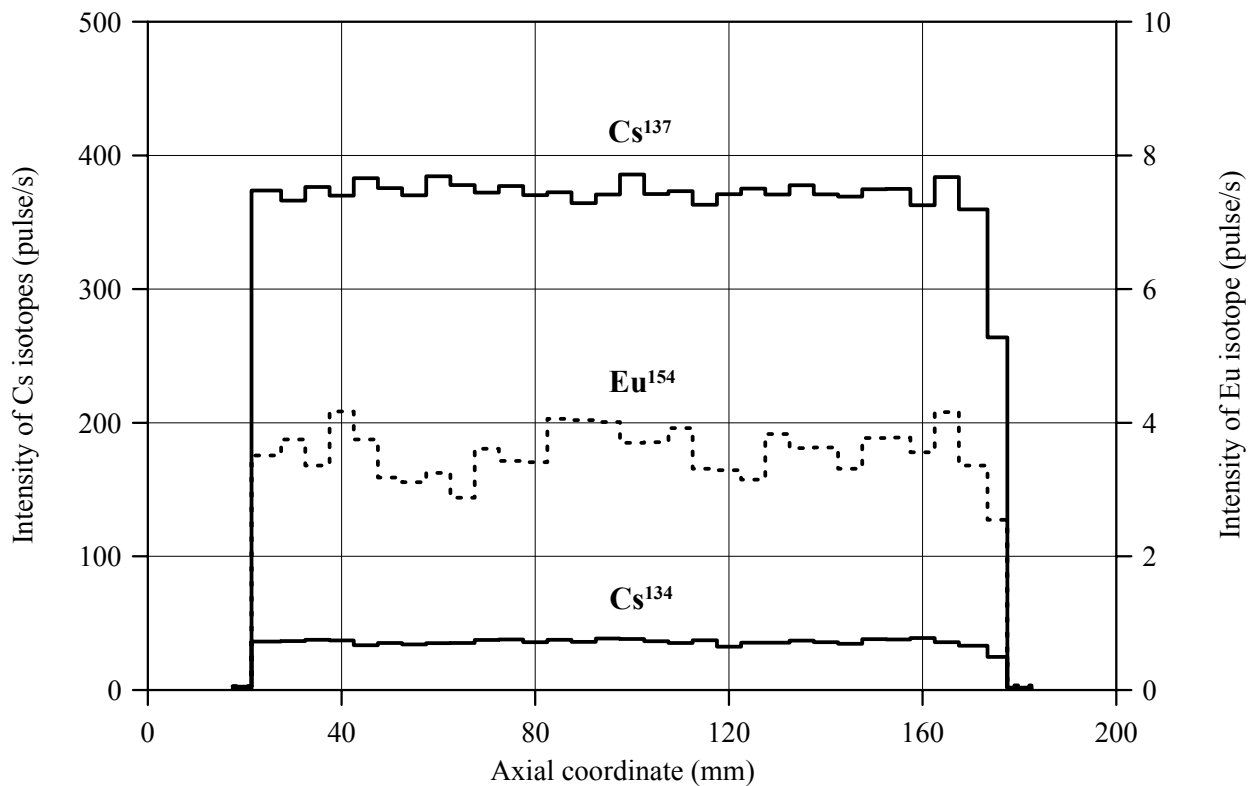
²⁾ Top end coordinate of fuel stack is 173.4 mm

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

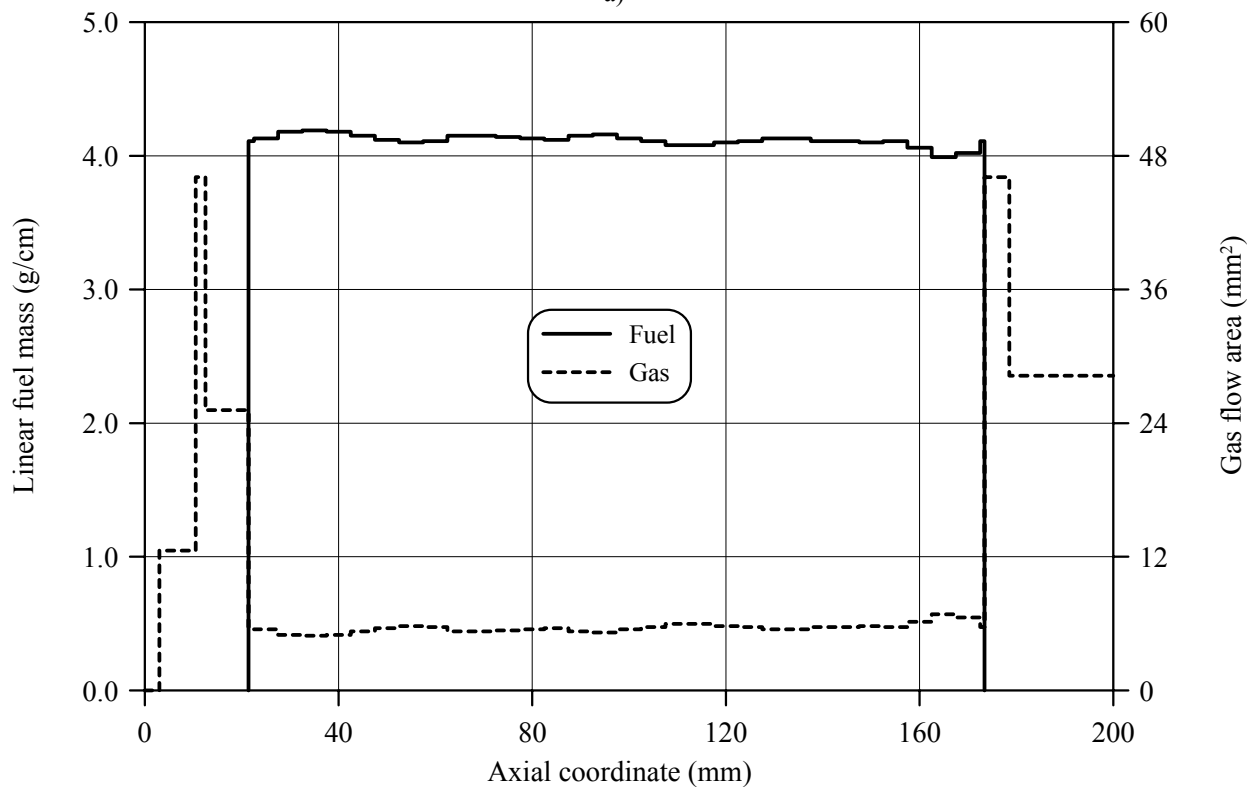
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-12.5mm – 46.08; 12.5-23.0mm – 25.17

Top: 173.4-178.5mm – 46.08; 178.5-204.5mm – 28.26; 204.5-281mm – 47.27; 281-290mm – 28.26; 290-299mm – 0.00

RT10

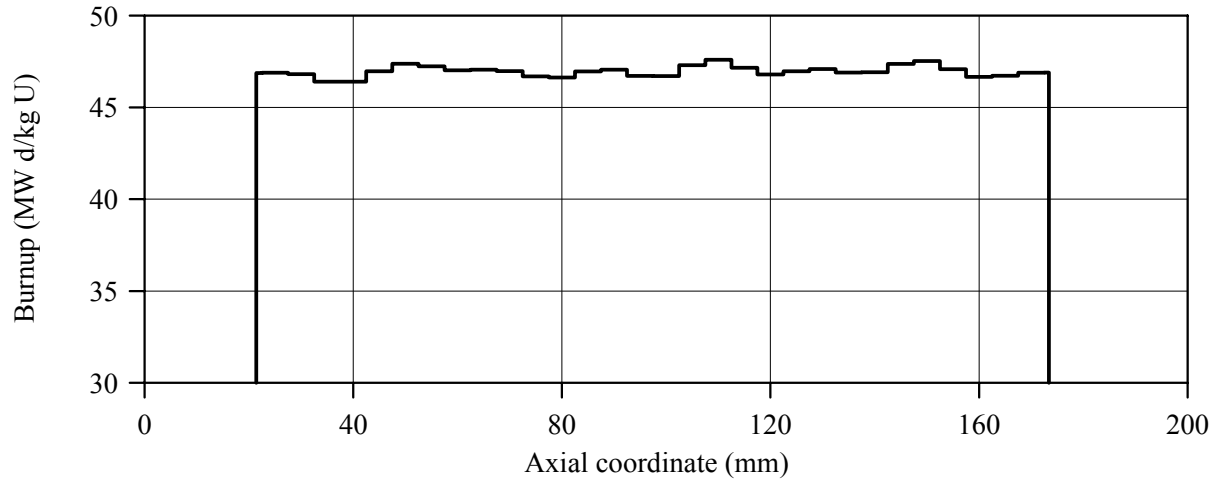


a)

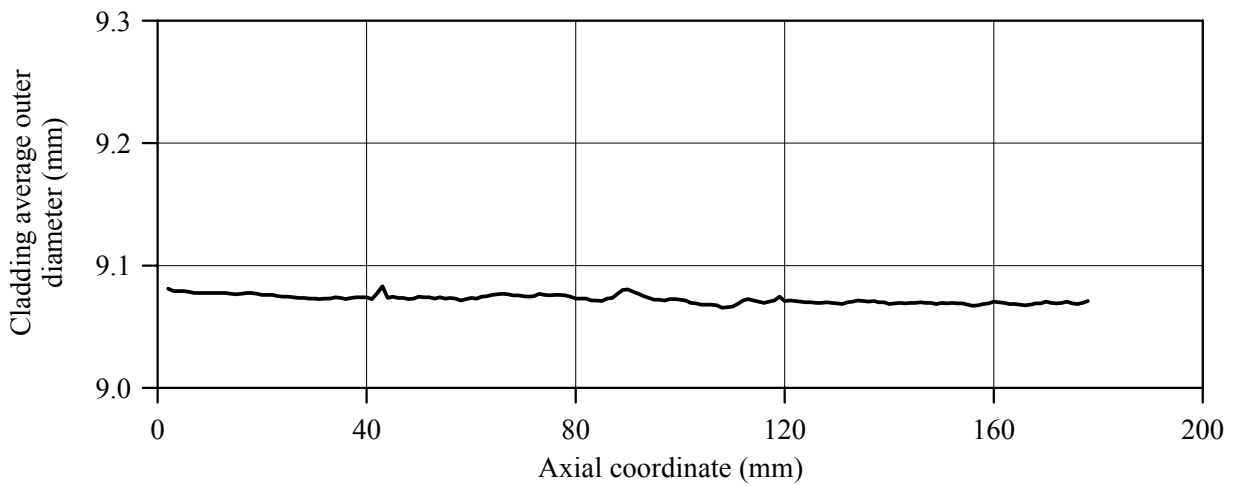


b)

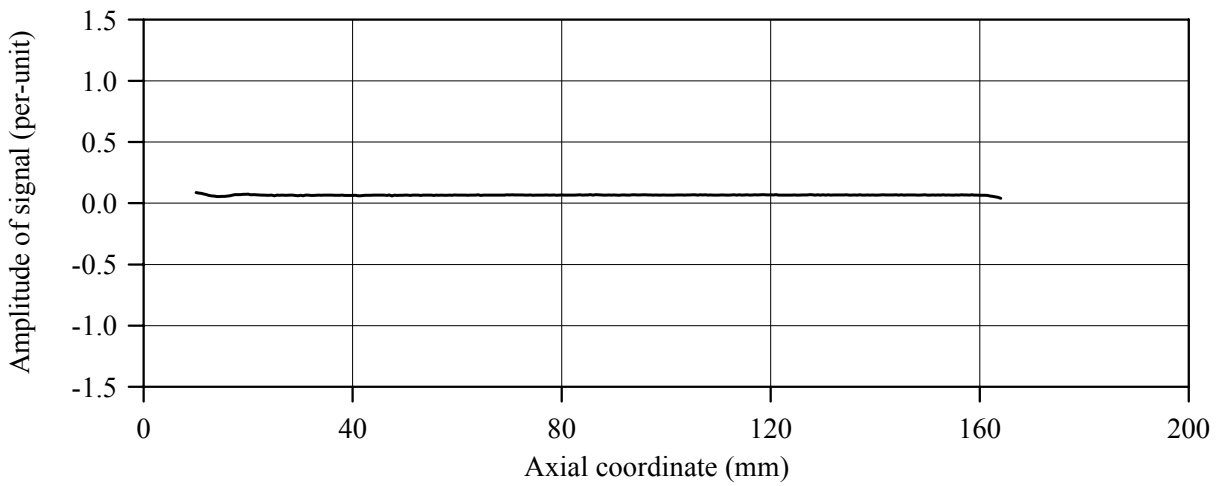
Fig.C-10.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT10



a)



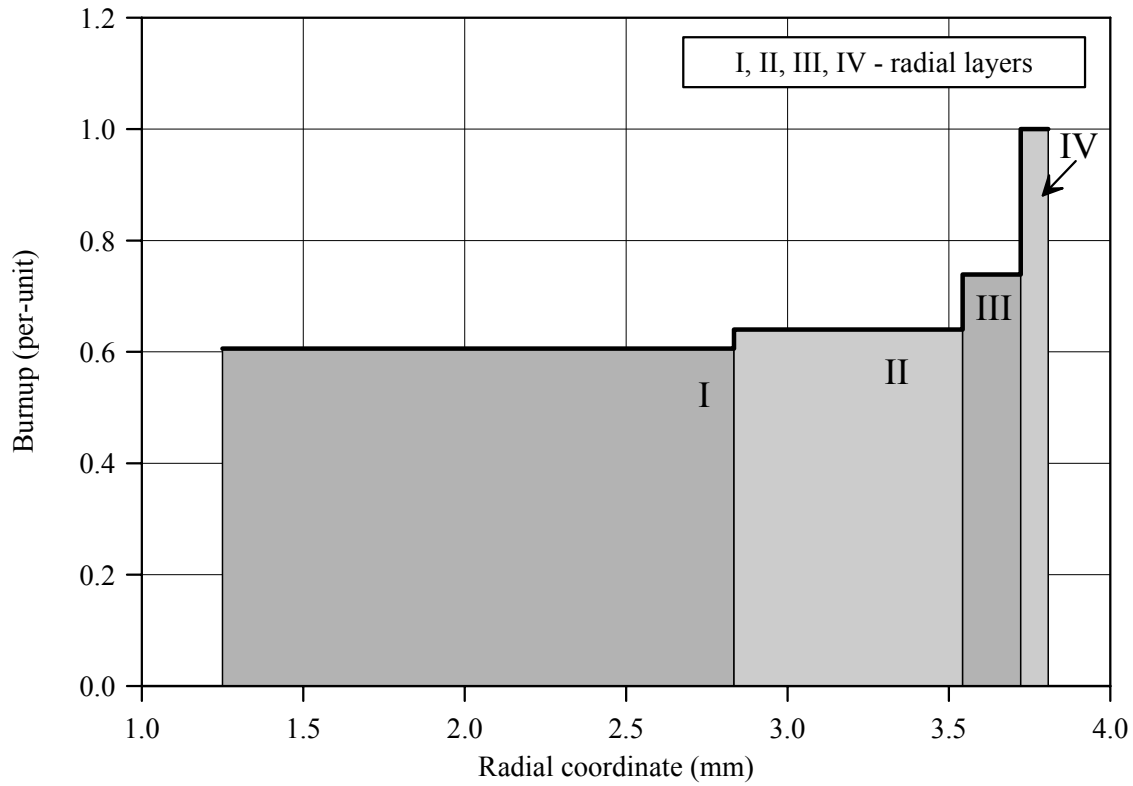
b)



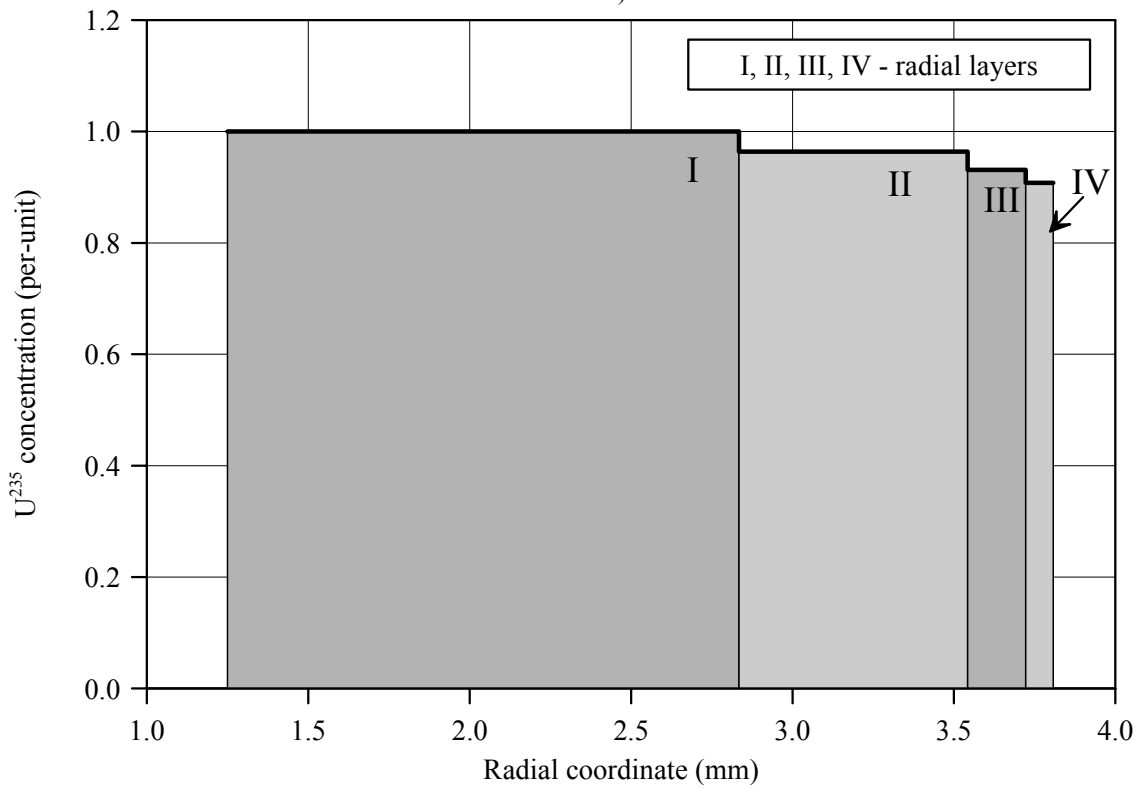
c)

Fig.C-10.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT10

RT10

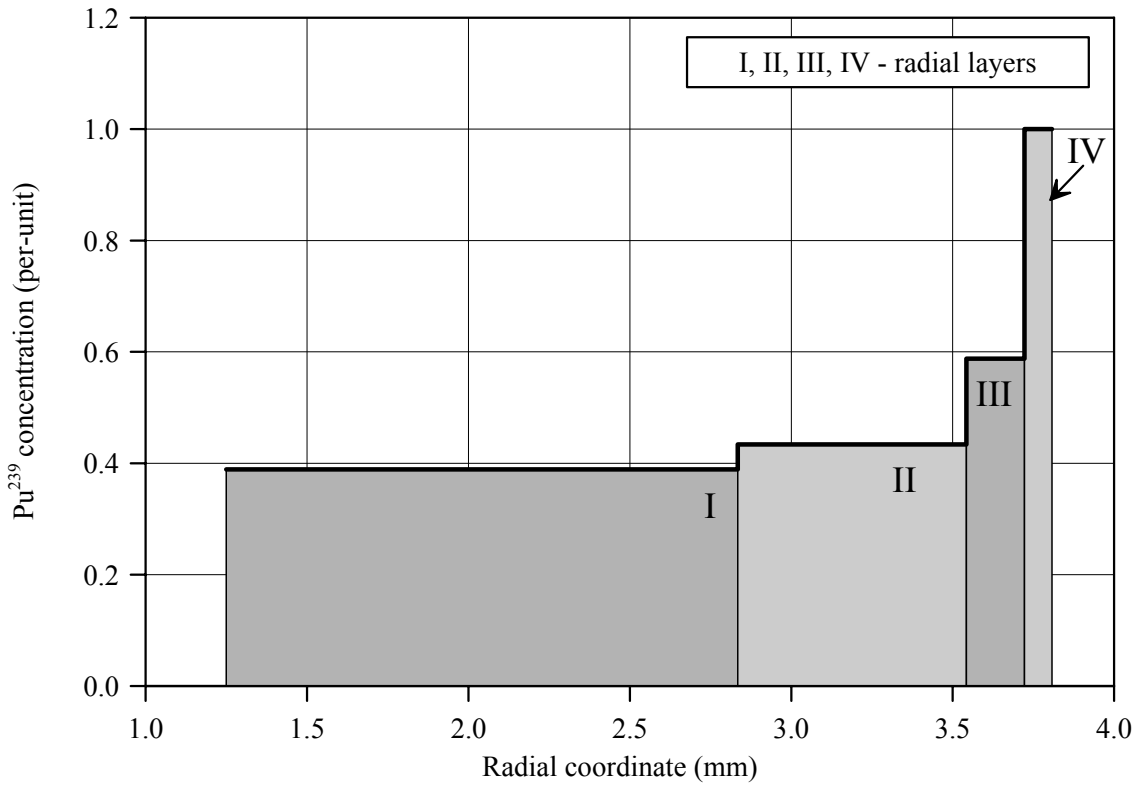


a)

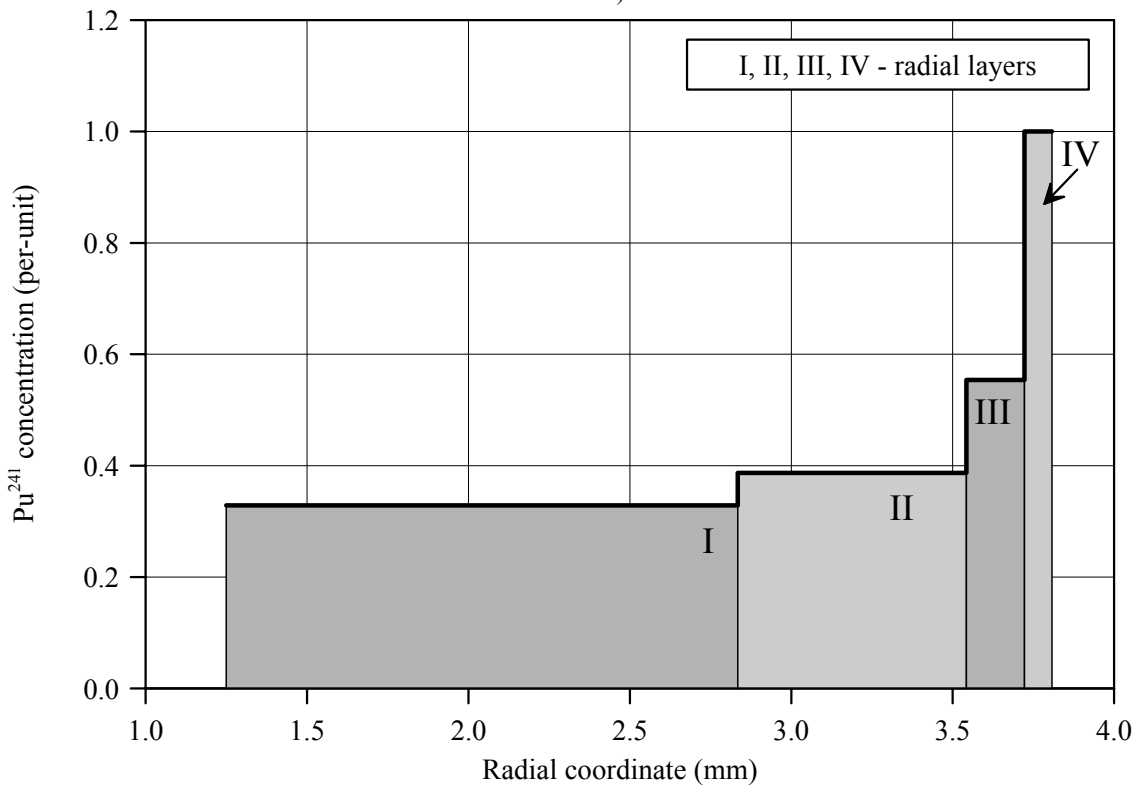


b)

Fig.C-10.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT10 (calculated values)



a)



b)

Fig.C-10.4. Radial distribution of (a) Pu²³⁹ and (b) Pu²⁴¹ for fuel rod # RT10 (calculated values)

Appendix C-11
Individual Characteristics
of Fuel Rod # RT11 before the BGR Test

RT11**Table C-11.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT11
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.250-2.834 mm	2.834-3.452 mm	3.452-3.722 mm	3.722-3.808 mm
U ²³⁴	0.212	0.209	0.206	0.203
U ²³⁵	8.058	7.767	7.500	7.316
U ²³⁶	6.746	6.765	6.783	6.802
U ²³⁸	928.2	924.7	913.3	882.7
Pu ²³⁸	0.266	0.281	0.303	0.343
Pu ²³⁹	4.835	5.389	7.299	12.42
Pu ²⁴⁰	2.546	2.711	3.509	5.742
Pu ²⁴¹	0.851	1.001	1.432	2.587
Pu ²⁴²	0.719	0.868	1.277	2.375
Np ²³⁷	1.290	1.331	1.371	1.399
Am ²⁴¹	0.990	1.149	1.625	2.932
Oxygen	134.5	134.5	134.5	134.5
Other fission products	46.11	48.69	56.22	76.05

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

Table C-11.2. Initial individual characteristics of fuel rod # RT11*

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⁾	9.095	1.76	3.91	8.59	46.49
30	9.088	2.02	4.03	7.46	46.30
35	9.087	2.10	4.19	5.95	46.26
40	9.089	2.15	4.30	4.91	46.41
45	9.087	2.15	4.30	4.91	46.39
50	9.089	2.15	4.29	5.00	46.22
55	9.088	2.14	4.27	5.19	46.44
60	9.083	2.13	4.26	5.28	47.02
65	9.083	2.13	4.26	5.28	47.16
70	9.083	2.11	4.22	5.66	46.77
75	9.082	2.11	4.21	5.76	46.81
80	9.081	2.11	4.21	5.76	47.48
85	9.083	2.09	4.18	6.04	47.93
90	9.083	2.08	4.16	6.23	47.81
95	9.082	2.07	4.15	6.32	47.56
100	9.085	2.08	4.15	6.32	47.40
105	9.082	2.09	4.18	6.04	47.28
110	9.085	2.11	4.21	5.76	47.23
115	9.082	2.10	4.20	5.85	47.42
120	9.081	2.08	4.17	6.13	47.76
125	9.085	2.06	4.13	6.51	47.76
130	9.081	2.07	4.14	6.42	47.42
135	9.085	2.07	4.13	6.51	47.32
140	9.080	2.07	4.14	6.42	47.62
145	9.082	2.07	4.14	6.42	47.81
150	9.080	2.06	4.12	6.61	47.72
155	9.080	2.07	4.13	6.51	47.68
160	9.082	2.07	4.14	6.42	47.76
165	9.080	2.10	4.21	5.76	47.64
170	9.083	1.82	3.64	11.14	47.27
175 ²⁾	9.082	0.71	2.84	18.70	46.92

* 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;

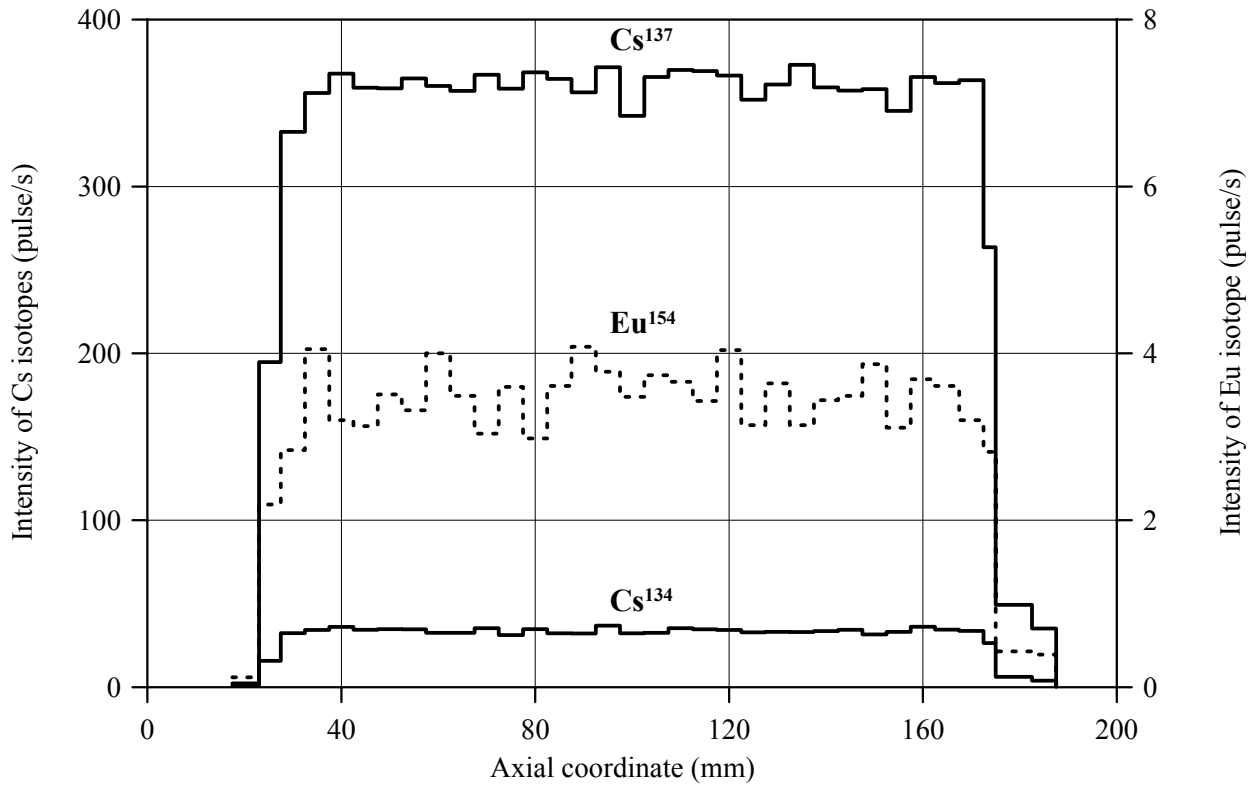
²⁾ Top end coordinate of fuel stack is 175 mm

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

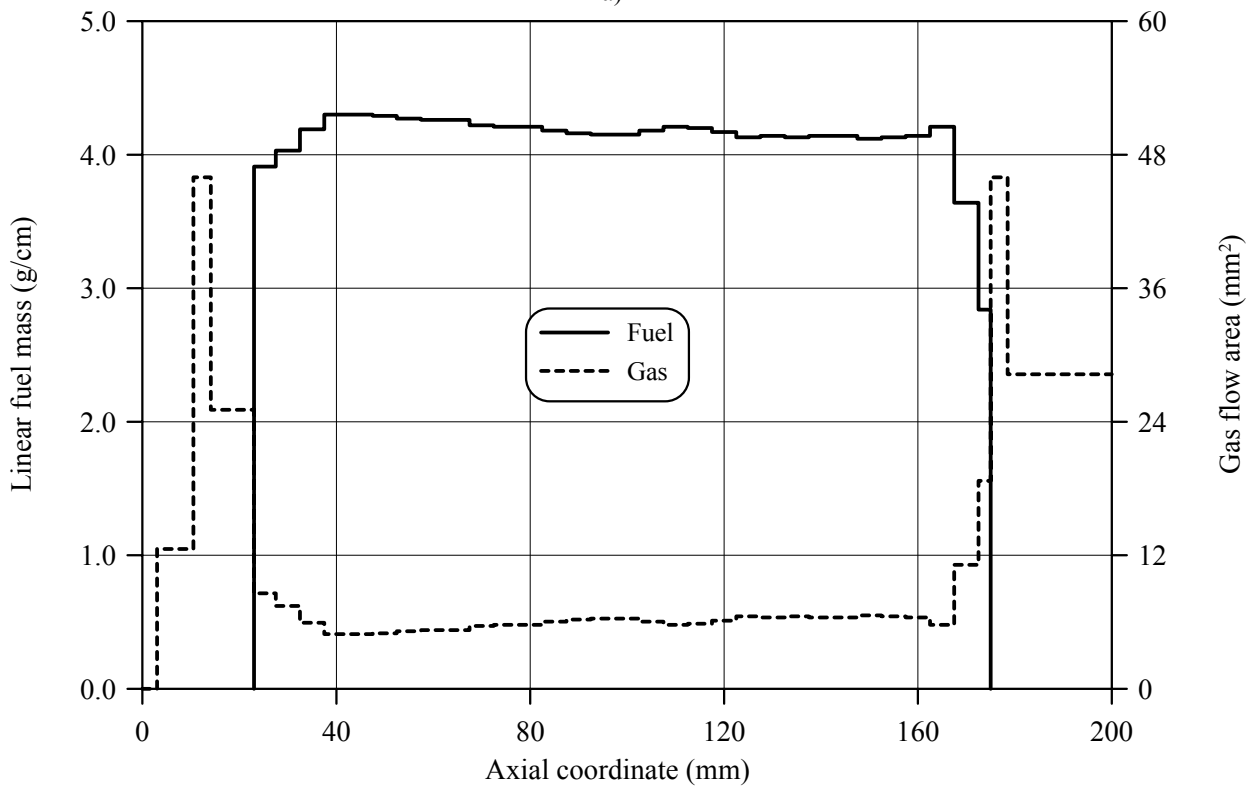
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-14.1mm – 45.96; 14.1-23.0mm – 25.08

Top: 176.1-178.5mm – 45.96; 178.5-204.5mm – 28.26; 204.5-281mm – 47.27; 281-290mm – 28.26; 290-299mm – 0.00

RT11



a)



b)

Fig.C-11.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT11

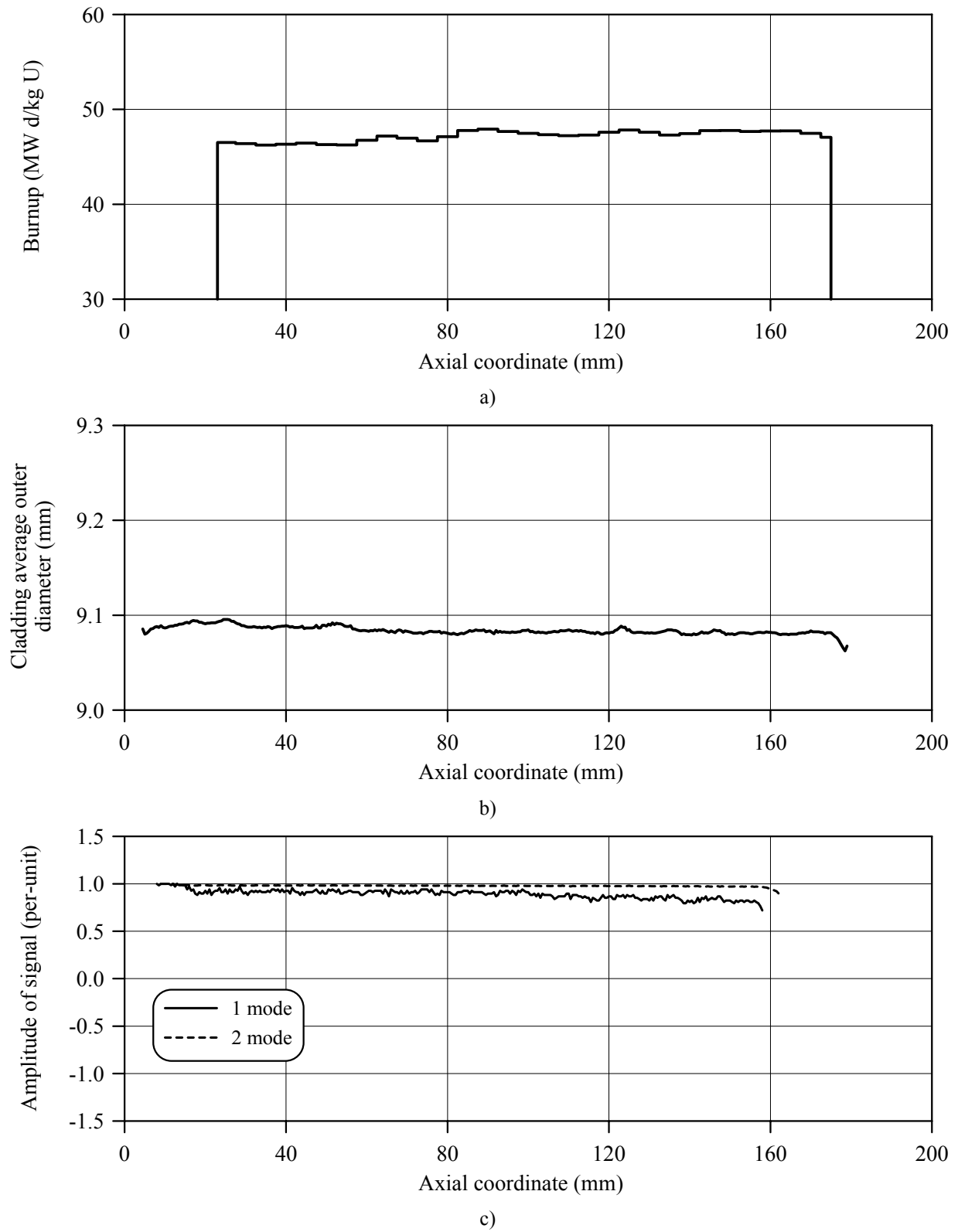
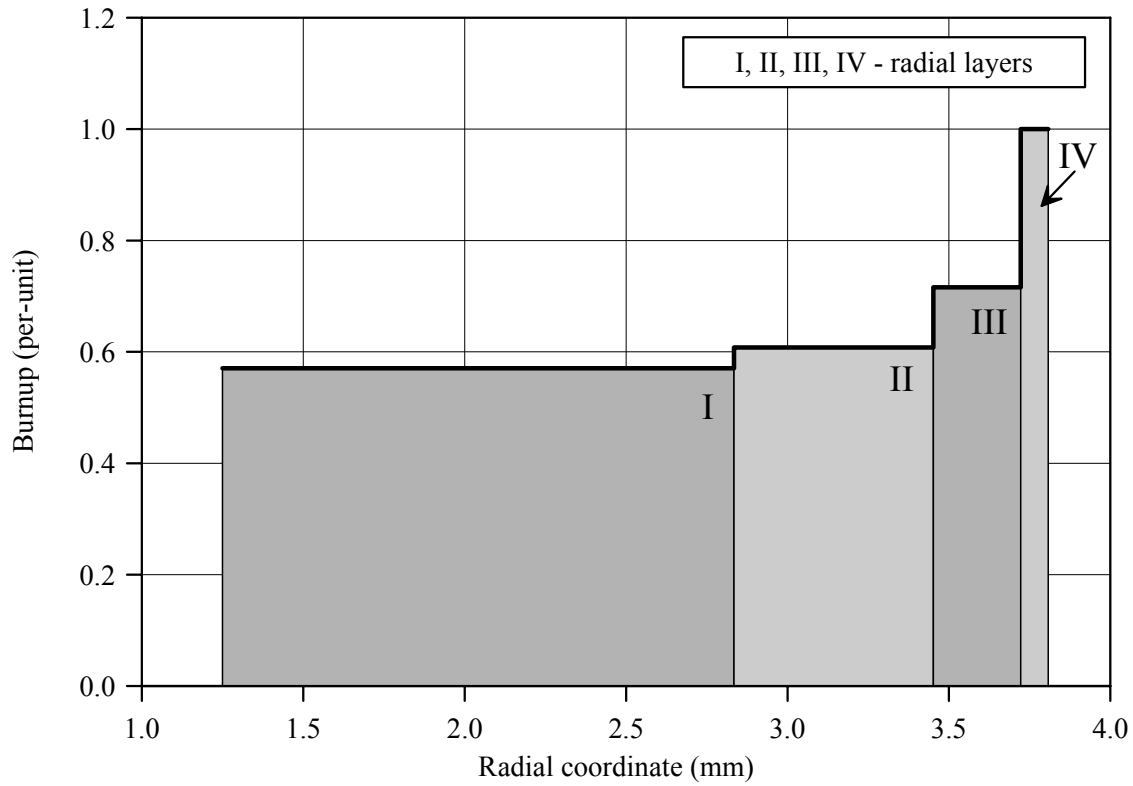
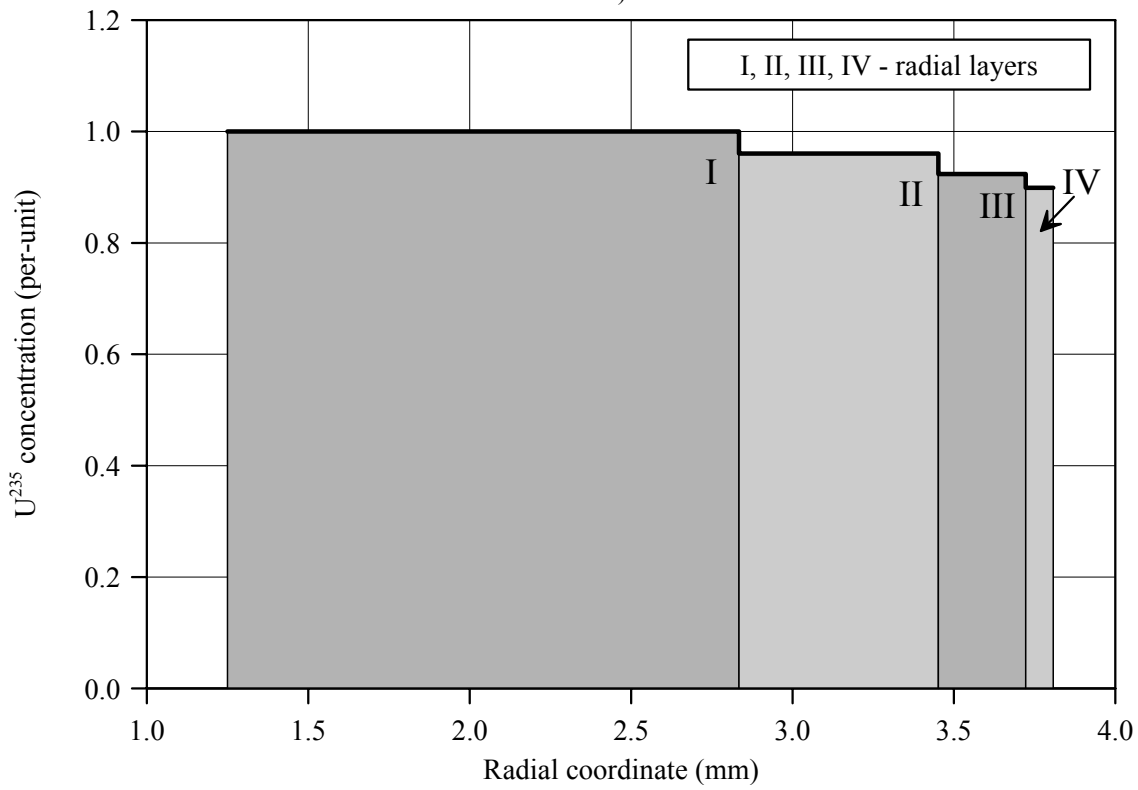


Fig.C-11.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT11

RT11



a)



b)

Fig.C-11.3. (a) Burnup radial distribution and (b) U²³⁵ radial distribution for fuel rod # RT11 (calculated values)

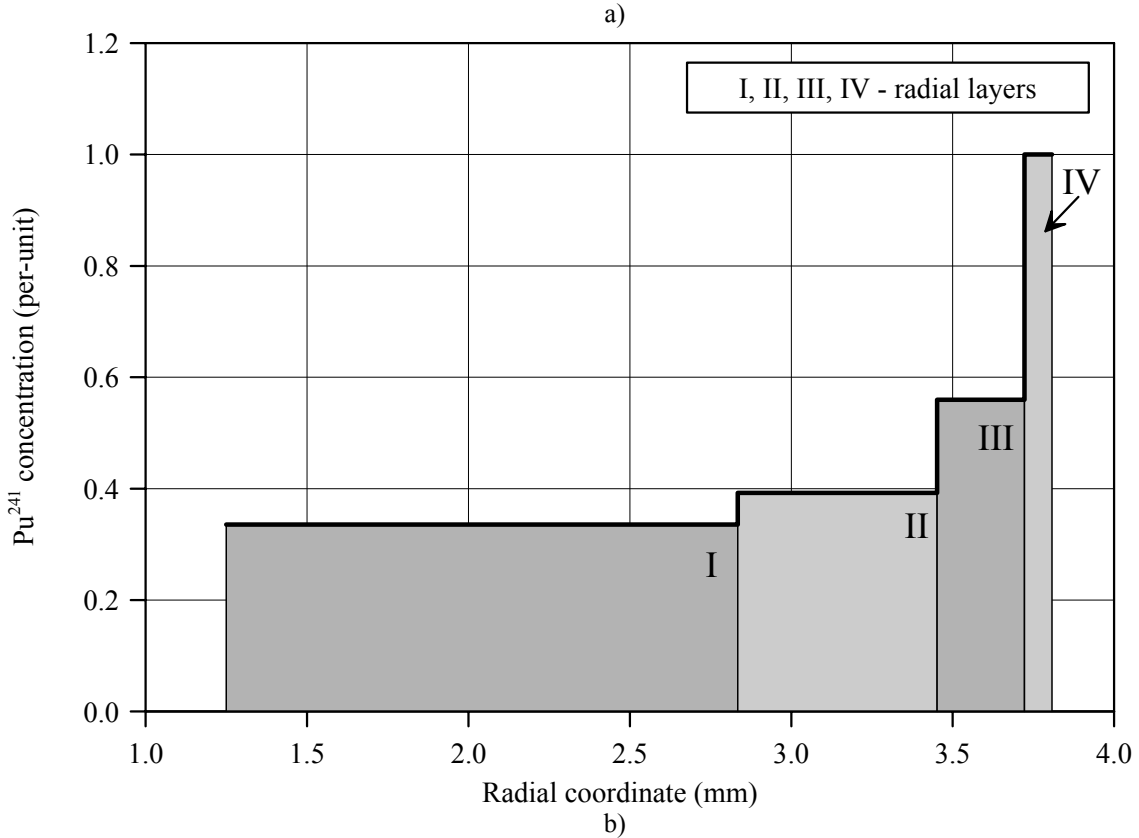
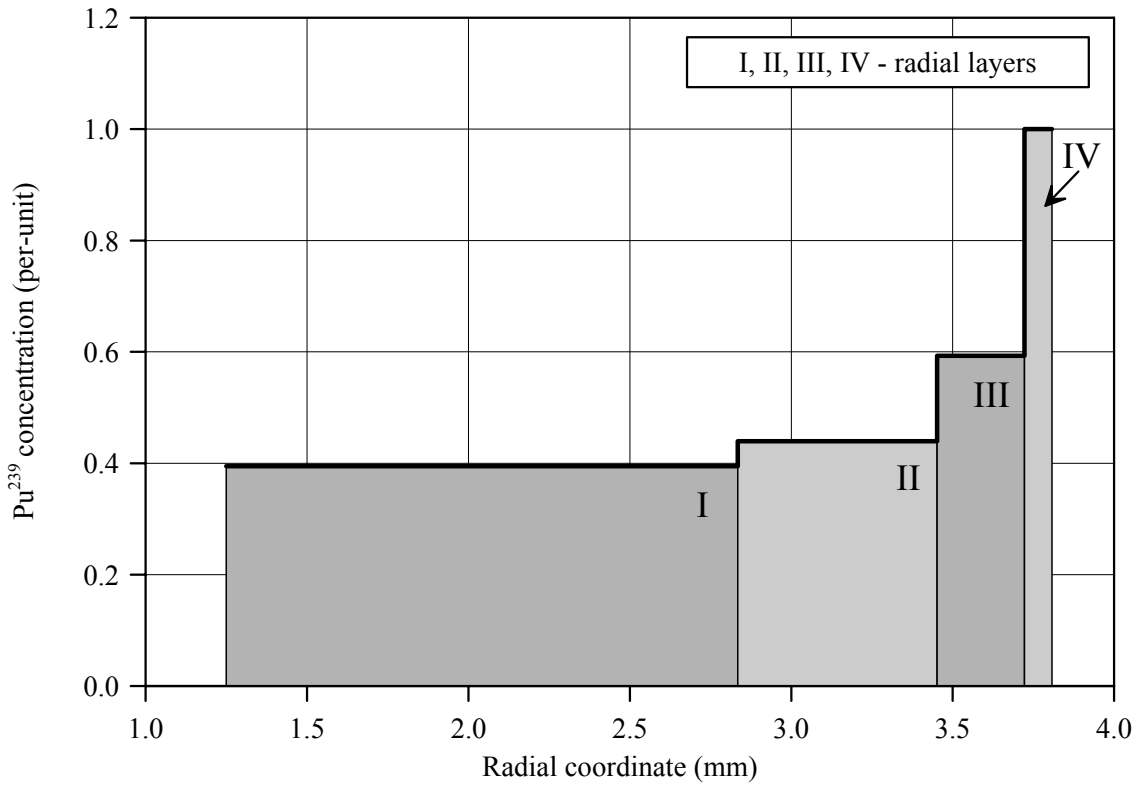


Fig.C-11.4. Radial distribution of (a) Pu^{239} and (b) Pu^{241} for fuel rod # RT11 (calculated values)

Appendix C-12
Individual Characteristics
of Fuel Rod # RT12 before the BGR Test

RT12**Table C-12.1. Radial distribution of isotope nuclear concentrations for fuel rod #RT12
(values averaged of over the fuel stack length)***

Isotope	Isotopic concentrations (kg/t U) in four fuel radial layers			
	1.250-2.834 mm	2.834-3.452 mm	3.452-3.722 mm	3.722-3.808 mm
U ²³⁴	0.212	0.209	0.206	0.203
U ²³⁵	8.058	7.767	7.500	7.316
U ²³⁶	6.746	6.765	6.783	6.802
U ²³⁸	928.2	924.7	913.3	882.7
Pu ²³⁸	0.266	0.281	0.303	0.343
Pu ²³⁹	4.835	5.389	7.299	12.42
Pu ²⁴⁰	2.546	2.711	3.509	5.742
Pu ²⁴¹	0.867	1.020	1.459	2.635
Pu ²⁴²	0.719	0.868	1.277	2.375
Np ²³⁷	1.290	1.331	1.371	1.399
Am ²⁴¹	0.990	1.149	1.625	2.932
Oxygen	134.5	134.5	134.5	134.5
Other fission products	46.19	48.79	56.35	76.27

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

Table C-12.2. Initial individual characteristics of fuel rod # RT12*

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)
20 ¹⁾	9.073	0.50	4.14	5.39	47.30
25	9.070	2.07	4.14	5.39	47.23
30	9.072	2.07	4.14	5.39	47.32
35	9.073	2.07	4.15	5.29	47.39
40	9.069	2.07	4.13	5.49	47.49
45	9.072	2.06	4.13	5.49	47.63
50	9.070	2.06	4.12	5.58	47.78
55	9.073	2.06	4.13	5.49	47.87
60	9.071	2.07	4.15	5.29	47.74
65	9.070	2.08	4.17	5.10	47.40
70	9.067	2.09	4.18	5.00	47.16
75	9.066	2.09	4.17	5.10	47.18
80	9.063	2.08	4.17	5.10	47.20
85	9.062	2.08	4.16	5.20	47.09
90	9.065	2.07	4.15	5.29	47.07
95	9.063	2.07	4.14	5.39	47.23
100	9.066	2.07	4.13	5.49	47.37
105	9.064	2.06	4.12	5.58	47.35
110	9.069	2.06	4.12	5.58	47.24
115	9.064	2.06	4.12	5.58	47.16
120	9.065	2.06	4.12	5.58	47.26
125	9.064	2.06	4.11	5.68	47.53
130	9.066	2.05	4.10	5.78	47.64
135	9.067	2.06	4.11	5.68	47.42
140	9.062	2.06	4.12	5.58	47.13
145	9.062	2.06	4.12	5.58	47.02
150	9.058	2.05	4.11	5.68	47.20
155	9.059	2.04	4.08	5.97	47.62
160	9.063	2.03	4.06	6.17	47.87
165	9.059	2.03	4.06	6.17	47.74
170	9.063	2.06	4.11	5.68	47.51
175 ²⁾	9.066	0.59	4.19	4.91	47.39

* 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 21.3 mm;

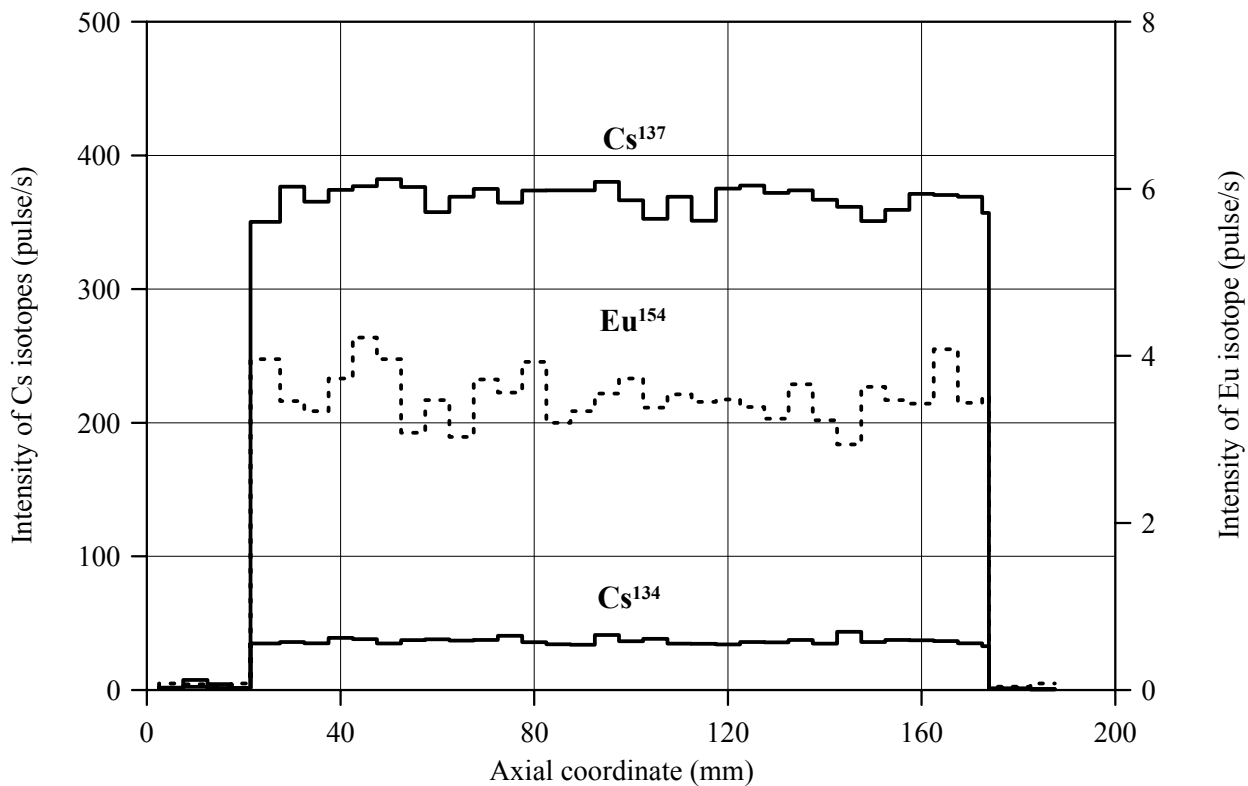
²⁾ Top end coordinate of fuel stack is 173.9 mm

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

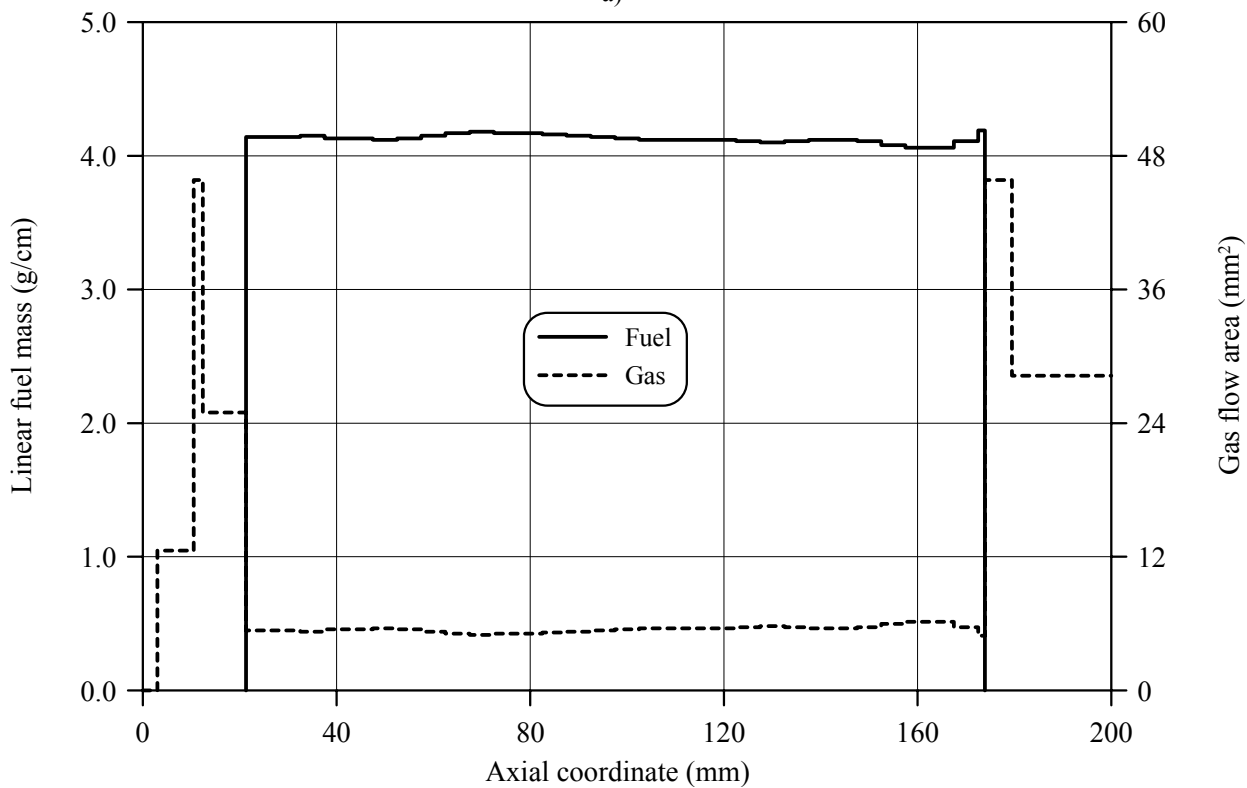
Bottom: 0.0-3.0mm – 0.00; 3.0-10.5mm – 12.56; 10.5-12.4mm – 45.82; 12.4-21.3mm – 24.97

Top: 173.9-180.0mm – 45.82; 180.0-206.0mm – 28.26; 206.0-282mm – 47.27; 282-291mm – 28.26; 291-300mm – 0.00

RT12



a)



b)

Fig.C-12.1. (a) Results of γ -scanning, (b) Axial fuel mass distribution and axial gas flow area distribution for fuel rod # RT12

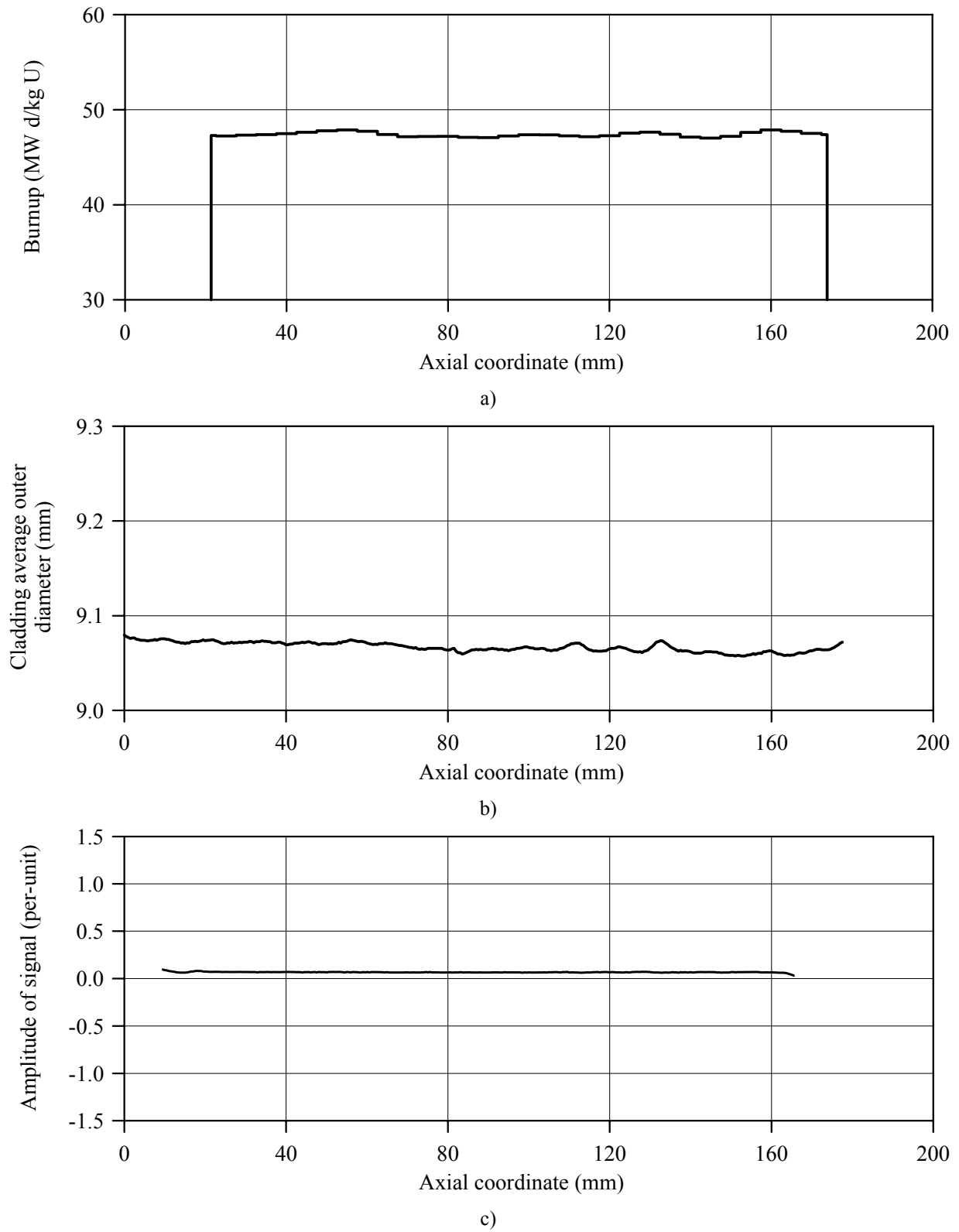
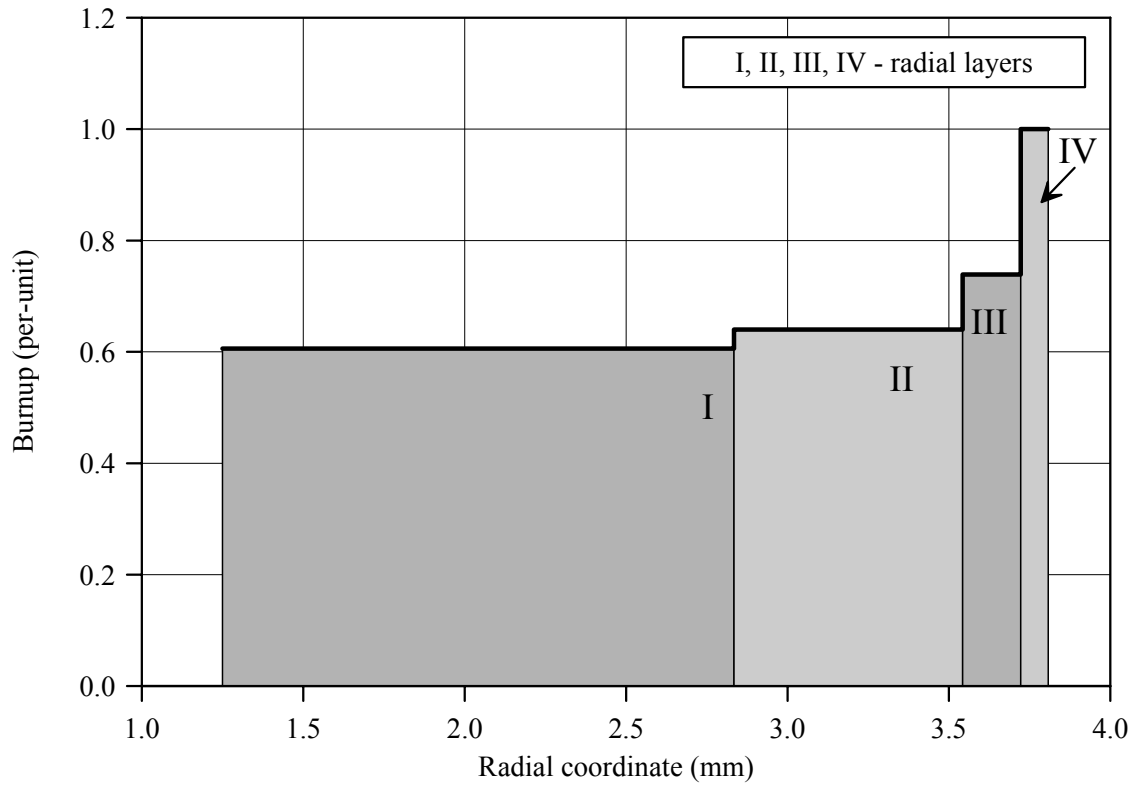
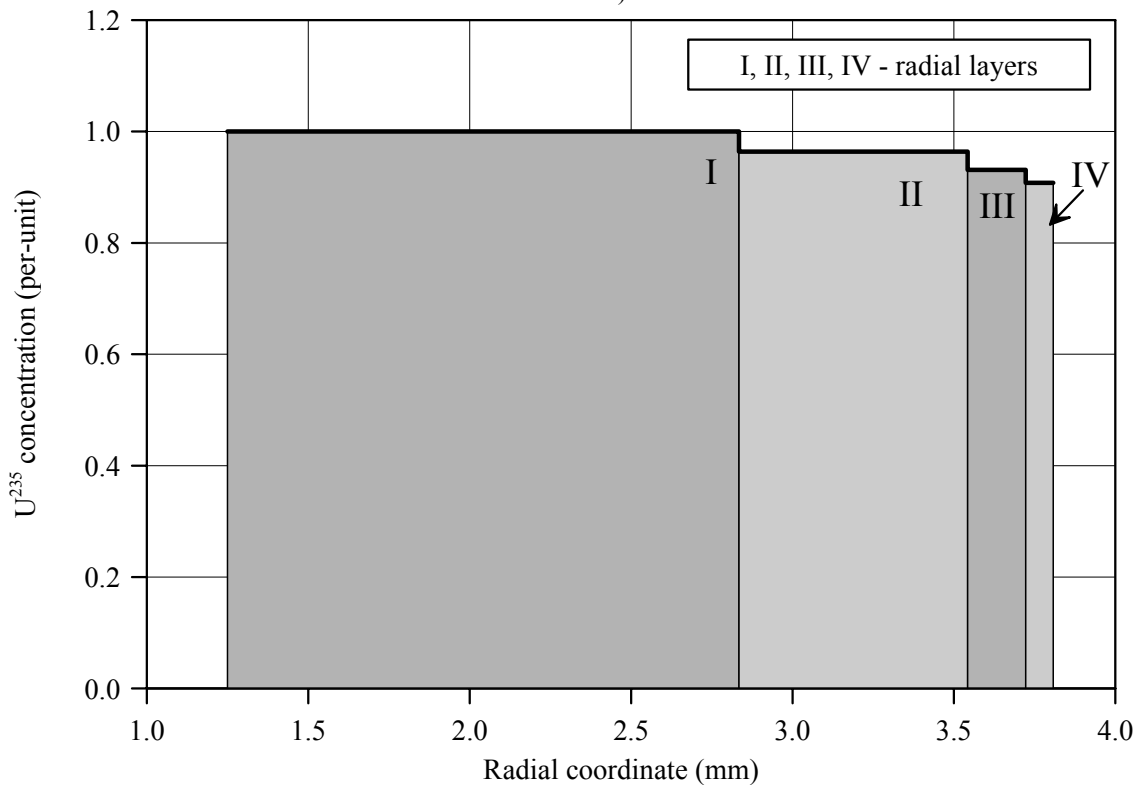


Fig.C-12.2. (a) Axial burnup distribution and (b) results of profilometry and (c) eddy-current examination of fuel rod # RT12

RT12

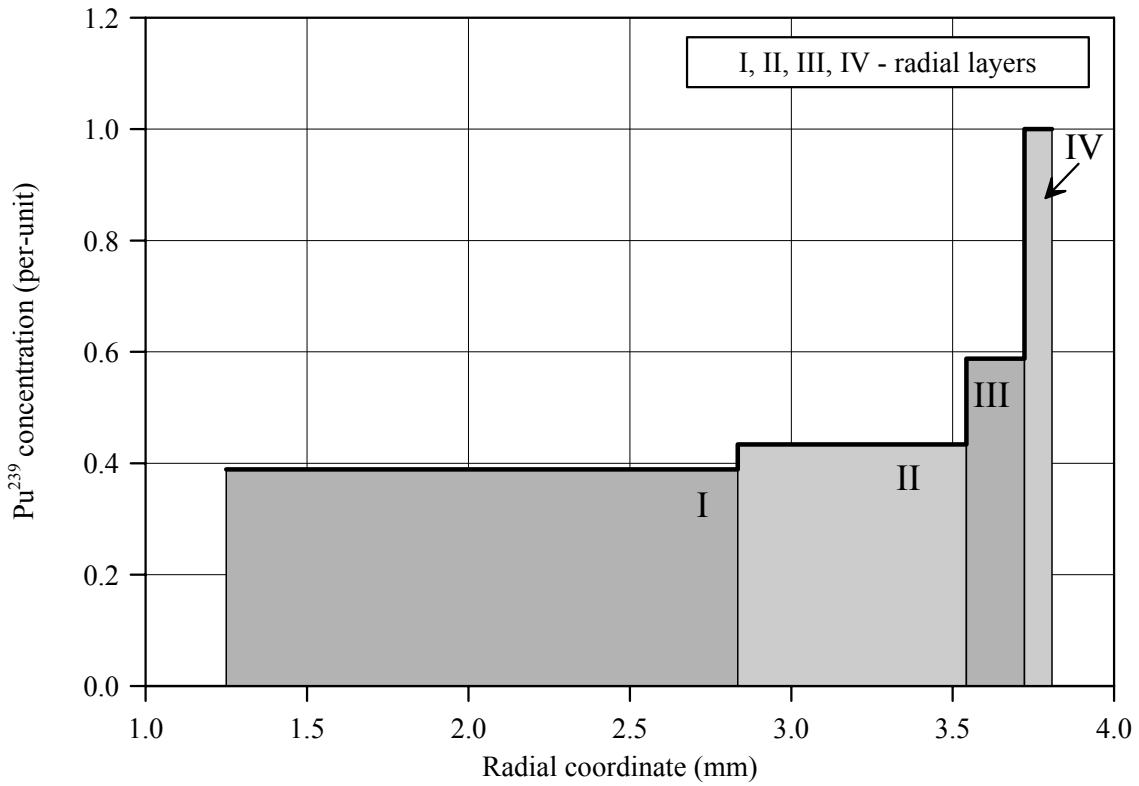


a)

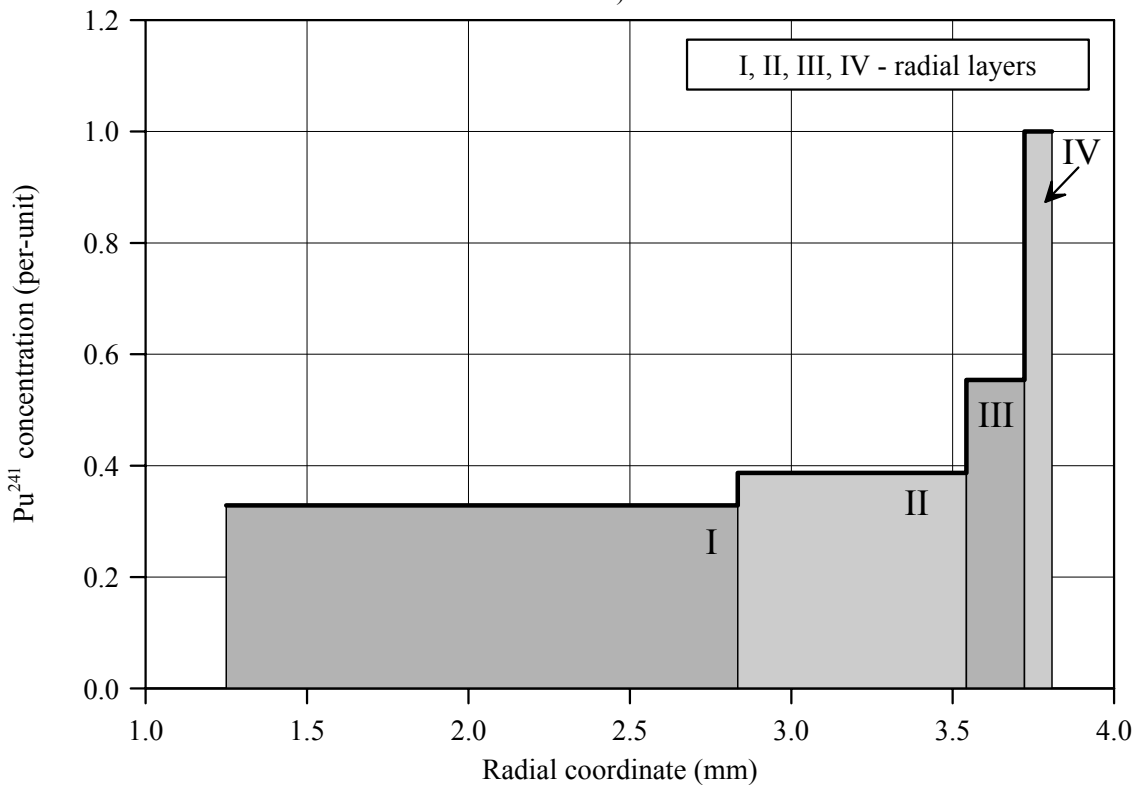


b)

Fig.C-12.3. (a) Burnup radial distribution and (b) U^{235} radial distribution for fuel rod # RT12 (calculated values)



a)



b)

Fig.C-12.4. Radial distribution of (a) Pu²³⁹ and (b) Pu²⁴¹ for fuel rod # RT12 (calculated values)

APPENDIX D

CHARACTERISTICS OF THE BGR POWER PULSES

Table D.1. Reference data characterizing BGR tests of refabricated fuel rods ## RT 1–12

Number of fuel rods	Number of BGR test	Date of BGR test	Pulse half width (ms)
RT1	833	06.11.97	2.6
RT2	834	10.11.97	3.1
RT3	832	04.11.97	2.5
RT4	846	13.11.97	2.5
RT5	847	16.11.97	2.5
RT6	845	11.11.97	2.6
RT7	881	30.06.2000	2.6
RT8	889	17.11.2000	2.6
RT9	887	11.11.2000	2.7
RT10	880	27.06.2000	2.6
RT11	888	14.11.2000	2.6
RT12	882	05.07.2000	2.8

**Table D.2. BGR power for fuel rods ## RT1–12 in accordance
with the Neutron detector recording**

Time (s)	Reactor power (V)											
	Number of fuel rod											
	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8	RT9	RT10	RT11	RT12
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000
0.001	0.810	1.598	0.946	0.917	0.931	0.788	0.004	0.003	0.003	0.009	0.003	0.003
0.002	2.636	3.254	2.966	2.894	2.891	2.840	0.017	0.012	0.013	0.041	0.012	0.012
0.003	4.545	3.384	4.800	4.800	4.900	4.500	0.076	0.055	0.057	0.185	0.053	0.049
0.004	3.367	2.232	3.269	3.110	3.200	3.051	0.314	0.238	0.240	0.620	0.229	0.195
0.005	1.467	1.109	1.406	1.277	1.318	1.269	0.837	0.706	0.688	1.003	0.689	0.603
0.006	0.759	0.562	0.710	0.682	0.715	0.684	0.939	0.990	0.998	0.684	0.993	0.997
0.007	0.409	0.356	0.387	0.364	0.379	0.374	0.520	0.619	0.670	0.318	0.632	0.764
0.008	0.270	0.267	0.268	0.253	0.264	0.261	0.234	0.282	0.319	0.150	0.289	0.389
0.009	0.241	0.238	0.236	0.216	0.221	0.218	0.119	0.136	0.155	0.086	0.138	0.192
0.010	0.230	0.230	0.229	0.213	0.220	0.213	0.075	0.081	0.092	0.062	0.082	0.109
0.012	0.273	0.237	0.256	0.255	0.260	0.247	0.054	0.054	0.059	0.052	0.054	0.063
0.014	0.337	0.250	0.316	0.321	0.321	0.300	0.056	0.054	0.061	0.057	0.054	0.059
0.016	0.370	0.242	0.345	0.360	0.363	0.338	0.066	0.064	0.072	0.065	0.064	0.064
0.018	0.366	0.219	0.332	0.352	0.357	0.329	0.075	0.074	0.083	0.070	0.074	0.070
0.020	0.315	0.188	0.275	0.310	0.300	0.275	0.076	0.078	0.086	0.067	0.079	0.070
0.022	0.247	0.156	0.219	0.284	0.241	0.220	0.069	0.074	0.081	0.059	0.074	0.064
0.024	0.194	0.131	0.173	0.250	0.191	0.174	0.059	0.062	0.070	0.050	0.062	0.056
0.026	0.151	0.115	0.139	0.201	0.146	0.140	0.049	0.050	0.058	0.042	0.050	0.047
0.028	0.127	0.107	0.117	0.154	0.118	0.118	0.040	0.040	0.047	0.035	0.040	0.040
0.030	0.117	0.104	0.110	0.123	0.109	0.106	0.034	0.034	0.039	0.031	0.034	0.035
0.050	0.107	0.104	0.112	0.091	0.091	0.091	0.028	0.027	0.030	0.026	0.028	0.031
0.070	0.085	0.084	0.090	0.082	0.079	0.079	0.025	0.024	0.027	0.022	0.025	0.025
0.090	0.066	0.069	0.071	0.061	0.056	0.056	0.018	0.021	0.023	0.015	0.022	0.018
0.110	0.042	0.038	0.038	0.039	0.034	0.035	0.005	0.012	0.013	0.003	0.013	0.008
0.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

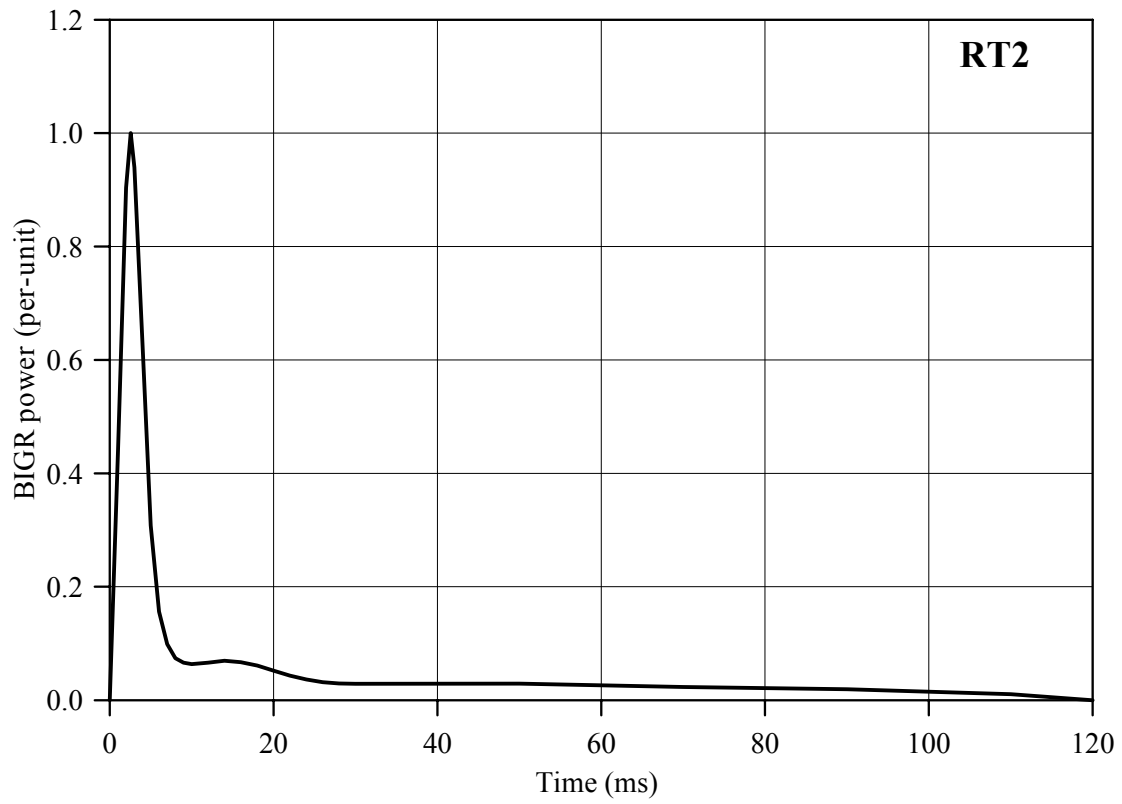
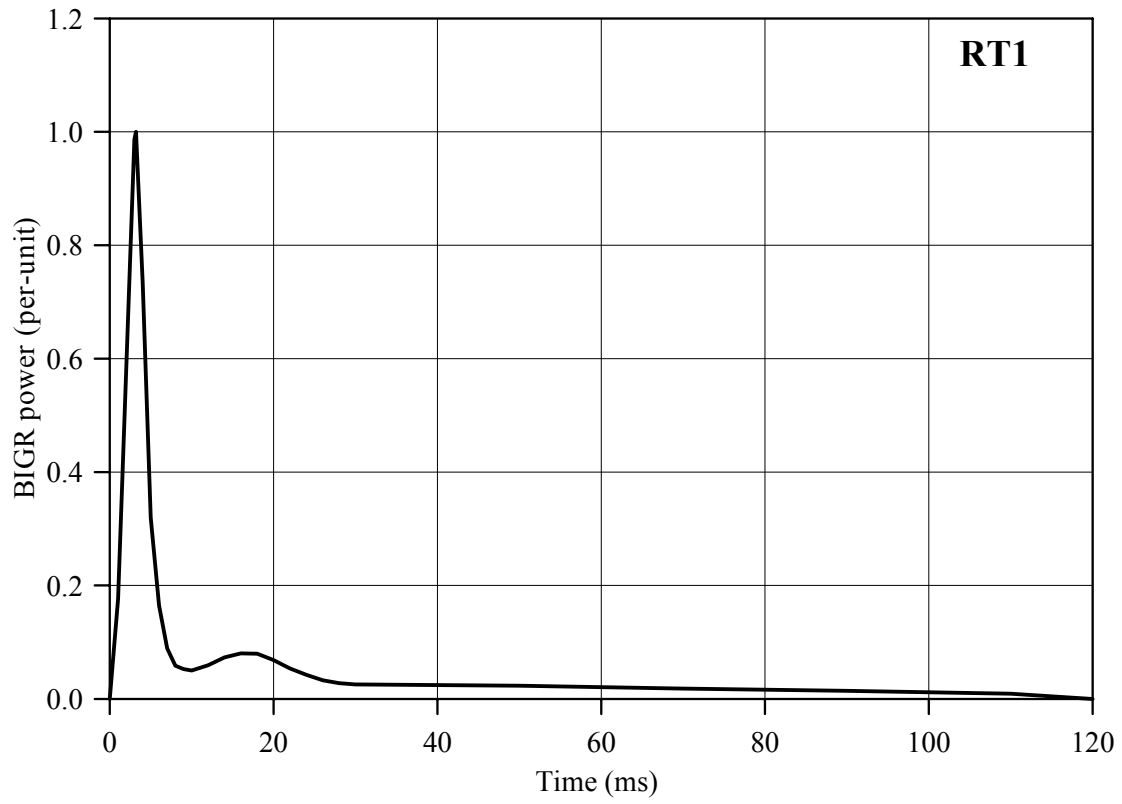


Fig. D.1. BGR power for fuel rods # RT1 and # RT2