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Volume 1

CHARACTERISTICS OF POTENTIAL REPOSITORY WASTES

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Prepared for the
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Table 1B.1. Nuclide half-lives, decay modes, and recoverable heat (Q) from the ORIGEN2 decay library used to calculate radiological data

Parent	Half-life	Decay mode[a]	Q (W/Ci)	Daughter
H-3	3.897E+08 s	Beta	3.367E-05	He-3
H-4	1.000E-03 s	Beta	0.000E+00	He-4
He-6	0.808 s	Beta	9.295E-03	Li-6
Li-8	0.842 s	Beta	3.729E-02	Be-8
Be-8	2.000E-06 s	Alpha	5.632E-04	He-4
Be-10	5.049E+13 s	Beta	1.200E-03	B-10
Be-11	13.6 s	Beta	6.823E-02	B-11
B-12	2.030E-02 s	Beta	7.926E-02	C-12
C-14	1.808E+11 s	Beta	2.933E-04	N-14
C-15	2.45 s	Beta	1.702E-02	N-15
N-13	598. s	POS or EC	8.957E-03	C-13
N-16	7.12 s	Beta	4.334E-02	O-16
O-19	29.0 s	Beta	2.857E-02	F-19
F-20	11.4 s	Beta	4.167E-02	Ne-20
Ne-23	37.2 s	Beta	1.226E-02	Na-23
Na-22	8.211E+07 s	POS or EC	1.415E-02	Ne-22
Na-24	5.400E+04 s	Beta	2.771E-02	Mg-24
Na-24m	1.990E-02 s	IT	2.798E-03	Na-24
Na-25	59.6 s	Beta	1.148E-02	Mg-25
Mg-27	568. s	Beta	9.443E-03	Al-27
Mg-28	7.528E+04 s	Beta	9.088E-03	Al-28
Al-28	134. s	Beta	1.794E-02	Si-28
Al-29	391. s	Beta	1.394E-02	Si-29
Al-30	3.68 s	Beta	3.393E-02	Si-30
Si-31	9.438E+03 s	Beta	3.536E-03	P-31
Si-32	650. y	Beta	1.245E-03	P-32
P-32	14.3 d	Beta	1.014E-02	S-32
P-33	25.0 d	Beta	1.470E-03	S-33
P-34	12.4 s	Beta	3.023E-02	S-34
S-35	88.0 d	Beta	9.924E-04	Cl-35
S-37	5.06 min	Beta	2.845E-02	Cl-37
Cl-36	9.499E+12 s	POS or EC (1.90%)	1.475E-03	S-36
		Beta (98.1%)		Ar-36
Cl-38	2.233E+03 s	Beta	1.788E-02	Ar-38
Cl-38m	0.716 s	IT	3.980E-03	Cl-38
Ar-37	3.026E+06 s	POS or EC	1.245E-05	Cl-37
Ar-39	269. y	Beta	3.349E-03	K-39
Ar-41	6.577E+03 s	Beta	1.036E-02	K-41
Ar-42	33.0 y	Beta	3.557E-03	K-42

[a]POS – positron; EC – electron capture; IT – internal transition; * – excited state; n – neutron; and SF – spontaneous fission.

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Abteilung für Angewandte Systemanalyse
Projekt Wiederaufarbeitung und Abfallbehandlung

Pu-Rezyklierung in Leichtwasserreaktoren: Abbrandrechnungen zur Auslegung von Wiederaufarbeitungsanlagen und Rückwirkungen auf den Uran-Bedarf

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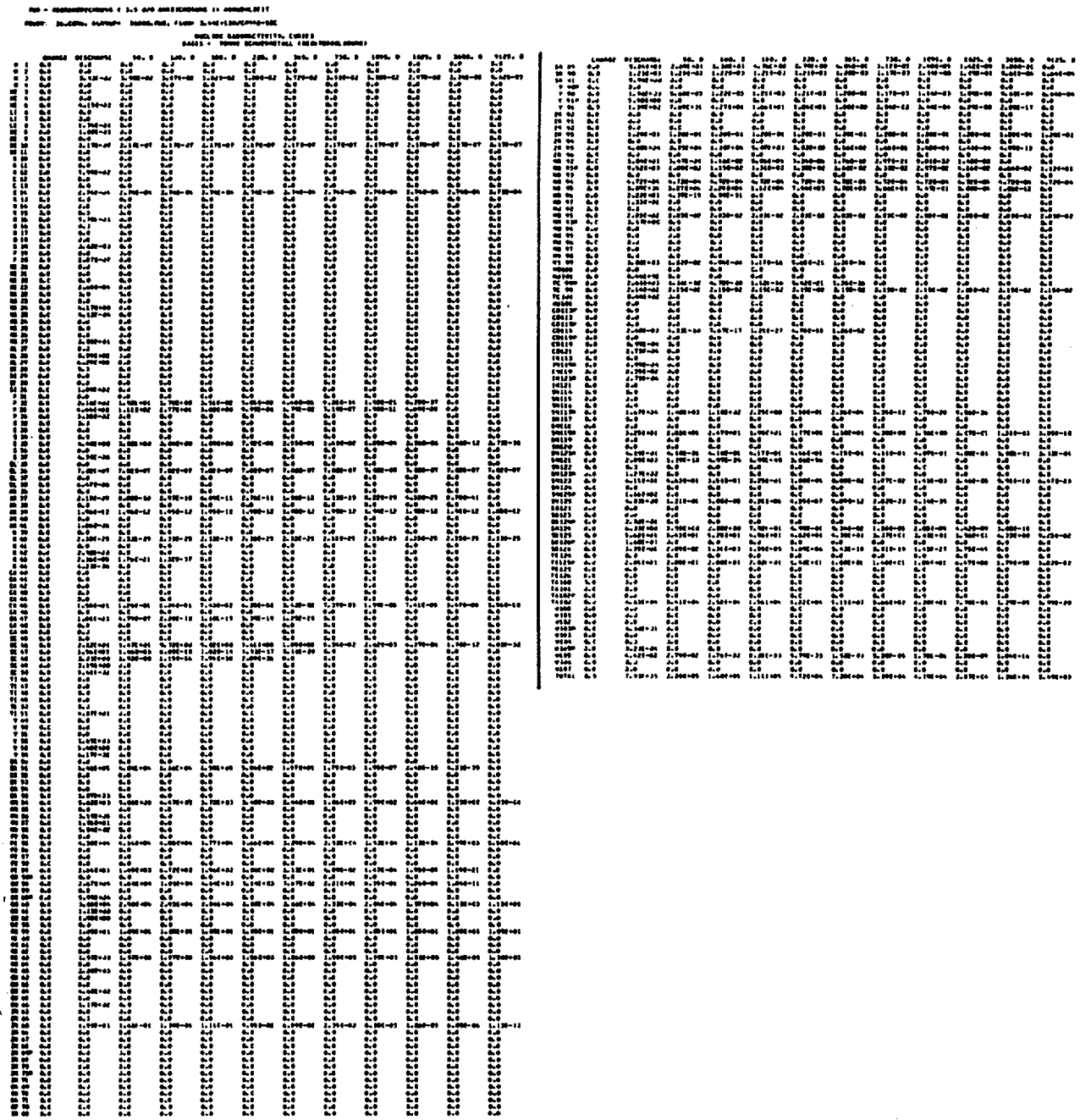

Tab. 5.0-5: Strukturmaterialnuklide während der Abkühlzeit (in Ci/t_{SM}), Abbrand 36.000 MWd/t_{SM}, Anfangsanreicherung 3.5% U-235, Uran-Zyklus