

## Usage of particle code EC (electron capture)

(N. Otsuka, 2020-01-16, Memo CP-D/989, A10)

Action 10 of the NRDC 2019 meeting asks me to check if we can make the particle code EC (electron capture) obsolete.

**My conclusion:** EC could be kept in Dictionary 33 (particles) when

1. detection of EC activity is explicitly mentioned by the author without specifying its radiation type (e.g., X-ray, Auger ~~conversion~~ electron).
2. the intensity of measured radiation (e.g.,  $\gamma$  radiation,  $\alpha$  radiation) assumed by the authors is not mentioned by the author, but the EC branching ratio assumed by the authors is mentioned (e.g., EC+ $\beta^+$  branching ratio is mentioned without  $\gamma$  intensity for a  $\gamma$  spectroscopy work – EC/B+.)

Nowadays, the reaction product undergoing EC decay is typically quantified by  $\gamma$ -ray spectrometry if there is a suitable  $\gamma$ -line. But I found some old experiments quantifying EC nuclides by detection of radiation other than  $\gamma$  emission.

R.A. Glass et al., Phys.Rev.**104**(1956)434 (EXFOR C2296) introduces such a measurement by the following sentences:

Radiations from isotopes undergoing electron capture decay (electrons and x-rays) are measured with a windowless beta proportional counter. Electron capture counting efficiencies are being determined for some of the nuclides involved and approximate values for other species are estimated.

The following extraction from M. Lindner et al., Phys.Rev.**78**(1950)499 (EXFOR C0386) could show you how such an old measurement with a Geiger-Müller counter was performed:

After irradiation the targets were separated into chemical fractions by the procedures to be described. Along with half-life determination, the radioactive species present were identified principally by absorption methods using cylindrical end-window Geiger counter tubes with mica windows of approximately 3 mg/cm thickness.

It is characteristic of irradiations with high energy particles that many neutron-deficient isotopes are formed and, in the region of the periodic table under investigation, many of these decay by orbital electron capture. As a result all chemical fractions contained considerable x-ray activity. In order to aid in identifying beta-particles and electrons in the presence of the many x-rays, beryllium rather than aluminum was used for determining the absorption end-points. Using sufficient beryllium to filter out electrons, the x-rays were usually characterized with the use of aluminum absorbers. Gamma-ray energies beyond the x-ray energy region were determined with lead absorbers.

A crude beta-ray spectrometer was used in distinguishing particles of different sign, and was found particularly useful in the cases in which one type was a minor component of the total activity. Used as a spectrometer, lines of electrons could usually be distinguished from continuous beta-spectra and approximate values for the energies were obtainable.

Below is another example of Geiger-Müller counting from H.H. Hopkins et al., Phys.Rev.**73**(1948)1406 (EXFOR C2356).

The gross rate of decay of the radio-isotopes in each elemental fraction was determined with argon-filled (10 cm pressure) Geiger-Müller counting tubes of the thin window type (ca. 3 mg/cm' of mica). The half-lives obtained from the resolved decay curves formed the chief basis for identification of known isotopes. In those cases in which sufficient activity was available, samples were placed in a crude beta-ray spectrometer and tested for positive or negative beta-particles.

Most of the radiations observed could be assigned to known isotopes; these isotopes are listed in Table I. The identifications of Zn<sup>72</sup>, Cu<sup>60</sup>, Ni<sup>67</sup>, and Co<sup>55</sup> are uncertain as they are based on half-lives obtained with low accuracy as a result of the high level of accompanying activities. The assignments of Mn<sup>52</sup> and Cr<sup>51</sup> are based on reliable half-life determinations from measurements of a small amount of activity in the manganese and chromium fractions. The identification of the remaining isotopes is beyond doubt.

TABLE I. Isotopes produced by <sup>75</sup>As+200 Mev D<sup>+</sup>.

Isotope	Type of radiation <sup>a</sup>	Half-life		Yield <sup>c</sup> Rel As <sup>75</sup> d	Reaction Δ	
		Observed	Literature <sup>b</sup>		ΔZ	ΔA
<sup>75</sup> Se	(K, γ, e <sup>-</sup> )	120 d	115 d <sup>o</sup>	0.11 (5%)	+1	+0
<sup>73</sup> Se	β <sup>+</sup>	6.7 h	—	0.09	+1	-2
<sup>72</sup> Se	K	9.5 d	—	0.1 (100%)	+1	-3
<sup>71</sup> Se	β <sup>+</sup>	44 m	—	0.01	+1	-4
<sup>74</sup> As	β <sup>-</sup> , β <sup>+</sup> , γ	19.0 d	16 d	1.1	0	-1
<sup>72</sup> As	β <sup>+</sup>	26 h	26 h	1.00	0	-3
<sup>71</sup> As	β <sup>+</sup>	52 m	—	0.3	0	-4
<sup>71</sup> Ge	β <sup>+</sup> , K	{38 h 11.4 d	40 h 11 d	2 ~2 (3%)	-1	-4
<sup>68</sup> Ge	K	250 d	195 d	≈5 (100%)	-1	-6
<sup>68</sup> Ga	β <sup>+</sup>	68 m	68 m	0.2	-2	-7
<sup>67</sup> Ga	K, γ, e <sup>-</sup>	83 h	83 h	~3 (5%)	-2	-8
<sup>66</sup> Ga	β <sup>+</sup>	10 h	9.4 h	~0.1	-2	-9
<sup>72</sup> Zn	(β <sup>-</sup> , γ)	~50 h	49 h <sup>f</sup>	≤0.001	-3	-3
<sup>69</sup> Zn	(β <sup>-</sup> , I. T., γ)	{51 m 14 h	57 m 13.8 h	0.07 0.05	-3	-6
<sup>67</sup> Cu	β <sup>-</sup>	61 h	56 h <sup>g</sup>	0.02	-4	-8
<sup>64</sup> Cu	(β <sup>-</sup> , β <sup>+</sup> , K, γ)	13 h	12.8 h	0.1	-4	-11
<sup>62</sup> Cu	(β <sup>+</sup> , K)	3.3 h	3.4 h	0.1 (100%)	-4	-14
<sup>60</sup> Cu	(β <sup>+</sup> )	~20 m	24.5 m <sup>b</sup>	0.06	-4	-15
<sup>66</sup> Ni	β <sup>-</sup>	56 h	56 h <sup>g</sup>	0.002	-5	-9
<sup>65</sup> Ni	(β <sup>-</sup> , γ)	2.6 h	2.6 h	0.001	-5	-10
<sup>57</sup> Ni	β <sup>+</sup>	34 h	36 h	0.0002	-5	-18
<sup>61</sup> Co	(β <sup>-</sup> )	1.8 h	1.75 h <sup>i</sup>	0.003	-6	-14
<sup>56-58</sup> Co	(β <sup>+</sup> , γ, K)	~80 d	72 d	0.06 (35%)	-6	{-19 -17
<sup>55</sup> Co	β <sup>+</sup> , γ	~16 h	18.2 h	0.003	-6	-20
<sup>59</sup> Fe	(β <sup>-</sup> , γ)	43 d	47 d	0.005	-7	-16
<sup>56</sup> Mn	(β <sup>-</sup> , γ)	2.6 h	2.59 h	0.002	-8	-19
<sup>52</sup> Mn	(β <sup>+</sup> , γ, K)	6 d	6.5 d	0.0002 (40%)	-8	-23
<sup>51</sup> Cr	(K, γ, e <sup>-</sup> )	26 d	26.5 d	0.005 (5%)	-9	-24

<sup>a</sup> Parentheses signify identification based on half-life determination only.

I do not know if we should try to indicate all parenthesized radiation types under DECAy-DATA as users could understand the quality of the measurement from GEMUC under DETECTOR.

I am not familiar with such old techniques and cannot fully understand their descriptions. Nevertheless, I tried to check all DECAy-DATA and DECAy-MON records with EC (356 records in 238 entries) in the EXFOR Master Ver. 2019-08-29 against the source articles. My suggestion on each record is appended to this memo. I am not an expert of radiation detection, and **I strongly encourage the originating centres to check the source articles before doing suggested corrections (especially for those compiled from old articles).**

Below I summarized typical appropriate and inappropriate use of EC coding.

### Examples – Appropriate and inappropriate EC coding

[1] Yu.P.Gangrskii+, J,SNP,31,162,1980 (EXFOR A0071) - appropriate

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REACTION (90-TH-232 (7-N-14, 6N) 97-BK-240, , SIG)
DECAy-DATA (97-BK-240, 4.MIN, EC, , 1.0)
(96-CM-240, 28.7D, A, 6260.)
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The authors performed α spectroscopy of <sup>240</sup>Cm (EC-decay daughter of the reaction product <sup>240</sup>Bk). The α intensity assumed by the authors is *not* mentioned, but the authors mention

“In the estimate it was assumed that the fraction of electron capture in decay of the Bk, Es, and Md isotope studied was 100% except for 248Md, where the fraction of electron capture was taken as 80%”.

I believe the EC branching ratio is useful to be kept under DECAY-DATA.

[2] A.Mushtaq+, J,RCA,50,27,1990 (EXFOR D0058) – inappropriate

REACTION (32-GE-0 (A, X) 34-SE-72, , SIG)  
DECAY-DATA (34-SE-72, 8.4D, EC, 1.)  
(33-AS-72, 26.HR, DG, 834.)

The authors performed  $\gamma$  spectroscopy of  $^{72}\text{Se}$  (EC-decay daughter of the reaction product  $^{72}\text{Se}$ ). The 834 keV  $\gamma$  emission probability adopted by the authors is 80% (see Table 1 of AMushtaq et al., Appl.Radiat.Isot.39(1988)1085), and this must be coded instead of the EC branching ratio (100%).

[3] S.Busse+, J,RCA,90,1,2002 (EXFOR O1016) – inappropriate

MONITOR (29-CU-63 (P, N) 30-ZN-63, , SIG, , , EVAL)  
(29-CU-63 (P, 2N) 30-ZN-62, , SIG, , , EVAL)  
DECAY-MON (30-ZN-63, 38.1MIN, B-, , 0.93, EC, , 0.07, DG, 669.8, 0.084,  
DG, 962.6, 0.066)  
(30-ZN-62, 9.23HR, EC, , 0.931, B-, , 0.069, DG, 548.4, 0.152,  
DG, 596.7, 0.257)

The  $\beta^-$  and EC branching ratios taken from Table 1 must be deleted. Also  $^{63}\text{Cu}(p,n)^{62}\text{Zn}$  and its decay data must be deleted since it was not used for proton flux determination.

**DECAY-DATA and DECAY-MON records including EC (extracted from EXFOR Master Ver. 2019-08-29)**

(All items except for shaded ones will be registered in the EXFOR Feedback List.)

<b>Subentry #</b>	<b>DECAY-DATA record</b>	<b>My suggestion</b>	<b>Additional remark</b>
10923.003	(101-MD-258-M,43.MIN,EC)	Delete EC.	258Md->258Fm(sf) was studied. Decay curve from FF detection.
10923.005	(101-MD-258-M,43.MIN,EC)	Delete EC.	258Md->258Fm(sf) was studied. Decay curve from FF detection.
12597.002	(27-CO-58-G,71.3D,EC)	Delete EC.	58Co(n,g)59Co was studied by using double-capture (BURN) of 58Ni.
13651.005	(4-BE-7,52.93D,EC)	EC -> DG,0.48	480 keV gamma was detected.
14283.001	(101-MD-256,78.1MIN,EC)	Delete EC. Add DECAY-DATA=(100-FM-256,2.627HR,DG) and RAD-DET=(100-FM-256,DG).	256Md->256Fm(sf) was studied. Decay gamma of 256Fm(sf) was analyzed.
21116.001	(38-SR-85,65.D,EC,,1.,DG,513.)	Delete EC radiation field.	Detection of K X-ray or 513 keV gamma following EC of 85Sr.
21936.020	(27-CO-58-M,32180.SEC,EC,,0.85,B+,,0.15)	Delete EC and B+ radiation field, but add 58gCo decay data and RAD-DET=(27-CO-58-G,DG).	g.s. and m.s. contributions were separated by g.s. activity measurements with several coolings.
21936.031	(27-CO-58-M,3.22E+04SEC,EC,,0.85,B+,,0.15)	Delete EC and B+ radiation field, but add 58gCo decay data and RAD-DET=(27-CO-58-G,DG).	g.s. and m.s. contributions were separated by g.s. activity measurements with several coolings.
22484.002	(27-CO-58-G,71.D,EC,,,B+)	EC,,,B+ -> XR	Detection of K X-ray.

22490.001	(73-TA-179,1.82YR,EC)	Replace EC with XR decay data.	179Ta (target) was quantified by X-ray spectrometry.
22490.001	(73-TA-180-G,8.152HR,EC,,,B-)	EC,,,B- -> DG,0.933,0.0451.	Typo in Igamma in Table I?
22754.002	(41-NB-92-M,10.15D,EC,,,DG,934.53,0.990)	Delete EC.	
22754.003	(41-NB-92-M,10.15D,EC,,,DG,934.53,0.990)	Delete EC.	
22754.004	(79-AU-196,6.183D,EC,,,B-,,,DG,355.73,0.869)	Delete EC and B-.	
22754.005	(79-AU-196,6.183D,EC,,,B-,,,DG,355.73,0.869)	Delete EC and B-.	
23037.008	(4-BE-7,,EC,,,DG,477.621,0.1044)	Delete EC.	
31568.002	(29-CU-64,12.701HR,DG,1345.78,0.0048,EC,,0.4,B-,,0.4,AR,511.,0.386)	Delete EC and B- radiation fields.	
31568.005	(30-ZN-63,38.1MIN,DG,669.76,0.084,DG,962.17,0.066,EC,,1.)	Delete EC radiation field.	
31584.003	(27-CO-58-G,71.D,EC,,,B+)	Use (27-CO-58-G,70.92D,810.8) in both 002-003. Use (27-CO-58-M,9.15HR) and RAD-DET=(27-CO-58-G,DG) in 003.	810.8 keV activity of g.s. and m.s. was separated by decay curve analysis.
41560.001	(95-AM-242-G,16.HR,B-,,0.84,EC,,0.16)	Delete EC radiation fields. Add RAD-DET=(96-CM-242,A).	Decay alpha of daughter (242Cm) measured.

A0004.002	(50-SN-113-G,115.D,EC)	Delete EC.	Decay gamma of daughter (113mIn) measured.
A0004.003	(50-SN-113-G,115.D,EC)	Delete EC.	Decay gamma of daughter (113mIn) measured.
A0004.005	(50-SN-113-G,115.D,EC)	Delete EC.	Decay gamma of daughter (113mIn) measured.
A0071.002	(97-BK-240,4.MIN,EC,,1.0)	Ok, but delete RAD-DET=(96-CM-240,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.003	(97-BK-242-G,7.MIN,EC,,1.)	Ok, but delete RAD-DET=(96-CM-242-G,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.004	(99-ES-246,8.MIN,EC,,1.)	Ok, but delete RAD-DET=(98-CF-246,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.005	(99-ES-244,37.SEC,EC,,1.)	Ok, but delete RAD-DET=(98-CF-244,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.006	(99-ES-244,37.SEC,EC,,1.)	Ok, but delete RAD-DET=(98-CF-244,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.007	(99-ES-248,28.MIN,EC,,1.)	Ok, but delete RAD-DET=(98-CF-248,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.008	(101-MD-248,7.SEC,EC,,0.8)	Ok, but delete RAD-DET=(100-FM-248,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0071.009	(101-MD-250,52.SEC,EC,,1.)	Ok, but delete RAD-DET=(100-FM-250-G,FF).	alpha spectroscopy of daughter with an assumed EC branching ratio.
A0173.012	(98-CF-253,,EC,,1.)	Delete this code string.	Alpha of daughter (253Es) measured.
A0173.021	(100-FM-253,,EC,,0.86)	Delete this code string.	Alpha of daughter (253Es) measured.
A0173.037	(98-CF-253,,EC,,1.)	Delete this code string.	Alpha of daughter (253Es) measured.
A0173.046	(100-FM-253,,EC,,0.86)	Delete this code string.	Alpha of daughter (253Es) measured.
A0173.050	(101-MD-256,,EC,,0.92)	Delete this code string.	SF of daughter (256No) measured.
A0173.062	(98-CF-253,,EC,,1.)	Delete this code string.	Alpha of daughter (253Es) measured.

A0173.069	(100-FM-253,,EC,,0.86)	Delete this code string.	Alpha of daughter (253Es) measured.
A0173.084	(98-CF-253,,EC,,1.)	Delete this code string.	Alpha of daughter (253Es) measured.
A0173.093	(100-FM-253,,EC,,0.86)	Delete this code string.	Alpha of daughter (253Es) measured.
A0295.001	(23-V-49,330.D,EC,,0.9,XR,4.51,0.198)	?	
A0360.002	(27-CO-55,18.2HR,EC,511.)	EC -> AR	
A0480.008	(93-NP-235,410.D,EC,,1.)	Ok?	
A0480.009	(93-NP-234,4.4D,EC,,1.)	Ok?	
A0480.010	(93-NP-233,35.MIN,EC,,1.)	Ok?	
A0573.001	(26-FE-52-G,8.3HR,B+,,0.563,EC,,0.435,DG,168.7,0.992)	Delete B+ and EC radiation field.	
A0719.003	(86-RN-211,14.6HR,A,,0.26,EC,,0.74)	Delete EC radiation field. Add E(alpha)=5783.9/5852.2 keV.	
A0719.009	(86-RN-211,14.6HR,A,,0.26,EC,,0.74)	Delete EC radiation field. Add E(alpha)=5783.9/5852.2 keV.	
A0719.023	(85-AT-211,7.2HR,A,,0.417,EC,,0.583)	Delete EC radiation field. Add E(alpha)=5869.5 keV.	
A0719.030	(85-AT-211,7.2HR,A,,0.417,EC,,0.583)	Delete EC radiation field. Add E(alpha)=5869.5 keV.	
A0800.001	(50-SN-117-M,14.D,DG,159.,0.86,EC,127.,0.65,EC,129.,0.12,EC,152.,0.26)	Delete all EC radiation fields.	Conversion electron intensities are wrongly coded under EC.

A0918.002	(26-FE-52-G,8.27HR,B+,,0.56,EC,,0.44,DG,168.7,0.992)	Delete B+ and EC radiation fields. Add decay data of 52mMn.	
A0918.003	(26-FE-52-G,8.3HR,B+,,0.56,EC,,0.44,DG,168.7,0.992)	Delete B+ and EC radiation fields. Add decay data of 52mMn. 8.3HR -> 8.27HR.	
A0918.005	(36-KR-77,1.2HR,B+,,0.01,EC,,0.999,DG,130.,0.873,	Delete B+ and EC radiation fields. Add decay data of 77Br.	
A0918.007	(38-SR-82,25.5D,EC,,1.)	Delete EC radiation field. Add decay data of 82Rb.	
A0918.008	(56-BA-128,2.43D,EC,,1.,DG,273.,0.145)	Delete EC radiation field. Add decay data of 128Cs.	
B0014.009	(50-SN-113-G,119.D,EC)	Delete EC. Delete decay data of 113mSn.	Decay gamma of daughter (113mIn) measured.
B0017.002	(30-ZN-63,38.MIN,B+,2300.,0.85,B+,1500.,0.07,B+,500.,0.01,EC,,0.07)	Delete EC radiation field.	
B0017.003	(30-ZN-62,9.5HR,EC)	Delete EC.	Positron of daughter (62Cu) measured.
B0017.006	(30-ZN-62,9.5HR,EC)	Delete EC.	Positron of daughter (62Cu) measured.
B0021.003	(84-PO-204,3.52HR,EC)	Delete EC.	Decay gamma of daughter (204Bi) measured.
B0021.004	(84-PO-204,3.52HR,EC)	Delete EC.	Decay gamma of daughter (204Bi) measured.
B0026.026	(56-BA-128,2.4D,EC)	Delete EC.	Annihilation gamma of daughter (128Cs) measured.



B0028.002	(85-AT-211,7.2HR,A,5870.,0.409,EC)	Delete EC.	
B0028.003	(86-RN-211,14.6HR,A,,0.26,EC)	Delete EC.	
B0028.003	(85-AT-211,7.2HR,A,5870.,0.409,EC)	Delete EC.	
B0028.005	(85-AT-211,7.2HR,A,5870.,0.409,EC)	Delete EC.	
B0028.006	(86-RN-211,14.6HR,A,,0.26,EC)	Delete EC.	
B0028.006	(85-AT-211,7.2HR,A,5870.,0.409,EC)	Delete EC.	
B0034.002	(85-AT-211,7.2HR,A,5860.,,EC)	Delete A and EC radiation field.	Alpha of daughter (211Po) measured.
B0038.005	(74-W-178,22.D,EC)	Delete EC.	Decay gamma and KX-ray of daughter (178Ta) measured.
B0049.013	(28-NI-57,36.HR,EC)	Delete EC.	Decay gamma of daughter (57Co) measured
B0050.007	(26-FE-55,,EC)	Delete this DECAY-DATA record.	XR coded under RAD-DET. No T1/2 value in the article.
B0050.014	(32-GE-68,,EC)	Delete all DECAY-DATA records.	Beta+ of daughter (68Ga) measured? No T1/2 value in the article.
B0064.004	(26-FE-55,2.94YR,EC,,1.0)	Delete EC radiation field, but add XR. Delete RAD-DET.	XR under RAD-DET, which will be redundant.
B0070.003	(30-ZN-65,,EC,,0.983,DG,1140.,0.513)	Ok, but Delete 0.513 but add XR,8. (8 keV).	EC=98.3% assumed.

B0071.006	(35-BR-77-G,58.HR,EC)	Replace EC with XR. Delete RAD-DET.	XR under RAD-DET, which will be redundant
B0071.009	(53-I-123,13.HR,EC)	Replace EC with XR. Delete RAD-DET.	XR under RAD-DET, which will be redundant
B0073.002	(28-NI-56,6.D,EC)	Delete this DECAY-DATA record.	<sup>56</sup> Ni is the precursor of the reaction product.
B0098.003	(26-FE-55,959.D,EC)	EC -> XR. Delete RAD-DET.	XR under RAD-DET, which will be redundant
B0111.003	(38-SR-82,25.0D,EC,,1.00)	Delete EC radiation field.	Decay gamma of daughter ( <sup>82</sup> Sr) measured.
C0275.002	(27-CO-56,72.D,B+/DG/EC)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.
C0275.002	(25-MN-52-G,5.8D,B+,,0.35,EC/DG)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.
C0275.002	(25-MN-54,310.D,B+/EC/DG)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.
C0275.002	(24-CR-51,26.5D,EC/DG)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.
C0275.002	(23-V-48,16.D,B+,,0.58,EC/DG)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.
C0275.002	(23-V-49,600.D,EC/DG)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.
C0275.002	(21-SC-46-G,85.D,B-/EC/DG)	Delete radiation fields from all DECAY-DATA records? Add DETECTOR=GEMUC.	Geiger-Mueller counter used.

C0323.002	(46-PD-100,3.63D,EC,,1.0)	EC,,1.0 -> XR	
C0323.002	(46-PD-101,8.4HR,EC,,0.968,B+,,0.032)	Delete EC and B+ radiation fields. Add (45-RH-101-M,,DG,307.)	Decay gamma of daughter (101Rh) measured.
C0323.002	(46-PD-103,17.0HR,EC,,1.0)	EC,,1.0 -> XR	
C0323.002	(47-AG-105-G,40.0D,EC,,1.0)	EC,,1.0 -> XR	
C0323.002	(49-IN-111-G,2.81D,EC,,1.0)	EC,,1.0 -> DG,247.	
C0323.002	(50-SN-111,35.0MIN,EC,,0.68,B+,,0.32)	Delete EC and B+ radiation fields. Add (49-IN-111,,DG,247.)	Decay gamma of daughter (111In) measured.
C0325.003	(49-IN-117-M,1.95HR,B-,1770.,0.55,EC,290.,0.25)	EC -> IEC. 1770. -> 1620./1770.	Sandor helped me!
C0326.002	(46-PD-100,3.63D,EC,,1.0)	EC,,1.0 -> XR	
C0326.002	(46-PD-101,8.4HR,EC,,0.968,B+,,0.032)	Delete EC and B+ radiation fields. Add (45-RH-101-M,,DG,307.)	Decay gamma of daughter (101Rh) measured.
C0326.002	(46-PD-103,17.0HR,EC,,1.0)	EC,,1.0 -> XR	
C0326.002	(47-AG-105-G,40.0D,EC,,1.0)	EC,,1.0 -> XR	
C0326.002	(48-CD-107,6.7HR,EC,,0.997,B+,,0.003)	Delete EC and B+ radiation fields. Add XR.	
C0326.002	(49-IN-111-G,2.81D,EC,,1.0)	EC,,1.0 -> DG,247.	
C0326.002	(50-SN-111,35.0MIN,EC,,0.68,B+,,0.32)	Delete EC and B+ radiation fields. Add (49-IN-111,,DG,247.)	Decay gamma of daughter (111In) measured.
C0330.002	(46-PD-103,17.0D,EC,,1.0)	EC,,1.0 -> XR	
C0330.002	(49-IN-111-G,2.81D,EC,,1.0)	EC,,1.0 -> DG,247	
C0337.002	(46-PD-100,3.63D,EC,,1.0)	EC,,1.0 -> XR	
C0337.003	(46-PD-101,8.4HR,EC,,0.968,B+,,0.032)	Delete EC and B+ radiation fields. Add XR.	
C0337.005	(46-PD-103,17.D,EC,,1.0)	EC,,1.0 -> XR	

C0337.007	(47-AG-105-G,40.D,EC,,1.0)	EC,,1.0 -> XR	
C0337.009	(47-AG-106-M,8.3D,EC,,1.0)	EC,,1.0 -> XR	
C0337.010	(46-PD-100,3.63D,EC,,1.0)	EC,,1.0 -> XR	
C0337.011	(46-PD-101,8.4HR,EC,,0.968,B+,,0.032)	EC,,1.0 -> XR	
C0337.012	(47-AG-101-G,10.1MIN,EC/B+)	Delete EC/B+. Add (46-PD-101,8.4HR,XR) and RAD-DET=(46-PD-101,XR).	X-ray of daughter (101Pd) measured.
C0337.013	(46-PD-103,17.D,EC,,1.0)	EC,,1.0 -> XR	
C0337.015	(47-AG-105-G,40.D,EC,,1.0)	EC,,1.0 -> XR	
C0337.017	(47-AG-106-M,8.3D,EC,,1.0)	EC,,1.0 -> XR	
C0339.002	(34-SE-72,8.4D,EC)	Delete EC. Add (33-AS-72,26.HR,DG,835.0.77).	Decay gamma of daughter (72As) measured.
C0339.002	(38-SR-83-G,33.HR,EC/B+)	Delete EC/B+. Add (37-RB-83,83.D,521./553.,0.93).	Decay gamma of daughter (83Rb) measured.
C0339.002	(47-AG-103-G,1.1HR,EC/B+)	Delete EC/B+. Add (46-PD-103,XR,,0.71).	X-ray of daughter (103Pd) measured.
C0339.003	(21-SC-44-G,4.0HR,B+/EC)	Replace B+/EC with DG,1160.,1.00.	
C0339.004	(34-SE-72,8.4D,EC)	Delete EC. Add (33-AS-72,26.HR,DG,835.0.77).	Decay gamma of daughter (72As) measured.
C0339.004	(38-SR-83-G,33.HR,EC/B+)	Delete EC/B+. Add (37-RB-83,83.D,521./553.,0.93).	Decay gamma of daughter (83Rb) measured.
C0339.004	(47-AG-103-G,1.1HR,EC/B+)	Delete EC/B+. Add (46-PD-103,XR,,0.71).	X-ray of daughter (103Pd) measured.
C0339.005	(21-SC-44-G,4.0HR,B+/EC)	Replace B+/EC with DG,1160.,1.00.	
C0344.001	(32-GE-66,2.4HR,B+,,EC)	Delete B+ and EC.	Decay gamma of daughter (66Ga) measured.
C0344.001	(32-GE-67,19.MIN,B+,,EC)	Delete B+ and EC.	Decay gamma of daughter (67Ga) measured.

C0364.002	(83-BI-207,8.YR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(84-PO-206,9.D,EC,,0.9,A,,0.1)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-206,6.4D,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(84-PO-205,1.5HR,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-205,14.5D,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(84-PO-204,3.8HR,EC,,0.99,A,,0.01)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-204,12.5HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(84-PO-203-G,47.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-203-G,12.4HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(84-PO-202,56.MIN,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-202,95.MIN,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(81-TL-202,12.5D,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(84-PO-201-G,18.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-201-G,111.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(81-TL-201,72.HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.

C0364.002	(80-HG-193-M,12.HR,G,,0.16,EC,,0.84)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(79-AU-192-G,4.8HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(79-AU-191-G,3.HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(79-AU-189,42.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(78-PT-189,11.HR,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(83-BI-200-G,35.MIN,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(82-PB-200,20.HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(82-PB-199-G,1.5HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(82-PB-198,2.3HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.002	(80-HG-195-M,40.HR,G,,0.5,EC,,0.5)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(80-HG-192,5.7HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(80-HG-191-G,57.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(80-HG-189-G,25.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(78-PT-188,10.3D,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(78-PT-186,2.5HR,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.

C0364.003	(83-BI-199-G,25.MIN,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(83-BI-198-G,7.MIN,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(82-PB-197-M,42.MIN,G,,0.24,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(81-TL-196-G,2.4HR,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.003	(81-TL-195-G,1.2HR,B+/EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0364.005	(80-HG-194,130.D,EC)	Delete the radiation type field.	Decay gamma detected by NaI, but no decay data info.
C0375.002	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.002	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.	
C0375.003	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.003	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.004	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.004	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.	
C0375.005	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.005	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.005	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.007	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.007	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.008	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.	

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C0375.008	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.
C0375.008	(55-CS-125,45.MIN,AR,511.,0.49,EC,,0.51)	Delete EC radiation field.
C0375.009	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.009	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.009	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.011	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.012	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.013	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.013	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.014	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.014	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.
C0375.014	(55-CS-125,45.MIN,AR,511.,0.49,EC,,0.51)	Delete EC radiation field.
C0375.015	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.015	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.015	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.
C0375.015	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.
C0375.016	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.

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C0375.016	(55-CS-125,45.MIN,AR,511.,0.49,EC,,0.51)	Delete EC radiation field.	
C0375.017	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.017	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.017	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.018	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.	
C0375.018	(55-CS-125,45.MIN,AR,511.,0.49,EC,,0.51)	Delete EC radiation field.	
C0375.019	(55-CS-132,6.48D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.019	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.019	(55-CS-129,32.4HR,EC,,1.0)	Delete EC radiation field. Add XR.	
C0375.019	(55-CS-127,6.2HR,AR,511.,0.035,EC,,0.965)	Delete EC radiation field. Add XR.	
C0375.021	(55-CS-131,9.69D,EC,,1.0)	Delete EC radiation field. Add XR.	
C0386.002	(52-TE-119-M,4.5D,EC)	Delete EC. Add (51-SB-119,39.HR,XR,0.01).	X-ray of daughter (119Sb) measured.
C0386.002	(52-TE-118,6.0D,EC)	Delete. Add (51-SB-118,3.5MIN).	Activity of daughter (118Sb) measured.
C0386.002	(51-SB-119,5.7D,EC)	5.7D,EC -> 39.HR,XR,0.01	T1/2 in Table I is wrong?
C0386.002	(51-SB-118-M,3.9HR,EC)	3.9HR -> 3.5MIN?	T1/2 in Table I is wrong?
C0386.002	(50-SN-113-G,110.D,EC)	Delete EC. Add (49-IN-113-M,105.MIN).	Activity of daughter (113mIn) measured.
C0386.002	(50-SN-108,4.5HR,EC)	?	
C0386.002	(49-IN-111-G,2.7D,EC)	?	
C0386.002	(48-CD-109,330.D,EC)	?	

C0386.002	(48-CD-107,6.7HR,EC)	Delete EC.	Activity of daughter (107mAg) measured.
C0386.002	(47-AG-110-M,225.D,EC)	?	
C0386.002	(47-AG-106-M,8.2D,EC)	?	
C0386.002	(47-AG-105-G,45.D,EC)	?	
C0386.002	(46-PD-103,17.D,EC)	EC -> XR	
C0386.002	(46-PD-100,4.D,EC)	Delete EC. Add (45-RH-100,XR).	X-ray of daughter (100Rh) measured.
C0386.002	(44-RU-97,2.7D,EC)	?	
C0386.002	(39-Y-87-G,80.HR,EC)	?	
C0386.003	(52-TE-119-M,4.5D,EC)	Delete EC. Add (51-SB-119,39.HR,XR,0.01).	X-ray of daughter (119Sb) measured.
C0386.003	(52-TE-118,6.0D,EC)	Delete. Add (51-SB-118,3.5MIN).	Activity of daughter (118Sb) measured.
C0386.003	(51-SB-119,5.7D,EC)	5.7D,EC -> 39.HR,XR,0.01	T1/2 in Table I is wrong?
C0386.003	(51-SB-118-M,3.9HR,EC)	3.9HR -> 3.5MIN?	T1/2 in Table I is wrong?
C0386.003	(50-SN-113-G,110.D,EC)	Delete EC. Add (49-IN-113-M,105.MIN).	Activity of daughter (113mIn) measured.
C0386.003	(50-SN-108,4.5HR,EC)	?	
C0386.003	(49-IN-111-G,2.7D,EC)	?	
C0386.003	(48-CD-109,330.D,EC)	?	
C0386.003	(48-CD-107,6.7HR,EC)	Delete EC.	Activity of daughter (107mAg) measured.
C0386.003	(47-AG-106-M,8.2D,EC)	?	
C0386.003	(47-AG-105-G,45.D,EC)	?	
C0386.003	(46-PD-103,17.D,EC)	EC -> XR	
C0386.003	(46-PD-100,4.D,EC)	Delete EC. Add (45-RH-100,XR).	X-ray of daughter (100Rh) measured.
C0386.003	(44-RU-97,2.7D,EC)	?	
C0402.002	(73-TA-175,11.HR,EC/B+,,0.86)	Delete EC/B+ radiation field. Add (72-HF-175,70.D,DG.,340.,0.86).	Decay gamma of daughter (175Hf) measured.
C0402.002	(73-TA-173,3.7HR,EC/B+,,1.1)	Delete EC/B+ radiation field. Add (72-HF-173,24.HR,DG.,120.,0.86,1.1).	Decay gamma of daughter (173Hf) measured.

C0402.002	(72-HF-172,5.YR,EC,,0.61)	Delete EC radiation field. Add (71-LU-172,5.YR,DG,1090.,0.61)	Decay gamma of daughter (172Lu) measured.
C0402.002	(72-HF-171,16.HR,EC/B+,,1.0)	Delete EC/B+ radiation field. Add (71-LU-171-G,7.7D,DG,740.,1.)	"171mLu" is in the article, but it does not emit 740 keV gamma.
C0403.002	((1.)77-IR-185,15.HR,EC/B+,,0.80)	Delete EC/B+. Add (76-OS-185,94.D,DG,646.,0.80)	Decay gamma of daughter (185Os) measured.
C0403.003	((3.)78-PT-188,10.D,EC/B+,,0.287)	Delete EC/B+. Add (77-IR-188,41.HR,633.,0.287)	Decay gamma of daughter (188Ir) measured.
C0498.005	(38-SR-85-M,68.0MIN,EC,,0.137)	EC,,0.137 -> XR	
C0498.005	(38-SR-85-G,65.0D,EC,,1.0)	EC,,1.0 -> XR	
C0709.004	(93-NP-234,4.40D,EC)	EC ->XR,,1.	1 Kx-ray/decay assumed.
C1462.002	(53-I-124,4.18D,B+/EC,0.23,0.77)	Delete B+/EC.	Gamma spectroscopy?
C1474.002	(24-CR-51,27.7025D,EC)	EC ->DG,320.,0.0992	
C1474.003	(49-IN-111,2.805D,EC)	EC -> DG,171.,0.9065,DG,245.,0.9409	
C2279.004	(52-TE-118,6.0D,EC,,1.0)	Delete EC radiation field. Add (51-SB-118-G,3.6MIN,DG,1229.3,0.025). Add RAD-DET=(51-SB-118-G,DG).	Decay gamma of daughter (118Sb) measured.
C2296.002	(96-CM-241,35.0D,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".
C2296.004	(96-CM-238,2.5HR,EC)	EC -> A,,0.018	
C2296.005	(95-AM-240,51.0HR,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".

C2296.006	(95-AM-239,12.0HR,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".
C2296.015	(96-CM-241,35.0D,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".
C2296.017	(96-CM-239,3.0HR,EC)	?	
C2296.018	(96-CM-238,2.5HR,EC)	EC -> A,,0.018	
C2296.020	(95-AM-240,51.0HR,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".
C2296.021	(95-AM-239,12.0HR,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".
C2296.042	(96-CM-241,35.0D,EC)	Ok	The article mentions "electron capture decays (electrons and x-rays)".
C2309.014	(93-NP-234,4.4D,EC)	Ok?	Proportional counter used
C2309.015	(93-NP-233,35.MIN,EC)	Ok?	Proportional counter used
C2309.016	(93-NP-232,13.0MIN,EC)	Ok?	Proportional counter used
C2309.017	(91-PA-230,17.7D,EC)	Ok?	Geiger-Mueller counter used
C2319.004	(99-ES-250,8.HR,EC)	Ok	Proportional counter used
C2343.003	(41-NB-92,,EC,0.935)	EC -> DG	EC is coded with gamma energy!
C2343.004	(43-TC-94-M,,EC,0.871)	EC -> DG	EC is coded with gamma energy!
C2343.005	(43-TC-94-G,,EC,0.703)	EC -> DG	EC is coded with gamma energy!
C2343.006	(43-TC-95-G,,EC,0.204)	EC -> DG; -G -> -M	EC is coded with gamma energy!
C2343.007	(43-TC-95-G,,EC,0.766)	EC -> DG	EC is coded with gamma energy!
C2343.008	(43-TC-96-G,,EC,0.813,0.85)	EC -> DG	EC is coded with gamma energy!
C2343.008	(43-TC-96-M,,EC,0.813,0.83)	EC -> DG	EC is coded with gamma energy!
C2356.002	(34-SE-75,120.0D,EC)	Ok?	GM counter (gross rate counting)
C2356.004	(34-SE-72,9.5D,EC)	EC -> XR	GM counter (gross rate counting)

C2356.006	((10.)32-GE-68,250.0D,EC)	EC -> XR	GM counter (gross rate counting)
C2356.006	((12.)31-GA-67,83.0HR,EC)	EC -> XR/DG/B-	GM counter (gross rate counting)
C2356.006	((32.)24-CR-51,26.0D,EC)	Ok?	GM counter (gross rate counting)
C2367.004	((4.)63-EU-149,93.1D,EC,,0.765)	EC -> XR?	" $\chi$ " in Table I stands for x-ray?
D0058.002	(34-SE-73-G,7.1HR,B+,,0.65,DG,361.,0.97,EC,0.35)	Delete B+ and EC radiation fields.	Decay data from J,ARI,39,1085,1988 (EXFOR A0467)
D0058.003	(34-SE-73-G,7.1HR,B+,,0.65,DG,361.,0.97,EC,0.35)	Delete B+ and EC radiation fields.	Decay data from J,ARI,39,1085,1988 (EXFOR A0467)
D0058.004	(34-SE-75,120.D,DG,0.265,0.58,EC,1.)	Delete EC radiation field.	Decay data from J,ARI,39,1085,1988 (EXFOR A0467)
D0058.005	(34-SE-75,120.D,DG,0.265,0.58,EC,1.)	Delete EC radiation field.	Decay data from J,ARI,39,1085,1988 (EXFOR A0467)
D0058.006	(34-SE-72,8.4D,EC,1.)	Delete EC radiation field. Add the 834 keV gamma emission probability (0.8).	Decay gamma of daughter (72As) measured.
D0058.007	(34-SE-72,8.4D,EC,1.)	Delete EC radiation field. Add the 834 keV gamma emission probability (0.8).	Decay gamma of daughter (72As) measured.
D0073.002	(32-GE-68,,EC)	Delete this DECAY-DATA record.	Decay gamma of daughter (68Ga) measured.
D0166.003	(48-CD-105,55.MIN,DG,962.,,DG,1302.,,DG,1693.,,B+,,EC)	Keep half-life only.	
D0166.004	(48-CD-104,57.MIN,DG,84.,,DG,709.,,DG,559.,,B+,,EC)	Keep half-life only.	

D0166.005	(48-CD-109,453.D,EC)	Keep half-life only.	
D0166.006	(47-AG-105,41.D,DG,345.,,DG,280.,,DG,443.,,B+.,,EC)	Keep half-life only.	
D0166.007	(47-AG-106-M,8.3D,DG,512.,,DG,1046.,,DG,717.,,EC)	Keep half-life only.	
D0502.002	(53-I-120-G,81.MIN,DG,1523.,0.112,B+.,0.56,EC.,0.44)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.
D0502.003	(53-I-121,2.12HR,DG,212.2,0.743,B+.,0.13,EC.,0.87)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.
D0502.004	(53-I-123,13.27HR,DG,159.,0.833,EC.,1.)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.
D0502.005	(53-I-124,4.18D,DG,602.7,0.63,B+.,0.22,EC.,0.78)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.
D0502.006	(53-I-125,59.4D,DG,35.5,0.067,EC.,1.)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.
D0502.007	(53-I-126,13.11D,DG,388.6,0.341,B-.,0.34,B+/EC.,0.563)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.
D0502.008	(53-I-128,24.99MIN,DG,442.9,0.17,B-.,0.931,B+/EC.,0.069)	Delete all radiation fields.	Not clear if all gamma lines in Table 1 were used for data reduction.

D0503.002	(35-BR-75,1.6HR,DG,141.,0.066,DG,286.6,0.88,B+,1.7,0.76,EC,,0.24)	Delete B+ and EC radiation fields.	
D0503.003	(35-BR-76,16.2HR,DG,559.,0.74,DG,657.,0.159,DG,1853.7,0.147,B+,3.7,0.58,EC,,0.42)	Delete B+ and EC radiation fields.	
D0503.004	(35-BR-77,57.04HR,DG,238.9,0.23,DG,520.0,0.224,DG,297.215,0.0416,EC,,0.99)	Delete EC radiation field.	
D0547.003	(29-CU-64,12.7HR,B+,,0.385,B+,,0.18,EC,,0.435)	Replace the radiation fields with DG,1345.84,0.00473.	
D0762.002	(31-GA-67,78.3HR,EC,,1.,XR,8.64/9.57)	Delete EC radiation field.	
D4209.003	(59-PR-140,,B+/EC,,0.6)	B+/EC,,0.6 -> AR,511.,1.12	
F1220.002	(11-NA-22,2.6YR,EC,,0.11,DG)	Ok. But add RAD-DET=(11-NA-22,DG).	Gamma intensity not given but EC probability given.
F1220.003	(11-NA-22,2.6YR,EC,,0.11,DG)	Ok. But add RAD-DET=(11-NA-22,DG).	Gamma intensity not given but EC probability given.
F1220.004	(11-NA-22,2.6YR,EC,,0.11,DG)	Ok. But add RAD-DET=(11-NA-22,DG).	Gamma intensity not given but EC probability given.
F1220.005	(25-MN-52-G,6.0D,B+,,,EC,,0.65)	Ok. But add RAD-DET=(25-MN-52-G,B+).	Beta+ intensity not given but EC probability given.

F1220.006	(25-MN-52-G,6.0D,B+,,EC,,0.65)	Ok. But add RAD-DET=(25-MN-52-G,B+).	Beta+ intensity not given but EC probability given.
F1220.007	(27-CO-55,18.2HR,EC,,0.40)	Add B+. Add RAD-DET=(27-CO-55,B+).	Beta+ intensity not given but EC probability given.
F1220.008	(27-CO-55,18.2HR,EC,,0.40)	Add B+. Add RAD-DET=(27-CO-55,B+).	Beta+ intensity not given but EC probability given.
F1220.009	(27-CO-55,18.2HR,EC,,0.40)	Add B+. Add RAD-DET=(27-CO-55,B+).	Beta+ intensity not given but EC probability given.
F1220.010	(31-GA-66,9.45HR,B+,4500,,EC,,0.40)	Ok	Beta+ intensity not given but EC probability given.
F1220.011	(31-GA-66,9.45HR,B+,4500,,EC,,0.40)	Ok	Beta+ intensity not given but EC probability given.
F1220.012	(31-GA-66,9.45HR,B+,4500,,EC,,0.40)	Ok	Beta+ intensity not given but EC probability given.
F1221.001	(30-ZN-65,240.D,EC)	Delete EC.	
F1240.001	(48-CD-109,416.D,EC,,,DG,88.)	Delete EC radiation field.	
F1354.011	(46-PD-100,4.D,EC)	Ok?	
F1354.015	(46-PD-100,4.D,EC)	Ok?	
O0299.028	(23-V-48,16.D,B+,,0.48,EC,,0.42)	B+,,0.48 -> B+,,0.58 (c.f. O0299.026)	
O0299.032	(25-MN-52-G,6.3D,B+,,0.35,EC,,0.65)	Ok?	
O0299.035	(26-FE-52-G,8.3HR,B+,,0.4,EC,,0.6)	Ok?	
O0319.005	(63-EU-152-M1,9.2HR,DG,,,B-,,EC)	Ok?	Beta spectroscopy with magnetic analyzer
O0319.015	(63-EU-152-M1,9.2HR,B-,,EC)	Ok?	Beta spectroscopy with magnetic analyzer



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O0468.013	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555,,	Ok	Decay data obtained by the same work but published separately.
O0468.014	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260,,	Ok	Decay data obtained by the same work but published separately.
O0468.015	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511,,	Ok	Decay data obtained by the same work but published separately.
O0468.037	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555,,	Ok	Decay data obtained by the same work but published separately.
O0468.038	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260,,	Ok	Decay data obtained by the same work but published separately.
O0468.039	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511,,	Ok	Decay data obtained by the same work but published separately.
O0468.040	(53-I-121,2.12HR,B+,,0.09,EC,,0.91,DG,135,,	Ok	Decay data obtained by the same work but published separately.
O0468.046	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555,,	Ok	Decay data obtained by the same work but published separately.
O0468.047	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260,,	Ok	Decay data obtained by the same work but published separately.

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O0468.048	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511.,,	Ok	Decay data obtained by the same work but published separately.
O0468.049	(53-I-121,2.12HR,B+,,0.09,EC,,0.91,DG,135.,,	Ok	Decay data obtained by the same work but published separately.
O0468.068	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555.,,	Ok	Decay data obtained by the same work but published separately.
O0468.069	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260.,,	Ok	Decay data obtained by the same work but published separately.
O0468.070	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511.,,	Ok	Decay data obtained by the same work but published separately.
O0468.071	(53-I-121,2.12HR,B+,,0.09,EC,,0.91,DG,135.,,	Ok	Decay data obtained by the same work but published separately.
O0468.073	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555.,,	Ok	Decay data obtained by the same work but published separately.
O0468.074	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260.,,	Ok	Decay data obtained by the same work but published separately.
O0468.075	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511.,,	Ok	Decay data obtained by the same work but published separately.
O0468.076	(53-I-121,2.12HR,B+,,0.09,EC,,0.91,DG,135.,,	Ok	Decay data obtained by the same work but published separately.

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O0468.078	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555,,	Ok	Decay data obtained by the same work but published separately.
O0468.079	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260,,	Ok	Decay data obtained by the same work but published separately.
O0468.080	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511,,	Ok	Decay data obtained by the same work but published separately.
O0468.081	(53-I-121,2.12HR,B+,,0.09,EC,,0.91,DG,135,,	Ok	Decay data obtained by the same work but published separately.
O0468.085	(53-I-118-G,13.9MIN,B+,,0.54,EC,,0.46,DG,555,,	Ok	Decay data obtained by the same work but published separately.
O0468.086	(53-I-119,19.5MIN,B+,,0.51,EC,,0.49,DG,260,,	Ok	Decay data obtained by the same work but published separately.
O0468.087	(53-I-120-G,1.35HR,B+,,0.46,EC,,0.54,AR,511,,	Ok	Decay data obtained by the same work but published separately.
O0468.088	(53-I-121,2.12HR,B+,,0.09,EC,,0.91,DG,135,,	Ok	Decay data obtained by the same work but published separately.
O0542.002	((12.)18-AR-37,34.4D,EC,,1.)	Ok?	Add "low-level beta-counter" under DETECTOR of 001.
O0542.013	(18-AR-37,34.4D,EC,,1.0)	Ok?	Add "low-level beta-counter" under DETECTOR of 001.

O0665.003	(39-Y-91-M,50.MIN,EC,511.,0.95)	EC,511.,0.95 -> DG,551.,0.95 (IT gamma!)	
O0665.005	(39-Y-91-M,50.MIN,EC,511.,0.95)	EC,511.,0.95 -> DG,551.,0.95 (IT gamma!)	
O2104.002	(60-ND-141,2.5HR,EC,38.)	EC,38. -> XR,38.	K X-ray detected
P0094.002	(49-IN-111-G,2.84D,EC)	Delete EC.	Add "thin-window beta-counter" under DETECTOR of 001.
T0121.002	(74-W-181,145.D,EC,,1.0)	EC,,1.0 -> XR	
<b>Subentry #</b>	<b>DECAY-MON record</b>	<b>My suggestion</b>	<b>Additional remark</b>
12595.001	(25-MN-54,314.D,EC)	Delete EC.	
O1016.001	(30-ZN-63,38.1MIN,B-,0.93,EC,,0.07,DG,669.8,0.084,	Delete B- and EC radiation fields.	Typical mistake ( $\beta$ and/or EC branch with adopted $E_\gamma$ and $I_\gamma$ in table)
O1016.001	(30-ZN-62,9.23HR,EC,,0.931,B-,0.069,DG,548.4,0.152,	Delete this DECAY-DATA and corresponding MONITOR.	Not used in proton flux determination.