

Memo CP-D/120

23 February 1984

To: Distribution

From: M. Lammer and H.D. Lemmel

M. Lammer *H.D. Lemmel*

Subject: Exfor "Decay-Flag": Repetition of column headings

For many fission products, decay data must be considered not only for the product nucleus itself but also for the precursor nucleus. This can be handled conveniently by giving in the DATA table two columns headed DECAY-FLAG. An example will be given in entry 30639 to be transmitted with the next TRANS tape.

Accordingly, we request to add in the Manual on page 5.5 item 4. (repetition of keyword FLAG):

"Similarly, the data-heading keyword DECAY-FLAG may be repeated when more than one DECAY-DATA entry refers to a line in the DATA table."

Clearance: J.J. Schmidt

J.J. Schmidt

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ENTRY 30639 821206 ML
SUBENT 30639001 821206
BIB 13
TITLE 119
EXPERIMENTAL RESULTS OF MASS DISTRIBUTION OF U-238
FISSION INDUCED BY 14 MEV NEUTRONS
(S.IAROCZY,P.RAICS,S.NAGY,L.KOEVER,I.HAMVAS,E.GERMAN)
(AHUNKOS)
AUTHOR (J,AK,18,317,76) FINAL DETAILED RESULTS
INSTITUTE (P,INUC(SEC)-61,53,7710) BRIEF,GRAPH ONLY
REFERENCE (S.IAROCZY,P.RAICS,S.NAGY,L.KOEVER,I.HAMVAS,E.GERMAN)
SAMPLE NATURAL URANIUM,UZ08.DETAILED FOR INDIVIDUAL SAMPLES OF
THE 3 EXPERIMENTS ARE GIVEN IN SUBENTRIES 2,3,4,7,8.
FACILITY NO INFORMATION
METHOD DIRECT GAMMA-SPECTROMETRY OF FISSION PRODUCTS
PART-DIET (DG)
CORRECTION GAMMA SPECTRA WERE CORRECTED FOR RANDOM PULSE FILE-UP
AND COINCIDENCES.
CORRECTIONS FOR GAMMA RAY ATTENUATION WERE DETERMINED
EXPERIMENTALLY USING URANIUM AND THORIUM SAMPLES OF
DIFFERENT THICKNESSES.
DECAY-DATA FOR SEVERAL FISSION PRODUCTS,FISSION YIELDS ARE GIVEN
AS RESULTS FROM MEASUREMENTS OF INDIVIDUAL GAMMA-LINES
OF THE SAME NUCLEIDE SEPARATELY. FOR SUCH NUCLEIDES
SEVERAL DECAY-DATA LINES ARE GIVEN, EACH SHOWING THE
GAMMA-LINE MEASURED, OR THE HALF-LIFE ONLY IF USED FOR
THE ANALYSIS OF THE DAUGHTER PRODUCT.
((1.)34-SE-83-0,22.5MIN,DG,356.6,0.686)
((2.)36-NR-85-M,4.48HR,DG,151.3,0.761)
((3.)36-NR-87,76.0MIN,DG,402.7,0.463)
((4.)36-NR-89,2.80HR,DG,196.1,0.272)
((5.)36-NR-89,3.16MIN,DG,220.9,0.25)
((6.)37-RB-89,15.2MIN,DG,1031.9,0.641)
((7.)38-SR-91,9.48HR) FOR DAUGHTER Y-91-M
((8.)38-SR-91,9.48HR,DG,653.0,0.111)
((9.)38-SR-91,9.48HR,DG,749.8,0.231)
((10.)38-SR-91,9.48HR,DG,1024.3,0.334)
((11.)39-Y-91-M,4.7MIN,DG,555.6,0.558)
((12.)39-Y-91-M,4.7MIN,DG,555.6,0.558)
((13.)39-SR-92,2.71HR,DG,1383.9,0.9)
((14.)39-SR-93,7.5MIN,DG,590.9,0.61)SEE FLAG (4.) IN
SUBENTRY 3
((15.)39-Y-93,10.2HR,DG,267.0,0.064)
((16.)40-ZR-95,62.5D) FOR DAUGHTER NB-95
((17.)40-ZR-95,62.5D,DG,724.2,0.438)
((18.)40-ZR-95,62.5D,DG,756.7,0.544)
((19.)41-NB-95-0,35.1D,DG,765.8,0.998)
((20.)40-ZR-97,16.8HR) FOR DAUGHTER NB-97-0,M
((21.)41-NB-97-0,73.6MIN,DG,658.2,0.981)
((22.)41-NB-97-M,54.6SEC,DG,743.4,0.933)
((23.)42-MO-99,66.02HR) FOR DAUGHTER TC-99-M
((24.)42-MO-99,66.02HR,DG,181.0,0.0959)
((25.)42-MO-99,66.02HR,DG,739.6,0.150)
((26.)43-TC-99-M,6.02HR,DG,140.4,0.810)
((27.)42-MO-101,14.6MIN) FOR DAUGHTER TC-101
((28.)42-MO-101,14.6MIN,DG,590.8,0.194)
((29.)43-TC-101,14.6MIN,DG,306.8,0.875)
((30.)44-RU-103,39.6D,DG,497.1,0.89)
((31.)43-TC-104,18.0MIN,DG,357.8,0.844)
((32.)44-RU-105,4.44HR) FOR DAUGHTER RH-105-M+G
((33.)44-RU-105,4.44HR,DG,724.2,0.49)
((34.)45-RH-105-G,35.5HR,DG,319.2,0.192)INCLUDESRH-105M3063900100059
((35.)44-RU-106,359.D)
((36.)45-RH-106-G,DG,621.8,0.098)EQUILIBRIUM W. RU-1063063900100061
((37.)46-PD-112,20.1HR) DAUGHTER AG-112 MEASURED
((38.)47-AG-112,3.13HR,DG,617.4,0.429)
((39.)48-CD-115-G,53.5HR) DAUGHTER IN-115-M MEASURED
((40.)49-IN-115-M,4.50HR,DG,336.2,0.470)
((41.)51-SR-125,3.72YR,DG,427.9,0.304)

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((42.))51-SB-125,3.72YR,DG,600.6,0.181)
 ((43.))51-SB-127,3.80D,DG,473.2,0.250)
 ((44.))51-SB-127,3.80D,DG,684.9,0.357)
 ((45.))52-TE-129-M,33.4D,DG,459.6,0.090)
 ((46.))51-SB-131,23.0MIN)
 ((47.))52-TE-131-G,25.0MIN,DG,149.8,0.677)
 ((48.))52-TE-131-M,30.0HR,DG,149.8,0.364)
 ((49.))53-I-131,8.041D,DG,364.5,0.820)
 ((50.))52-TE-132,78.HR) FOR DAUGHTER I-132
 ((51.))52-TE-132,78.HR,DG,228.2,0.883)
 ((52.))53-I-132-G,2.285HR,DG,522.6,0.156)
 ((53.))53-I-132-G,2.285HR,DG,630.2,0.135)
 ((54.))53-I-132-G,2.285HR,DG,667.7,0.980)
 ((55.))53-I-132-G,2.285HR,DG,772.7,0.750)
 ((56.))53-I-132-G,2.285HR,DG,954.6,0.167)
 ((57.))53-I-133-G,20.8HR,DG,539.5,0.669)
 ((58.))53-I-133-G,20.8HR,DG,875.3,0.048)
 ((59.))52-TE-134,42.MIN) FOR DAUGHTER I-134
 ((60.))52-TE-134,42.MIN,DG,210.8,0.222)
 ((61.))53-I-134-G,52.6MIN,DG,847.0,0.954) INCLUDES I-134M3043900100086
 ((62.))53-I-134-G,52.6MIN,DG,884.1,0.653) INCLUDES I-134M3043900100087
 ((63.))53-I-135,6.585HR) FOR DAUGHTER XE-135
 ((64.))53-I-135,6.585HR,DG,1269.5,0.266)
 ((65.))54-XE-135-G,9.17HR,DG,249.7,0.903) INCL. XE-135M
 ((66.))55-CS-137,30.1YR)
 ((67.))56-BA-137-M, DG,661.6,0.85) EQUILIBRIUM W. CS-1373063900100092
 ((68.))54-XE-138,14.2MIN) FOR DAUGHTER CS-138-G
 ((69.))55-CS-138-G,32.2MIN,DG,1435.7,0.750)
 ((70.))56-BA-139,93.3MIN,DG,165.8,0.218)
 ((71.))56-BA-140,12.79D) FOR DAUGHTER LA-140
 ((72.))56-BA-140,12.79D,DG,537.3,0.240)
 ((73.))57-LA-140,40.23HR,DG,815.8,0.223)
 ((74.))57-LA-140,40.23HR,DG,1526.2,0.933)
 ((75.))57-LA-140,40.23HR,DG,487.0,0.46)
 ((76.))58-CE-141,32.53D,DG,145.4,0.48)
 ((77.))57-LA-142,92.4MIN,DG,641.2,0.475)
 ((78.))58-CE-143,33.0HR,DG,293.2,0.426)
 ((79.))58-CE-144,284.4D,DG,133.5,0.107)
 ((80.))58-CE-146,14.2MIN,DG,218.3,0.214)
 ((81.))60-ND-147,10.99D,DG,531.0,0.131)
 ((82.))60-ND-149,1.73HR,DG,211.3,0.23)
 THE WORK CONSISTS OF 3 DIFFERENT EXPERIMENTS. RESULTS
 ARE GIVEN FOR EACH EXPERIMENT AS WELL AS WEIGHTED
 AVERAGES AND DEDUCED CHAIN AND FRACTIONAL YIELDS.
 SUBENT 02-EXPERIMENT 1 (1969), CUMULATIVE YIELDS
 SUBENT 03-EXPERIMENT 2 (1971), CUMULATIVE YIELDS
 SUBENT 04-EXPERIMENT 3 (1973), CUMULATIVE YIELDS
 SUBENT 05-WEIGHTED AVERAGE OF CUMULATIVE YIELDS
 SUBENT 06-CHAIN YIELDS
 SUBENT 07-EXPERIMENT 1 (1969), INDEPENDENT YIELDS
 SUBENT 08-EXPERIMENT 2 (1971), INDEPENDENT YIELDS
 SUBENT 09-WEIGHTED AVERAGE OF INDEPENDENT YIELDS
 SUBENT 10-FRACTIONAL INDEPENDENT YIELDS
 DATA COMPILED FROM TABLES II AND III OF FIRST REFERENCE
 (821105C) ML.
 119

COMMENT
 STATUS
 HISTORY
 ENDBIB
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 (92-U-238(N,F)ELEM/MASS,CUM,F) LONG LIVED PRODUCTS
 (49) FIRST EXPERIMENT
 (13-AL-27(N,A)11-NA-24,(SIG) MEASURED WITH GE(LI) DET.
 (H.VONACH+J.ZP,273,155,70)
 (ASSUM,92-U-238(N,F),(SIG)M.G.SOMERBY+,AERE-R-7273,19733063900200007
 2640 GRAMS,THICKNESS=1.47 MM OR 921.4 MG/CM**2,
 DIAMETER=19.1 MM.
 NEUTRON FLUX=(7.80+-0.36)*10**6 N/(S*CM**2) RANDOM
 ERROR,OR +-3 PERCENT SYSTEMATIC ERROR
 IRRADIATION TIME=29.25 HOURS
 NUMBER OF FISSION EVENTS = 5.41*10**9
 (GELI).27 CCM, 4000 CHANNEL PULSE HEIGHT ANALYSER,
 RESOLUTION AT 662 KEV = 7.3 KEV.
 47 GAMMA SPECTRA WERE RECORDED AND ANALYSED BY THE
 COMPUTER PROGRAM SIRIUS,BASED ON A LEAST SQUARES
 FITTING PROCEDURE.COMPLETE DECAY CURVES FROM 1.4 HRS.
 TO 149 DAYS AFTER IRRADIATION WERE ANALYSED.
 ALL ERRORS QUOTED ARE ONE STANDARD DEVIATION. THEY
 INCLUDE CONTRIBUTIONS FROM PEAK AREA AND DECAY CURVE
 ANALYSIS,GAMMA-RAY INTENSITIES,DETECTOR EFFICIENCY
 AND RANDOM ERROR OF THE NEUTRON FLUX,NOT INCLUDED IS
 THE SYSTEMATIC 3 PERCENT UNCERTAINTY IN THE NEUTRON
 FLUX DETERMINATION,WHICH SHOULD BE ADDED WHEN
 CONSIDERING ABSOLUTE FISSION YIELDS.
 PRELIMINARY RESULTS OF THIS FIRST EXPERIMENT WERE
 REPORTED IN EARLIER PUBLICATIONS AND COMPILED IN
 EXFOR30267,HOWEVER, THE VALUES ARE EITHER ALTERED IN
 THE FINAL PUBLICATION OR WITHDRAWN IF THEY ARE
 SUPERSEDED BY THE SECOND AND/OR THIRD EXPERIMENT WITH
 MUCH BETTER DETECTOR RESOLUTION.
 (1.) FOR THE CALCULATION OF THE YIELD OF THE FISSION
 PRODUCT GIVEN THE HALF-LIFE OF ITS PRECURSOR IS
 ALSO USED,THEN THE FIRST DECAY-FLAG REFERS TO THE
 FISSION PRODUCT,THE SECOND ONE TO ITS PRECURSOR.
 (2.) THE YIELD OF THE FISSION PRODUCT GIVEN IS DERIVED
 FROM A GAMMA-LINE OF ITS DAUGHTER PRODUCT OFTEN IN
 EQUILIBRIUM,THEN THE FIRST DECAY-FLAG REFERS TO
 THE FISSION PRODUCT (HALF-LIFE ONLY), THE SECOND
 DECAY FLAG TO THE DAUGHTER PRODUCT MEASURED.
 (3.) THE WEIGHTED AVERAGE OF ALL YIELD DATA FOR TE-132
 LISTED ABOVE THIS VALUE.
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 EN-ERR MONIT MONIT-ERR ASSUM
 MEV MB MB MB
 0.19 117.6 0.5 1170.8
 3
 8
 ISOMER DATA DATA-ERR DECAY-FLAG
 35
 38. 3.66 0.40 9.
 38. 3.36 0.59 10.
 38. 4.37 0.23 11.
 38. 3.34 0.18 8.
 2. 3.52 0.19 13.
 38. 5.07 0.49 16.
 40. 5.02 0.25 20.
 19. 2.
 97. 40.

SURENT
 RIB
 REACTION
 EXP-YEAR
 MONITOR
 MONIT-REF
 ASSUMED
 SAMPLE
 N-SOURCE
 DETECTOR
 ANALYSIS
 ERR-ANALYS
 COMMENT
 FLAG
 ENDBIS
 COMMON
 EN
 MEV
 14.40
 ENDCOMMON
 DATA
 MASS
 DECAY-FLAG
 NO-DIM
 NO-DIM
 NO-DIM
 91.
 91.
 91.
 12.
 92.
 95.
 19.
 97.

21.	5.41	0.29	20.	3063900200068
97.	5.91	1.22	25.	3063900200069
22.	6.07	0.33	23.	3063900200070
99.	4.63	0.26	30.	3063900200071
42.	3.45	0.19	33.	3063900200072
2.	2.99	0.19	34.	3063900200073
44.	1.023	0.085	37.	3063900200074
44.	1.401	0.155	44.	3063900200075
45.	4.08	0.21	49.	3063900200076
32.	4.66	0.27	51.	3063900200077
112.	4.43	0.39	50.	3063900200078
38.	4.41	0.40	50.	3063900200079
127.	4.65	0.24	50.	3063900200080
131.	4.53	0.26	50.	3063900200081
132.	4.71	0.26	50.	3063900200082
52.	4.600	0.117	57.	3063900200083
52.	6.13	0.32	61.	3063900200084
52.	6.34	0.84	64.	3063900200085
53.	5.25	0.29	63.	3063900200086
1.	5.04	0.29	65.	3063900200087
53.	5.34	0.30	72.	3063900200088
2.	4.81	0.29	71.	3063900200089
54.	4.89	0.27	71.	3063900200090
1.	4.32	0.22	71.	3063900200091
56.	4.39	0.24	75.	3063900200092
2.	4.44	0.32	76.	3063900200093
1.	4.46	0.30	78.	3063900200094
58.	3.60	0.19		3063900200095
58.				3063900200096
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