BIB/BIB link by pointer

(N. Otsuka, V. Zerkin, 2024-04-16, CP-D/1106)

The current EXFOR Formats Manual restricts use of pointers to the following five cases:

1. Multiple reaction formalism
2. Vector common data (*abolished*)
3. BIB/DATA link
4. BIB/BIB link
5. Complemental results (also known as alternative results)

In the case 1, 3 and 5, several data sets are compiled together in a subentry, and each dataset is defined by its own REACTION code string. These cases can be implemented in a database system without a pointer by separating the subentry to independent datasets,

Example (two datasets defined by two REACTION codes in a subentry)**:**

Subentry X1234.012

```
REACTION  1(78-PT-0(A,X)80-HG-195-G,,SIG)
          2(78-PT-0(A,X)80-HG-195-M,,SIG)
DECAY-DATA1(80-HG-195-G,10.5HR,DG,585.1,0.02)
          2(80-HG-195-M,41.6HR,DG,261.8,0.31)
…
EN          DATA      1DATA-ERR  1DATA      2DATA-ERR  2
MEV         MB         MB         MB         MB
28.4         9.8        0.2        19.9       0.1
19.5         0.20       0.04        0.32      0.05
```

…

can be reorganized to two datasets without pointers:

Dataset X1234.012.1

```
REACTION   (78-PT-0(A,X)80-HG-195-G,,SIG)
DECAY-DATA (80-HG-195-G,10.5HR,DG,585.1,0.02)
…
EN          DATA       DATA-ERR
MEV         MB         MB
28.4         9.8        0.2
19.5         0.20       0.04
…
```

Dataset X1234.012.2

```
REACTION   (78-PT-0(A,X)80-HG-195-M,,SIG)
DECAY-DATA (80-HG-195-M,41.6HR,DG,261.8,0.31)
…
EN          DATA       DATA-ERR
MEV         MB         MB
28.4         19.9       0.1
19.5          0.32      0.05
```

However, BIB/BIB links do not have any connection with DATA section, therefore they cannot be used together with multiple reaction formalism (BIB/DATA links).

Example. *Titles, authors and references coded with the pointer A and B irrelevant to the cross section values coded under DATA with the pointer 1 and 2:*

```
TITLE      AIsomeric ratios of 195Hg
           BPt(a,x)195Hg isomeric ratios
AUTHOR     A(N.Otuka, S.Takacs)
           B(N.Otuka, M.Aikawa)
REFERENCE  A(J,ABC,12,345,2026)
           B(C,2025MADRID,,123,2025)
            Preliminary data in tables
INSTITUTE   (3ZZZIAE,3HUNDEB,2JPNHOK)

….
REACTION   1(78-PT-0(A,X)80-HG-195-G,,SIG)
           2(78-PT-0(A,X)80-HG-195-M,,SIG)
DECAY-DATA1(80-HG-195-G,10.5HR,DG,585.1,0.02)
           2(80-HG-195-M,41.6HR,DG,261.8,0.31)
…
EN          DATA       1DATA-ERR  1DATA       2DATA-ERR  2
MEV         MB          MB         MB          MB
28.4         9.8         0.2        19.9        0.1
19.5         0.20        0.04        0.32       0.05
```

To solve these problems, we propose the followings:

1. Forbid BIB/BIB links
2. Introduce new free text identifiers *#title:* and *#author:* to the REFERENCE with which compilers may provide the title and authors of a secondary reference if they are important. The free text belonging to these identifiers should not be followed by additional free text.

Note. Similar extension was introduced for coding DOI using *#doi:* (see WP2009-25)

Example:

```
TITLE      Isomeric ratios of 195Hg
AUTHOR     (N.Otuka, S.Takacs)
REFERENCE  (J,ABC,12,345,2026)
           (C,2025MADRID,,123,2025)
           Preliminary data in tables
           #title: Pt(a,x)195Hg isomeric ratios
           #author: N.Otuka, M.Aikawa
INSTITUTE   (3ZZZIAE,3HUNDEB,2JPNHOK)
….
REACTION   1(78-PT-0(A,X)80-HG-195-G,,SIG)
           2(78-PT-0(A,X)80-HG-195-M,,SIG)
DECAY-DATA1(80-HG-195-G,10.5HR,DG,585.1,0.02)
           2(80-HG-195-M,41.6HR,DG,261.8,0.31)
…
EN          DATA       1DATA-ERR  1DATA       2DATA-ERR  2
MEV         MB          MB         MB          MB
28.4         9.8         0.2        19.9        0.1
19.5         0.20        0.04        0.32       0.05
```

Addition to WP2024-28:

EXFOR BIB/BIB links /without Pointers in Subent-N/

by V.Zerkin, 2024-04-17

##	#Entry	Entry	KeyWord	Pointer	Code	FreeText
1	1	10839	DECAY-MON	1	27-CO-60-M,10.4MIN,DG,133.25	
2		10839	DECAY-MON	2	79-AU-199,3.14D,DG,158.375,,DG,208.201	
3		10839	DECAY-MON	3	71-LU-177-G,6.7D,DG,208.36,,DG,112.95	
4		10839	MONITOR	1	27-CO-59(N,G)27-CO-60,,SIG,,MXW	
5		10839	MONITOR	2	79-AU-198(N,G)79-AU-199,,SIG,,MXW	
6		10839	MONITOR	3	71-LU-176(N,G)71-LU-177,,SIG,,MXW	Fast flux
7	2	12313	MONITOR	1	27-CO-59(N,G)27-CO-60,,SIG	
8		12313	MONITOR	2	27-CO-59(N,G)27-CO-60,,RI	
9	3	12635	MONITOR	1	79-AU-197(N,G)79-AU-198,,SIG	
10		12635	MONITOR	2	79-AU-197(N,G)79-AU-198,,RI	
11	4	12976	MONITOR	1	41-NB-93(N,2N)41-NB-92-M,,SIG	
12		12976	MONITOR	2	26-FE-54(N,P)25-MN-54,,SIG	FLUENCE MONITOR
13	5	13829	ANALYSIS	G		amma-ray lines were identified by their relative
14	6	13963	MONIT-REF	1	(MONIT)10668001,A.B.McDonald+,J,NP/A,281,325,1977	Authors used 190 +- 18 mu-b citing McDonald, but
15		13963	MONIT-REF	2	(MONIT),S.Fiarman,J,NP/A,251,1,1975	
16		13963	MONITOR	1	8-O-16(N,G)8-O-17,,SIG	
17		13963	MONITOR	2	1-H-2(N,G)1-H-3,,SIG	
18	7	13984	SAMPLE	P		lutonium sample, 3.456 cm in diameter, 0.2 cm thick,
19	8	14092	SAMPLE	T		arget mat. Purity (%) ppm Mn Typical weight (g)
20	9	14222	FACILITY	1	VDG,2GERKFK	
21		14222	FACILITY	2	VDG,2GERTUE	
22		14222	INC-SOURCE	1	P-LI7	Neutrons were produced via the 7Li(p,n)7Be

23		14222	INC-SOURCE	2	P-T	at Univ. Tuebingen 3.75 MV Van de Graaff
24	10	14273	MONIT-REF	1	,,3,ENDF/B-VII.0,9228,2006	
25		14273	MONIT-REF	2	,,3,ENDF/B-VII.0,9237,2006	
26		14273	MONITOR	1	92-U-235(N,F),,SIG	
27		14273	MONITOR	2	92-U-238(N,F),,SIG	
28	11	14291	DECAY-MON	1	79-AU-196,6.1669D,DG,355.73,0.0087	
29		14291	DECAY-MON	2	11-NA-24,14.997HR,DG,1368.626,0.999936	
30		14291	MONIT-REF	1	,J.Martinez-Rico,R,INDC(NDS)-285/G,1993	
31		14291	MONIT-REF	2	,H.Vonach,R,NEANDC-311,75,1992	= Report INDC(SEC)-101
32		14291	MONITOR	1	79-AU-197(N,2N)79-AU-196,,SIG	
33		14291	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
34	12	14330	DECAY-MON	1	79-AU-196,6.169D,DG,355.73,0.87	
35		14330	DECAY-MON	2	11-NA-24,14.99HR,DG,1368.62,0.99	
36		14330	MONIT-REF	1	,K.I.Zolotarev,R,INDC(NDS)-0526,2008	Au(n,2n)
37		14330	MONIT-REF	2	,K.I.Zolotarev,R,INDC(NDS)-0546,2009	Al(n,a)
38		14330	MONITOR	1	79-AU-197(N,2N)79-AU-196,,SIG	
39		14330	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
40	13	14358	DECAY-MON	1	79-AU-196-G,6.17D,DG,355.7,0.87	
41		14358	DECAY-MON	2	11-NA-24,14.997HR,DG,1368.626,0.999936	
42		14358	MONITOR	1	79-AU-197(N,2N)79-AU-196,,SIG	Monitor cross section data from author
43		14358	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	this reaction was used
44	14	14441	DECAY-MON	1	29-CU-64,0.52921D,DG,1345.8,0.00475	
45		14441	DECAY-MON	2	26-FE-59,44.495D,DG,1099.2,0.565,	
46		14441	DECAY-MON	3	27-CO-60-G,1925.28D,DG,1173.2,0.999	
47		14441	DECAY-MON	4	79-AU-198-G,2.6948D,DG,214.9,0.773	

48		14441	DECAY-MON	5	25-MN-54,312.12D,DG,834.8,1.00	
49		14441	DECAY-MON	6	25-MN-56,0.10745D,DG,846.8,0.989,	
50		14441	DECAY-MON	7	11-NA-24,0.62487D,DG,1368.6,1.0,	
51		14441	DECAY-MON	8	21-SC-47,3.3492D,DG,159.4,0.683	
52		14441	DECAY-MON	9	21-SC-48,1.820D,DG,983.5,1.0,	
53		14441	MONITOR	1	29-CU-63(N,G)29-CU-64,,SIG	
54		14441	MONITOR	2	26-FE-58(N,G)26-FE-59,,SIG	
55		14441	MONITOR	3	27-CO-59(N,G)27-CO-60,,SIG	
56		14441	MONITOR	4	79-AU-197(N,G)79-AU-198,,SIG	
57		14441	MONITOR	5	26-FE-54(N,P)25-MN-54,,SIG	
58		14441	MONITOR	6	26-FE-56(N,P)25-MN-56,,SIG	
59		14441	MONITOR	7	13-AL-27(N,A)11-NA-24,,SIG	
60		14441	MONITOR	8	22-TI-47(N,P)21-SC-47,,SIG	
61		14441	MONITOR	9	22-TI-48(N,P)21-SC-48,,SIG	
62	15	21141	MONITOR	1	29-CU-63(N,2N)29-CU-62,,SIG	469+-10 mb at 14.1 MeV.
63		21141	MONITOR	2	29-CU-65(N,2N)29-CU-64,,SIG	919+-30 mb at 14.1 MeV.
64	16	21563	MONITOR	1	92-U-238(N,G)92-U-239,,SIG	
65		21563	MONITOR	2	92-U-238(N,G)92-U-239,,RI,,RNV	Cut off at 0.5 eV.
66	17	21590	FACILITY	1	REAC	The Melusine reactor at the Laboratory was
67		21590	FACILITY	2	ACCEL	Sames Accelerator for the U-238 measurement.
68		21590	INC-SOURCE	1	REAC	Reactor neutrons with a fast (En>1 MeV) to
69		21590	INC-SOURCE	2	D-T	The Sames Accelerator produced a 300 keV
70		21590	INC-SPECT	1		Flux of 10**13 n/cm**2/sec .
71		21590	INC-SPECT	2		Flux 5*10**9 - 10**10 n/cm/sec.
72		21590	SAMPLE	1		-Uranyl nitrate in a sealed polythene sachet, enriched

73		21590	SAMPLE	2		-Natural uranium oxide UO3 in a sealed polythene sachet
74	18	21807	DECAY-MON	1	11-NA-24,14.98HR,DG	
75		21807	DETECTOR	2	CSICR	To detect the recoil protons.
76		21807	FACILITY	1	CCW,2AUSIRK	IRK accelerator. For the energy range 14
77		21807	FACILITY	2	VDG,2ZZZGEL	7 MV Van de Graaff accelerator of Geel.
78		21807	INC-SOURCE	1		Air-jet-cooled solid state Ti-t target.
79		21807	INC-SOURCE	2		Solid state target of tritium occluded in
80		21807	METHOD	1		.Measurements were done relative to Al-27(N,a)Na-24.
81		21807	METHOD	2		.Neutron fluences were determined by means of a
82		21807	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	Cross section data taken from evaluation
83		21807	MONITOR	2	1-H-1(N,EL)1-H-1,,SIG	
84	19	21839	DETECTOR	1	NAICR	SHIELDED NAI DETECTOR.
85		21839	DETECTOR	2		.BETA SPECTROMETER.
86		21839	DETECTOR	3	BPAIR	PAIR SPECTROMETER CONSISTING OF
87		21839	FACILITY	1	SPECC	CURVED CRYSTAL SPECTROMETER `GAMS`.
88		21839	FACILITY	2		.THE ILL BETA SPECTROMETER `BILL` WAS USED TO
89		21839	PART-DET	1	G	
90		21839	PART-DET	2	B-	CONVERSION ELECTRONS.
91		21839	PART-DET	3	G	
92		21839	SAMPLE	1		. 109 MILLI-G OXIDE CONFINED TO A THIN LAMINA
93		21839	SAMPLE	2		. 50 MILLI-G OXIDE POWDER DEPOSITED ONTO AN AL
94		21839	SAMPLE	3		. 48 MILLI-G OXIDE MOUNTED IN A 800 MILLI-G
95	20	21894	DECAY-MON	1	29-CU-62,9.8MIN,AR,511.	
96		21894	DECAY-MON	2	12-MG-27,9.5MIN,DG,842.	
97		21894	MONITOR	1	29-CU-63(N,2N)29-CU-62,,SIG	.IN MEASUREMENTS OF THE INDUCED ACTIVITY THE CU-SAMPLES

98		21894	MONITOR	2	13-AL-27(N,P)12-MG-27,,SIG	
99	21	21901	DECAY-MON	1	41-NB-92-M,10.15D,DG,934.53,.992	
100		21901	DECAY-MON	2	40-ZR-89-G,78.43HR,DG,909.20,.999	
101		21901	DECAY-MON	3	11-NA-24,15.02HR,DG,1368.63,1.000,DG,2754.10,.999	
102		21901	MONITOR	1	41-NB-93(N,2N)41-NB-92-M,,SIG	FOR FLUX MEASURM. AND
103		21901	MONITOR	2	40-ZR-90(N,2N)40-ZR-89-G,IND/M+,SIG	FOR DETERMINATION
104		21901	MONITOR	3	13-AL-27(N,A)11-NA-24,,SIG	
105	22	22006	INC-SOURCE	1	P-T	For energy range 1-3 MeV, resolution +-67 keV
106		22006	INC-SOURCE	2	P-LI7	For energies 0.5 - 0.9 MeV, resolution
107		22006	INC-SPECT	1		Neutron energy spread corresponding to 1 mg/cm**2
108		22006	INC-SPECT	2		Neutron flux with energy spread between 40 and 80 keV.
109	23	22019	MONITOR	1	28-NI-58(N,P)27-CO-58,,SIG,,FIS	
110		22019	MONITOR	2	49-IN-115(N,INL)49-IN-115-M,,SIG,,FIS	
111	24	22020	MONITOR	1	28-NI-58(N,P)27-CO-58,,SIG,,FIS	
112		22020	MONITOR	2	49-IN-115(N,INL)49-IN-115-M,,SIG,,FIS	
113	25	22147	DETECTOR	1	TELES,SOLST,SOLST	THE TRITONS AND ALPHA PARTICLES
114		22147	DETECTOR	2	SOLST	THE TOTAL NUMBER OF FISSION EVENTS WERE MONI-
115		22147	METHOD	1	RELFY	SEVERAL DAYS OF IRRADIATION WERE REQUIRED TO
116		22147	METHOD	2	FISCT	
117		22147	PART-DET	1	T	
118		22147	PART-DET	2	FF	
119	26	22166	DETECTOR	1	GE-IN	30% EFFICIENT, RESOLUTION 2.3 KEV FWHM AT
120		22166	DETECTOR	2	GE-IN	AS ABOVE, FOR TARGET 2.
121		22166	DETECTOR	3	BPAIR	USED FOR THE HIGH ENERGY (ABOVE 1.5 MEV) PART
122		22166	SAMPLE	1		. 290 MG ENRICHED 24-MG2P2O7, 24-MG ENRICHMENT 99.5%

123		22166	SAMPLE	2		. 298 MG OF 99.5% ENRICHED 24-MGO AND APPROX. 0.2 MG OF
124		22166	SAMPLE	3		. TARGET WITH SAME COMPOSITION AS TARGET 1.
125	27	22189	DETECTOR	1	SCIN	THIN 50 MICRON NE102A PLASTIC SCINTILLATOR FOR
126		22189	METHOD	1	ASSOP	ASSOCIATED ALPHAS
127	28	22281	MONIT-REF	2	,,3,ENDF/B-V,,1978	
128		22281	MONITOR	1	13-AL-27(N,P)12-MG-27,,SIG	- used for normalization
129		22281	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
130	29	22336	MONITOR	1	13-AL-27(N,X)2-HE-4,,SIG	
131		22336	MONITOR	2	28-NI-58(N,X)1-H-1,,SIG	
132	30	22422	DETECTOR	1	FISCH	Back-to-back double fission chamber with
133		22422	DETECTOR	2	BF3	The BF3 counter was of a cylindrical type, 50 mm
134		22422	MONITOR	1	92-U-235(N,F),,SIG	Above 1 keV
135		22422	MONITOR	2	5-B-10(N,A)3-LI-7,,SIG	Below 1 keV
136	31	22443	DECAY-MON	1	25-MN-56,2.58HR,DG,847.,0.9887	
137		22443	DECAY-MON	2	11-NA-24,15.0HR,DG,1368.,1.0	
138		22443	MONIT-REF	2	,H.VONACH,R,IAEA/TA-227,1983	First
139		22443	MONITOR	1	26-FE-56(N,P)25-MN-56,,SIG	
140		22443	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
141	32	22544	DETECTOR	A	PROPC	Proton detection for neutron flux measurement
142		22544	DETECTOR	B	SIBAR	Proton detection for H-2(D,P) reaction
143		22544	MONIT-REF	A	,J.C.Hopkins+,J,ND/A,9,137,1971	
144		22544	MONITOR	A	1-H-1(N,EL)1-H-1,,DA,P	(n,p) scattering cross
145		22544	MONITOR	B	1-H-2(D,P)1-H-3,,SIG	
146	33	22646	MONIT-REF	1	,N.Olsson+,C,94GATLIN,1,60,1994	
147		22646	MONIT-REF	2	,P.Staples+,J,BAP,40,962,1995	

148		22646	MONITOR	1	1-H-1(N,EL)1-H-1,,SIG	
149		22646	MONITOR	2	92-U-238(N,F),,SIG	
150	34	22656	FACILITY	1	VDG,2ZZZGEL	7-MV Van de Graaff accelerator,
151		22656	FACILITY	2	CYCLO,2GERJUL	Compact cyclotron CV-28,
152		22656	INC-SOURCE	1	D-T	1-H-3(D,N)2-He-4. Deuterons incident on a metal
153		22656	INC-SOURCE	2	D-D	1-H-2(D,N)2-He-3. 9-MeV deuterons incident on a
154	35	22666	CORRECTION	S		Monte Carlo simulated TOF spectra of the complete
155	36	22745	MONIT-REF	1	,A.B.SMITH+,R,ANL-NDM-115,1990	
156		22745	MONIT-REF	2	,H.CONDE+,R,INDC(SEC)-101,1992	
157		22745	MONITOR	1	49-IN-115(N,INL)49-IN-115-M,,SIG	
158		22745	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	
159	37	22763	MONIT-REF	1	,C.A.Uttley,R,IAEA-227,3,1983	
160		22763	MONIT-REF	2	,H.Vonach,R,IAEA-227,59,1983	References for neutron flux monitoring.
161		22763	MONITOR	1	1-H-1(N,EL)1-H-1,,DA	A proton recoil telescope,
162		22763	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	In addition, the activities from the 13-Al-27(N,A)-
163	38	22794	EXP-YEAR	1		Irradiation at Louvain:
164		22794	EXP-YEAR	2		Irradiation at Uppsala:
165		22794	FACILITY	1	CYCLO,2BLGLVN	CYCLONE (UCL)
166		22794	FACILITY	2	CYCLO,2SWDUPP	The Svedberg Laboratory (TSL)
167		22794	INC-SOURCE	1		Irradiation at Louvain:
168		22794	INC-SOURCE	2		Irradiation at Uppsala:
169		22794	INC-SPECT	1		Irradiation at Louvain:
170		22794	INC-SPECT	2		Irradiation at Uppsala:
171		22794	SAMPLE	1		Louvain: 5 meter from Li
172		22794	SAMPLE	2		Uppsala: 1.55 deg to proton beam, 192.0 cm from 7Li

173	39	22803	DECAY-MON	1	11-NA-24,14.9590HR,DG,1369.,1.0	Monit1
174		22803	DECAY-MON	2	12-MG-27,9.458MIN,DG,843.76,0.718	Monit2
175		22803	DECAY-MON	3	27-CO-58-G,70.86D,DG,810.78,0.9945	Monit3
176		22803	DECAY-MON	4	41-NB-92-M,10.15D,DG,934.44,0.9907	Monit4
177		22803	MONIT-REF	1	,H.Conde,R,INDC(SEC)-101,1992	(M0NIT1) Also H.Conde,
178		22803	MONIT-REF	2	,P.F.Rose+,R,ENDF-201,1991	(MONIT2) Evaluated
179		22803	MONIT-REF	3	,P.F.Rose+,R,ENDF-201,1991	(MONIT3) Evaluated
180		22803	MONIT-REF	4	,H.Conde,R,INDC(SEC)-101,1992	(MONIT4) See also
181		22803	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	Primary Standard Monit1
182		22803	MONITOR	2	13-AL-27(N,P)12-MG-27,,SIG	Secondary Standard. Monit2
183		22803	MONITOR	3	27-CO-59(N,2N)27-CO-58,,SIG	Monit3
184		22803	MONITOR	4	41-NB-93(N,2N)41-NB-92-M,,SIG	Monit4 Secondary Stand.
185	40	22818	DECAY-MON	1	11-NA-24,14.9590HR,DG,1369.,1.0	Monit1
186		22818	DECAY-MON	2	12-MG-27,9.458MIN,DG,843.76,0.718	Monit2
187		22818	DECAY-MON	3	27-CO-58-G,70.86D,DG,810.78,0.9945	Monit3
188		22818	DECAY-MON	4	41-NB-92-M,10.15D,DG,934.44,0.9907	Monit4
189		22818	MONIT-REF	1	,H.Conde,R,INDC(SEC)-101,1992	(M0NIT1) Also H.Conde,
190		22818	MONIT-REF	2	,P.F.Rose+,R,ENDF-201,1991	(MONIT2) Evaluated
191		22818	MONIT-REF	3	,P.F.Rose+,R,ENDF-201,1991	(MONIT3) Evaluated
192		22818	MONIT-REF	4	,H.Conde,R,INDC(SEC)-101,1992	(MONIT4) See also
193		22818	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	Primary Standard Monit1
194		22818	MONITOR	2	13-AL-27(N,P)12-MG-27,,SIG	Secondary Standard. Monit2
195		22818	MONITOR	3	27-CO-59(N,2N)27-CO-58,,SIG	Monit3
196		22818	MONITOR	4	41-NB-93(N,2N)41-NB-92-M,,SIG	Monit4 Secondary Stand.
197	41	22822	DECAY-DATA	1	11-NA-24,14.997HR,DG,1368.6,0.999936	HL=14.997+-0.012 hr, intensity 0.999936+-0.0015 .

198		22822	DECAY-DATA	2	12-MG-27,9.458MIN,DG,843.8,0.718	HL=9,458+-0.012 min, intensity 0.718+-0.004 .
199		22822	DECAY-DATA	3	25-MN-56,2.5789HR,DG,846.8,0.989	HL=2.5798+-0.0001 hr, intensity 0.989+-0.003 .
200		22822	DECAY-DATA	4	49-IN-115-M,4.486HR,DG,336.2,0.460	HL=4.486+-0.004 hr, intensity 0.0460+-0.002 .
201		22822	DECAY-DATA	5	41-NB-92-M,10.15D,DG,934.4,0.9907	HL=10.15+-0.02 d, intensity 0.9907+-0.04 .
202		22822	DECAY-DATA	6	27-CO-58-G,70.86D,DG,810.8,0.9945	HL=70.86+-0.07 .
203		22822	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	Primary standard
204		22822	MONITOR	2	13-AL-27(N,P)12-MG-27,,SIG	Secondary
205		22822	MONITOR	3	26-FE-56(N,P)25-MN-56,,SIG	Secondary
206		22822	MONITOR	4	49-IN-115(N,INL)49-IN-115-M,,SIG	Spectral index component. This reaction is very
207		22822	MONITOR	5	41-NB-93(N,2N)41-NB-92-M,,SIG	Secondary standard
208		22822	MONITOR	6	28-NI-58(N,P)27-CO-58,,SIG	All relative measurements were ultimately normalized
209	42	22823	DECAY-MON	A	25-MN-56,2.58HR,DG,847.,0.989	
210		22823	DECAY-MON	B	11-NA-24,14.97HR,DG,1369.,1.0	
211		22823	DECAY-MON	C	12-MG-27,9.46MIN,DG,844.,0.73	
212		22823	MONITOR	A	26-FE-56(N,P)25-MN-56,,SIG	For neutron energies
213		22823	MONITOR	B	13-AL-27(N,A)11-NA-24,,SIG	For neutron energies
214		22823	MONITOR	C	13-AL-27(N,P)12-MG-27,,SIG	For neutron flux
215	43	22934	DETECTOR	1	HPGE	2 detectors, 70% and 100% rel.eff., among the
216		22934	PART-DET	1	G	Prompt gamma rays emitted by sample.
217	44	22952	DETECTOR	1	TELES,SI,SILI	Two E-deltaE telescopes, placed at 5cm
218		22952	DETECTOR	2	PHVC	15 photovoltaic cells of 20*40 mm**2 size,
219		22952	PART-DET	1	P,D,T,A	p,d,t,alpha
220		22952	PART-DET	2	FF	
221	45	22966	DECAY-MON	1	11-NA-24,14.9590HR,DG,1368.5,1.0	
222		22966	ERR-ANALYS	1	ERR-HL	Main monitor half-life error, in HOUR unit.

223		22966	MONIT-REF	1	,,3,IRDF-2002,,2002	Main monitor - The International
224		22966	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	Main monitor
225	46	22991	DETECTOR	1	HPGE	Two high purity planar HPGe detectors,placed at
226		22991	DETECTOR	2	SCIN	NE213 scintillation detector for neutron
227		22991	DETECTOR	3	FISCH	Parallel-plate U-238 fis.ioniz. chamber UFC H21
228		22991	METHOD	1	PSD	Gamma-rays from 8+ -> 6+, 6+ -> 4+, 4+ -> 2+
229		22991	METHOD	2	TOF	Relative spectral fluence was measured by BC501
230		22991	METHOD	3		Effective beam area determined from measurement
231		22991	PART-DET	1	G	
232		22991	PART-DET	2	N	
233	47	23030	ANALYSIS	2		Spectra for collective states in C-12(n,inl) and
234		23030	CORRECTION	2		Correction for neutron multiple scattering and
235		23030	DETECTOR	1	TELES	MEDLEY :
236		23030	DETECTOR	2		SCANDAL:
237		23030	INC-SPECT	1		At MEDLEY target position 9.15m after Li target,neutron
238		23030	INC-SPECT	2		At SCANDAL target position 10.70m after Li target,
239		23030	METHOD	1		MEDLEY : ND scattering. Elastic peaks were well
240		23030	METHOD	2		SCANDAL:
241		23030	MONIT-REF	1	22668002,J.Rahm+,J,PR/C,63,044001,2001	- Absolute
242		23030	MONIT-REF	2	22847002,J.Klug+,J,PR/C,68,064605,2003	
243		23030	MONITOR	1	1-H-1(N,EL)1-H-1,,DA	for (n,p) and (n,d) scattering
244		23030	MONITOR	2	6-C-12(N,EL)6-C-12,,SIG	for normalization in
245		23030	SAMPLE	1		MEDLEY:
246		23030	SAMPLE	2		SCANDAL:
247	48	23045	INC-SPECT	1		98.5 MeV protons produce neutrons with peak energy

248		23045	INC-SPECT	2		180 MeV protons produce neutrons with peak energy of
249	49	23093	DETECTOR	1	SCIN	Organic liquid scintillation detector NE213 of
250		23093	DETECTOR	2	HPGE	For gamma-ray counting of three times 2 h, 5 h,
251		23093	METHOD	1	TOF	Neutron spectrum was measured by TOF technique.
252		23093	METHOD	2	ACTIV	2.5 hr irradiation.
253	50	23102	FACILITY	1	CYCLO,2SWTPSI	PSI multi-user accelerator facility,
254		23102	FACILITY	2	CHOPS,2FR ILL	Very slow neutrons from turbine at ILL
255		23102	INC-SOURCE	1	SPALL	Spallation target made of lead-filled Zircaloy
256		23102	INC-SPECT	1		Thermalyzed spallation neutrons can be downscattered
257		23102	INC-SPECT	2		Very slow neutrons of 3-20 m/sec.
258		23102	METHOD	2	TRN,TOF	Transmission of very slow neutrons (3-20 m/s)
259	51	23136	DETECTOR	1	GLASD	At 50m measuring station,neutrons were detected
260		23136	DETECTOR	2	SCIN	In the first case two C6D6 detectors,
261		23136	METHOD	1	TRN	Transmission measurement.
262		23136	METHOD	2		Capture measurement.
263	52	23140	DECAY-MON	1	3-LI-7-L,,DG,478.	
264		23140	MONIT-REF	2	,,3,JENDL-4.0,,2010	
265		23140	MONITOR	1	5-B-10(N,A)3-LI-7,,SIG	The TOF spectrum corresponding to the flux of neutrons
266		23140	MONITOR	2	5-B-10(N,G)5-B-11,,SIG	Neutron flux was deduced from the gated TOF spectrum
267	53	23144	DETECTOR	1	SCIN	Intensity and energy spectrum of source neutrons
268		23144	DETECTOR	2	HPGE	HPGe detector for gamma rays measurement
269		23144	METHOD	1	TOF	For neutron beam.
270		23144	METHOD	2	GSPEC	Gamma-ray spectrometry of irradiated samples.
271		23144	PART-DET	1	N	
272		23144	PART-DET	2	G	

273	54	23150	DETECTOR	1	FISCH	Plane fission chamber for the measurements
274		23150	DETECTOR	2	GELI	Calibrated Ge-Li spectrometers.
275		23150	METHOD	1	FISCT	Fission counting
276		23150	METHOD	2	GSPEC	Gamma-spectrometry of the irradiated targets.
277	55	23192	DETECTOR	1	SCIN	Neutron energy spectra were measured by an NE213
278		23192	DETECTOR	2	HPGE	HPGe detector for gamma rays measurement.
279		23192	METHOD	1	TOF	For neutron beam.
280		23192	METHOD	2	GSPEC	Gamma-ray spectrometry of irradiated samples.
281		23192	PART-DET	1	N	
282		23192	PART-DET	2	G	
283	56	23551	AUTHOR	1	E.Konecny,H.Guenther,H.Roesler,G.Siegert,H.Ewald	
284		23551	AUTHOR	2	E.Konecny,H.Guenther,G.Siegert,L.Winter	
285		23551	AUTHOR	3	H.Guenther,G.Siegert,R.Gebert,D.Kerr,E.Konecny	
286		23551	AUTHOR	4	E.Konecny,H.Guenther,G.Siegert	
287		23551	AUTHOR	5	E.Konecny,H.Opower,H.Guenther,H.Goebel	
288		23551	REFERENCE	1	J,ZP,231,59,1970	Tables - Subents 003,004.
289		23551	REFERENCE	2	J,NP/A,100,465,1967	Figs.only. Nucl.emulsion method
290		23551	REFERENCE	3	J,ZN/A,22,1808,1967	Emulsion method, A=132,133,134.
291		23551	REFERENCE	4	J,AF,36,319,1966	Figs. only. Nucl.emulsion method.
292		23551	REFERENCE	5	C,65SALZBURG,1,401,1965	Table - Subent 002.
293		23551	TITLE	1		Nuclear charge distribution of heavy fission fragments
294		23551	TITLE	2		Pairing effect in fission fragment charge distribution
295		23551	TITLE	3		Fission fragment charge distributions in mass chains
296		23551	TITLE	4		Fine structure in fission fragment charge distribution
297		23551	TITLE	5		Primary distributions of nuclear charge for

298	57	23706	METHOD	1		.Irradiation time 20 min; separation time ~25 min.
299		23706	METHOD	2		.Irradiation time 10 min, cooling time 90 min.
300		23706	SAMPLE	1		. 50 mg of natural U metal.
301		23706	SAMPLE	2		. 2 mg of natural U metal.
302	58	30267	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	used for determining the neutron flux,
303		30267	MONITOR	2	92-U-238(N,F),,SIG	. Accepted values see below.
304	59	30426	MONIT-REF	1	,P.P.D`yachenko+,J,AE,42,25,1977	
305		30426	MONITOR	1	98-CF-252(0,F),PR,DE,N	Prompt neutron spectrum of Cf-252
306	60	30443	MONIT-REF	1	11701004,D.C.Santry+,J,CJP,42,1030,1964	
307		30443	MONIT-REF	2	20291003,K.Nakai+,J,JPJ,17,1215,1962	
308		30443	MONITOR	1	26-FE-56(N,P)25-MN-56,,SIG	
309		30443	MONITOR	2	30-ZN-64(N,P)29-CU-64,,SIG	
310	61	30561	MONIT-REF	1	,M.G.Sowerby+,J,ANE,1,409,197407	
311		30561	MONIT-REF	2	,Y.Kanda+,C,68WASH,1,193,196809	
312		30561	MONIT-REF	3	,Y.Kanda+,C,68WASH,1,193,196809	
313		30561	MONITOR	1	92-U-238(N,F),,SIG	
314		30561	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
315		30561	MONITOR	3	26-FE-56(N,P)25-MN-56,,SIG	
316	62	30585	MONITOR	1	17-CL-35(N,G)17-CL-36,,SIG,,MXW	Value used not given
317		30585	MONITOR	2	52-TE-128(N,G)52-TE-129,,SIG,,MXW	from BNL-325(1973)
318	63	31445	SAMPLE	A		sample rotation technique provides the capability of
319	64	31484	DECAY-MON	1	25-MN-54,312.20D,DG,834.826,0.99975	
320		31484	DECAY-MON	2	41-NB-92-M,10.15D,DG,934.53,0.99	
321		31484	MONITOR	1	26-FE-54(N,P)25-MN-54,,SIG	
322		31484	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	

323	65	31496	DECAY-MON	1	11-NA-24,14.659HR,DG,1368.598,1.	
324		31496	DECAY-MON	2	41-NB-92-M,10.15D,DG,934.44,0.99	
325		31496	DECAY-MON	3	40-ZR-89-G,3.268D,DG,909.2,0.9987	
326		31496	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	
327		31496	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	
328		31496	MONITOR	3	40-ZR-90(N,2N)40-ZR-89,,SIG	
329	66	31857	FACILITY	1	CYCLO,3CZRUJF	U-120M cyclotron (NPI) at Ep = 33 and
330		31857	FACILITY	2	CYCLO,2SWDUPP	The Svedberg Laboratory (TSL)
331	67	32219	DECAY-MON	1	41-NB-92-M,10.15D,DG,934.44,1.	
332		32219	DECAY-MON	2	11-NA-24,14.96HR,DG,1369.,1.	
333		32219	MONIT-REF	1	22312006,Y.Ikeda+,J,NST,30,870,1993	
334		32219	MONIT-REF	2	41424002,A.A.Filatenkov+,R,RI-258,2001	
335		32219	MONITOR	1	41-NB-93(N,2N)41-NB-92-M,,SIG	for normalization and flux monitoring (kept constant
336		32219	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	for normalization
337	68	32233	DECAY-MON	1	41-NB-92-M,10.15D,DG,934.44,1.	
338		32233	DECAY-MON	2	11-NA-24,14.959HR,DG,1369.,1.	
339		32233	MONIT-REF	1	30985002,N.I.Molla+,C,91JUELIC,,355,199105	
340		32233	MONIT-REF	2	41420003,A.A.Filatenkov+,R,RI-258,2001	
341		32233	MONITOR	1	41-NB-93(N,2N)41-NB-92-M,,SIG	for flux monitoring (kept constant with accuracy 5%)
342		32233	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	for normalization. For this reason, each specimen was
343	69	32709	DETECTOR	1	HPGE	A HPGe gamma-ray spectrometer consisting of an
344		32709	DETECTOR	2	SIBAR	An Au-Si surface barrier detector was used as
345		32709	FACILITY	1	CCW,3CPRAEP	600 kV Cockcroft-Walton accelerator for
346		32709	FACILITY	2	VDGT,3CPRAEP	HI-13 tandem accelerator for accelerator
347		32709	METHOD	1	ACTIV	Irradiation of the samples was carried out

348		32709	METHOD	2	TOF	The TOF system consisted of a microchannel
349	70	32729	DECAY-MON	1	11-NA-24,14.959HR,DG,1368.6,1.00	
350		32729	DECAY-MON	2	41-NB-92-M,10.15D,DG,934.4,0.9907	)
351		32729	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	
352		32729	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	
353	71	32730	DECAY-MON	1	11-NA-24,14.959HR,DG,1368.6,1.00	
354		32730	DECAY-MON	2	41-NB-92-M,10.15D,DG,934.4,0.9907	J.Luo (2017-06-13):
355		32730	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	
356		32730	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	
357	72	32743	DECAY-MON	1	41-NB-92-M,10.15D,DG,934.43,0.9907	
358		32743	DECAY-MON	2	11-NA-24,14.959HR,DG,1368.6,1.00	
359		32743	MONITOR	1	41-NB-93(N,2N)41-NB-92-M,,SIG	
360		32743	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
361	73	32786	FACILITY	1	VDG,3CPRBJG	4.5 MV Van de Graaff accelerator
362		32786	FACILITY	2	VDGT,3CPRAEP	HI-13 tandem accelerator
363		32786	INC-SOURCE	1	D-D	At 5.5 MeV based on the 4.5-MV Van de Graaff
364		32786	INC-SOURCE	2	D-D	At 8.5, 9.5, and 10.5 MeV based on the HI-13
365	74	33056	DECAY-MON	1	40-ZR-97,16.74HR,DG,743.36,0.931	
366		33056	DECAY-MON	2	53-I-135,6.57HR,DG,1260.4,0.287	
367		33056	MONIT-REF	3	20796003,J.Blons+,J,PRL,35,1749,1975	
368		33056	MONITOR	1	92-U-238(N,F)40-ZR-97,CUM,FY	
369		33056	MONITOR	2	92-U-238(N,F)53-I-135,CUM,FY	
370		33056	MONITOR	3	92-U-238(N,F),,SIG	
371	75	33118	DETECTOR	1	GELI	2 cc Ge(Li) detector having a resolution (FWHM)
372		33118	DETECTOR	2	PROPC	End-window methane gas flow beta proportional

373		33118	METHOD	1	GSPEC	
374		33118	METHOD	2	BSPEC	For samples for radiochemical work except for
375	76	33133	DECAY-MON	1	49-IN-115-M,4.486HR,DG,336.24,0.458	
376		33133	DECAY-MON	2	49-IN-114-M,49.51D,DG,192.92,0.1556	
377		33133	MONITOR	1	49-IN-115(N,INL)49-IN-115-M,,SIG	
378		33133	MONITOR	2	49-IN-115(N,2N)49-IN-114-M,,SIG	
379	77	40004	MONIT-REF	3	,W.G.Davey,J,NSE,26,149,1966	for absolute
380		40004	MONITOR	3	92-U-235(N,F),,SIG	For absolute normalization of
381	78	40010	REFERENCE	A	R,YFI-8,4,1969	Data table.
382		40010	REFERENCE	B	J,ZEP,9,196,1969	Fig. of angl.anisotropy of FF
383		40010	REFERENCE	C	J,ZEP,10,276,1969	
384		40010	TITLE	A		Sub-barrier neutron fission of Am-241
385		40010	TITLE	B		Angular anisotropy of Am-241 neutron-fission
386		40010	TITLE	C		Subbarrier fission of Am-241 by neutrons
387	79	40040	DETECTOR	1	NAICR	NaI(Tl) 40*40 mm scintillation counter in
388		40040	DETECTOR	2	LONGC,BF3	Neutron flux was controlled by long
389		40040	PART-DET	1	G	Gammas
390		40040	PART-DET	2	N	Neutron flux
391	80	40079	MONIT-REF	1	40253001,S.B.Ermagambetov+,J,AE,25,(6),527,1968	
392		40079	MONIT-REF	2	,,R,BNL-325,1965	2nd ed., Supl.2. v.III
393		40079	MONITOR	1		The relative behavior of Pu-238 fis. c-s after
394		40079	MONITOR	2	92-U-235(N,F),,SIG	The reference values for U-235 from
395	81	40089	DETECTOR	1	IOCH	Ionization chamber with 95.0 percent of
396		40089	DETECTOR	2	NAICR	Capture was registered simultaneously by two
397		40089	PART-DET	1	FF	Fission Fragments

398		40089	PART-DET	2	G	Gammas
399	82	40189	DETECTOR	1	HE3SP	24 He-3 counters into paraffin block - for
400		40189	DETECTOR	2	IOCH	multilayer ionization chamber - for fission
401		40189	PART-DET	1	N	Neutrons
402		40189	PART-DET	2	FF	fission fragments
403	83	40419	MONIT-REF	2	12316011,R.K.Smith+,J,BAP,2,196,1957	
404		40419	MONITOR	1		Cf-252 spontaneous fission spectrum of FF was measured
405		40419	MONITOR	2	92-U-238(N,F),,SIG	U-238 fiss. c-s was used for normalization in
406		40419	SAMPLE	1		RaF2 sample of about 100 microg weight, made by
407		40419	SAMPLE	2		-In J,YF,11,(5),1006,1970 -EN=14-16 MeV, stacked
408	84	40448	FACILITY	1	VDG,4RUSFEI	
409		40448	FACILITY	2	REAC,4RUSFEI	Experimental fast reactor.
410		40448	INC-SOURCE	1	P-T	Fast neutrons.
411		40448	INC-SOURCE	2	THCOL	Thermal neutrons.
412	85	40454	REFERENCE	1	C,77TASHKENT,,9,1977	
413		40454	REFERENCE	2	C,77TASHKENT,,14,1977	
414		40454	TITLE	1		Gamma-transitions of 141Pr in (n,n`g) reaction
415		40454	TITLE	2		Gamma-spectrum from reaction 181Ta(n,n`g)
416	86	40489	CORRECTION	S		For contribution of 238U and 240Pu fission in the
417	87	40500	DETECTOR	A	SCIN	Plastic scint.counter 170 mm diameter
418		40500	DETECTOR	B	SCIN	Gas scint.counter Ar +5% N2
419		40500	PART-DET	A	N	
420		40500	PART-DET	B	FF	
421	88	40557	MONIT-REF	A	,A.Horsley,J,ND/A,2,243,1966	
422		40557	MONIT-REF	B	,H.Lisken+,J,ND/A,11,7,1973	

423		40557	MONITOR	A	1-H-1(N,EL)1-H-1,,SIG	For differential inelastic cross sections.
424		40557	MONITOR	B	1-H-3(P,N)2-HE-3,,SIG	For detector efficiency.
425	89	40597	DETECTOR	1		Breakdown hemispherical mosaic detectors for
426		40597	DETECTOR	2	LONGC	For neutron flux monitoring
427		40597	DETECTOR	3	SOLST	Semiconductor alpha-counter
428		40597	DETECTOR	4	GELI	For gammas
429		40597	PART-DET	1	FF	
430		40597	PART-DET	2	N	
431		40597	PART-DET	3	A	
432		40597	PART-DET	4	G	
433	90	40616	DETECTOR	1	IOCH	Time resolution of 20 nsec
434		40616	DETECTOR	2	HE3SP	Helium-3 counters CHM-12
435		40616	PART-DET	1	FF	
436		40616	PART-DET	2	N	
437	91	40642	MONIT-REF	1	40640001,Yu.Ya.Stavisskiy+,J,AE,10,(2),158,196102	
438		40642	MONITOR	1	53-I-127(N,G)53-I-128,,SIG	
439	92	40701	MONIT-REF	1	,B.Magurno,R,IAEA-208,375,1978	ENDF/B-V dosim.file
440		40701	MONIT-REF	2	,N.V.Kornilov,J,YK,,(1/45),33,1982	
441		40701	MONIT-REF	3	,B.Magurno,R,IAEA-208,375,1978	ENDF/B-V dosim.file
442		40701	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	
443		40701	MONITOR	2	92-U-238(N,F),,SIG	
444		40701	MONITOR	3	92-U-238(N,2N)92-U-237,,SIG	
445	93	40740	DETECTOR	1	SOLST	Stilbene crystal of 70 mm diameter, 50 mm high,
446		40740	DETECTOR	2	IOCH	For FF detection.
447		40740	PART-DET	1	N	

448		40740	PART-DET	2	FF	
449	94	40907	AUTHOR	1	M.R.Beytin`sh,I.L.Kuvaga,P.T.Prokof`ev	
450		40907	AUTHOR	2	N.D.Kramer,V.A.Bondarenko,M.P.Beytin`sh,I.L.Kuvaga,	
451		40907	REFERENCE	1	C,84ALMAAT,,143,198404	
452		40907	REFERENCE	2	C,85LENING,,372,1985	
453		40907	TITLE	1		New levels of the Lu-176 excited in the (n,n`gamma)
454		40907	TITLE	2		Lu-176m fast neutrons activation cross section.
455	95	40910	ERR-ANALYS	1	MONIT1-ERR	Error of the 1-St Standard
456		40910	ERR-ANALYS	2	MONIT2-ERR	Error of the 2-Nd Standard
457		40910	ERR-ANALYS	3	MONIT3-ERR	Error of the 3-D Standard
458		40910	MONITOR	1	(MONIT1)6-C-12(N,G)6-C-13,,SPC	
459		40910	MONITOR	2	(MONIT2)52-TE-123(N,G)52-TE-124,,SPC	
460		40910	MONITOR	3	(MONIT3)52-TE-123(N,G)52-TE-124,,SPC	
461		40910	MONITOR	4	79-AU-197(N,G)79-AU-198,,SPC	
462	96	40922	FACILITY	1	REAC,4RUSLIN	Source of neutrons for cross-section
463		40922	INC-SPECT	1		Horizontal thermal neutron beam with Maxwell
464	97	41005	DETECTOR	1	SCIN	Stilbene crystal with FEU-30 at 2.2 m distance.
465		41005	DETECTOR	2	SCIN	Stilbene crystal with FEU-110 at 2.m distance.
466		41005	FACILITY	1	VDG,4UKRIJD	Electrostatic accelerator EG-5.
467		41005	FACILITY	2	VDG,4RUSJIA	Electrostatic accelerator EG-2.5 .
468	98	41007	FACILITY	1	VDG,4RUSJIA	Electrostatic accelerator EG-2.5
469		41007	FACILITY	2	VDG,4UKRIJD	Proton accelerator EG-5 for
470		41007	INC-SOURCE	2	P-T	TiT target of about 100 keV thickness.
471		41007	SAMPLE	2		Powder samples of mass up to 60 g; enrichment in
472	99	41130	FACILITY	1	REAC,4RUSKUR	Reactor IR-8

473		41130	FACILITY	2	REAC,3LIBTAJ	
474		41130	METHOD	1		Linear polarization of gamma-quanta was measured.
475		41130	METHOD	2		Gamma spectra and angular distributions were measured.
476	100	41156	MONIT-REF	1	,W.Mannhart+,R,IAEA-410,158,1987	IAEA-TECHDOC-410 .
477		41156	MONIT-REF	2	,,R,STI/DOC/10-227,1983	IAEA-TECHDOC-227 .
478		41156	MONITOR	1	98-CF-252(N,F),PR,NU/DE	To define efficiency of
479		41156	MONITOR	2	1-H-1(N,EL)1-H-1,,SIG	n-p scattering c-s was used
480		41156	MONITOR	3	13-AL-27(N,A)11-NA-24,,SIG	For incident neutron flux.
481	101	41424	DECAY-MON	A	41-NB-92-M,10.15D,DG,934.4,0.99	
482		41424	DECAY-MON	B	11-NA-24,14.9590HR,DG,1368.6,0.9999,	
483		41424	MONIT-REF	A	41240003,A.A.Filatenkov+,R,RI-252,1999	
484		41424	MONIT-REF	B	,,3,FENDL/A-2.0,,1997	See MONIT values in Subent 41240.003.
485		41424	MONITOR	A	41-NB-93(N,2N)41-NB-92-M,,SIG	Main monitor.
486		41424	MONITOR	B	13-AL-27(N,A)11-NA-24,,SIG	
487	102	41456	MONIT-REF	1	,H.Conde,R,INDC(SEC)-101,1992	`Nuclear Data Standards for Nuclear Measurements`
488		41456	MONIT-REF	2	,A.A.Filatenkov+,R,RI-252,1999	
489		41456	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	
490		41456	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	
491	103	41469	MONIT-REF	1	,A.B.Paschenko+,R,IAEA-NDS-173,1997	FENDL/A-2.0
492		41469	MONIT-REF	2	41240002,A.A.Filatenkov+,R,RI-252,1999	Exper. c-s.
493		41469	MONITOR	1	41-NB-93(N,2N)41-NB-92-M,,SIG	
494		41469	MONITOR	2	13-AL-27(N,A)11-NA-24,,SIG	
495	104	41488	DETECTOR	1	GE	X-ray Ge-detector of 10 cm**3 volume -for energy
496		41488	DETECTOR	2	HPGE	22% HPGe detector,1.9keV resolution at 1332 keV.
497		41488	DETECTOR	3	SPEC,HPGE,GELI	15% efficient HPGe detector,

498		41488	FACILITY	1	REAC,4LATULR	IRT Reactor of Nuclear Reseach Center of
499		41488	FACILITY	2	REAC,3CZRUJF	Neutron guide facility at 15 MW
500		41488	FACILITY	3	REAC,4ZZZDUB	IBR-30 pulsed reactor in JINR, Dubna.
501		41488	INC-SOURCE	1	REAC	Thermal neutron beam from tangential exp.channel
502		41488	INC-SPECT	1		Collimated neutron flux (1cm*1cm) at target -
503		41488	METHOD	3	TOF	Thermal neutron capture was selected by
504		41488	SAMPLE	1		0.9 g Ho metal of 99% purity, contained in thin
505		41488	SAMPLE	2		0.464 g Ho2O3 oxide of 99.99% purity.
506		41488	SAMPLE	3		Ho-165 target mass 4g.
507	105	41516	CORRECTION	S		-For time uncertainties in the time-of-flight
508	106	41526	DETECTOR	1	SCIN	Eight-sections liquid scintillator .
509		41526	DETECTOR	2	BF3	B-10 counter SNM-13 at 12 m flight base for
510		41526	INC-SOURCE	1		Pulse neutron source RADEX (Radiational experiments).
511		41526	INC-SOURCE	2		Natural Rb target of 6 cm thickness cooled by water
512		41526	METHOD	1	TOF	Flight path 50. m .
513		41526	METHOD	2		Flight path about 18m at Isotope Complex facility
514	107	41537	CORRECTION	S		For detection efficiency decreasing at increasing of
515	108	41595	DETECTOR	1	NAICR	Two drift gamma-gamma counters:
516		41595	METHOD	1	MANGB	Manganese bath (certificated at 1977) -
517	109	41605	DETECTOR	1	PROPC	28 proportional He3 (pressure 7 atm) filled
518		41605	DETECTOR	2		In series 1,2,4 of measurements - detector described
519		41605	REL-REF	2	I,,G.N.Flerov+,J,YF,20,472,1974	
520	110	41606	AUTHOR	1	D.Rabenstein,Y.Y.Berzin,A.E.Kruminya,P.T.Prokofev	
521		41606	AUTHOR	2	M.R.Berzin`,A.E.Kruminya,L.A.Neyburg,P.T.Prokof`ev	
522		41606	AUTHOR	3	D.Rabenstein,Y.Y.Berzin,A.J.Krumina,L.A.Neiburg,	

523		41606	REFERENCE	1	J,IZV,40,68,1976	Issue 1.
524		41606	REFERENCE	2	C,73TBILISI,,76,1973	Nd-143(n,gamma) SPC, measured at 4LATIFL .
525		41606	REFERENCE	3	C,74PETTEN,,565,1974	(Not available for checking,M.M.)
526		41606	TITLE	1		Some states in Nd-144.
527		41606	TITLE	2		Low-energy spectrum of gamma-rays from
528		41606	TITLE	3		Spins and parities for some Nd-144 levels.
529	111	41688	AUTHOR	1	A.A.Goverdovsky, V.F.Mitrofanov	
530		41688	AUTHOR	2	A.A.Goverdovsky, B.D.Kuzminov, V.F.Mitrofanov,	
531		41688	REFERENCE	1	J,PAN,60,1787,1997	Engl.translation of :
532		41688	REFERENCE	2	C,88MITO,,695,1988	No exp.details. Figues only.
533		41688	TITLE	1		Standard modes of thorium fission
534		41688	TITLE	2		Kinetic energies of fragments in neutron-induced
535	112	41735	FACILITY	1	REAC,4RUSKUR	RFT reactor
536		41735	FACILITY	2	ACCEL,4RUSKUR	
537		41735	INC-SOURCE	1	REAC	For fission neutrons
538		41735	INC-SOURCE	2	D-T	For 14.5 MeV neutrons .
539		41735	INC-SPECT	1		~2.E+13 integral neutron flux.
540		41735	INC-SPECT	2		2.E+14 integral neutron flux.
541	113	A0137	DECAY-MON	1	11-NA-22,2.60YR,DG,1274.54,0.9995	
542		A0137	DECAY-MON	2	4-BE-7,52.93D,DG,477.56,0.103	
543		A0137	MONITOR	1	13-AL-27(P,X)11-NA-22,CUM,SIG	
544		A0137	MONITOR	2	13-AL-27(P,X)4-BE-7,CUM,SIG	
545	114	A0148	MONIT-REF	1	A0153003,R.Michel+,R,INDC(GER)-22,45,1980	
546		A0148	MONIT-REF	2	A0153002,R.Michel+,R,INDC(GER)-22,45,1980	
547		A0148	MONITOR	1	13-AL-27(A,X)11-NA-22,,SIG	

548		A0148	MONITOR	2	13-AL-27(A,X)11-NA-24,,SIG	thin (100 um) Al-foil was used
549	115	A0155	DETECTOR	1	SIBAR	A rugged silicon surface-barrier particle
550		A0155	FACILITY	1	VDG,1USACAL	Prompt gamma-rays.
551		A0155	FACILITY	2	VDGT,1USACAL	For activation method.
552		A0155	METHOD	1	GSPEC	
553		A0155	METHOD	2	ACTIV	The Be-7 produced by radiative capture
554		A0155	SAMPLE	1		Windowless, recirculating, 3He gas target.
555		A0155	SAMPLE	2		3He gas cell with a 0.66 mu-m Ni entrance foil.
556	116	A0187	DECAY-MON	A	11-NA-24,15.HR,DG,1368.,1.	
557		A0187	DECAY-MON	C	29-CU-61,3.41HR,DG,283.,0.13	
558		A0187	DECAY-MON	Z	30-ZN-62,9.3HR,DG,548.,0.141	
559		A0187	MONIT-REF	A	,I.Tobailem+,R,CEA-N-1466,(1),1971	For Al-27
560		A0187	MONIT-REF	C	B0054003,J.W.Meadows,J,PR,91,885,1953	.
561		A0187	MONIT-REF	Z	B0054005,J.W.Meadows,J,PR,91,885,1953	
562		A0187	MONITOR	A	13-AL-27(P,X)11-NA-24,CUM,SIG	
563		A0187	MONITOR	C	29-CU-63(P,X)29-CU-61,CUM,SIG	
564		A0187	MONITOR	Z	29-CU-63(P,2N)30-ZN-62,,SIG	
565	117	A0529	FACILITY	1	ISOCY,2GERJUL	. (E=170.5 MEV)
566		A0529	FACILITY	2	CYCLO,2SWTVIL	. Sector Cyclotron. (E=119.7 MEV)
567	118	A1186	MONITOR	1	6-C-12(P,G)7-N-13,,SIG	The 12C(p,gamma)N13 was used at Eg=15.07 MeV (0.833+-
568		A1186	MONITOR	2	1-H-2(P,EL)1-H-2,,SIG	
569	119	B0014	MONIT-REF	1	B0019007,J.A.Panontin+,J,JIN,30,2017,1968	
570		B0014	MONIT-REF	2	B0019010,J.A.Panontin+,J,JIN,30,2017,1968	
571		B0014	MONITOR	1	92-U-238(P,F)47-AG-111,CUM,SIG	Reference Cross Section at 450 MeV 62.2 Mb Used For
572		B0014	MONITOR	2	92-U-238(P,F)49-IN-111,CUM,SIG	Reference Cross Section at 450 MeV 0.77 Mb Used For

573	120	B0105	DECAY-MON	1	30-ZN-63,38.8MIN,DG,670.,0.0847	
574		B0105	DECAY-MON	2	29-CU-64,12.82HR,AR,511.,0.386	
575		B0105	MONIT-REF	1	B0057002,R.Colle+,J,PR/C,9,1819,1974	
576		B0105	MONIT-REF	2	B0023002,D.A.Newton+,J,JIN,35,361,1973	
577		B0105	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	
578		B0105	MONITOR	2	29-CU-65(P,X)29-CU-64,,SIG	
579	121	B0106	MONIT-REF	1	,H.G.HICKS+,J,PR,102,1390,1956	
580		B0106	MONIT-REF	2	B0101002,W.E.CRANDALL+,J,PR,101,329,1956	
581		B0106	MONIT-REF	3	,M.LEFORT+,J,NP,25,216,1961	
582		B0106	MONITOR	1	13-AL-27(P,X)11-NA-24-G,CUM,SIG,,,EXP	
583		B0106	MONITOR	2	6-C-12(P,X)6-C-11,,SIG,,A,EXP	
584		B0106	MONITOR	3	6-C-12(P,X)4-BE-7,,SIG,,,EXP	
585	122	B0130	DECAY-MON	1	30-ZN-63,38.8MIN,DG,670.,0.0847	
586		B0130	DECAY-MON	2	29-CU-64,12.82HR,AR,511.,0.386	
587		B0130	DECAY-MON	3	39-Y-88,107.D,DG,898.,0.957	
588		B0130	MONIT-REF	1	B0057002,R.Colle+,J,PR/C,9,1819,1974	
589		B0130	MONIT-REF	2	B0023002,D.A.Newton+,J,JIN,35,361,1973	
590		B0130	MONIT-REF	3	B0130002,M.V.Kantelo+,J,PR/C,14,64,1976	
591		B0130	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	
592		B0130	MONITOR	2	29-CU-65(P,X)29-CU-64,,SIG	
593		B0130	MONITOR	3	40-ZR-90(P,X)39-Y-88,,SIG	Secondary monitor for timed chemical separation
594	123	C1383	SAMPLE	T		he 50Ti (69.7 %, 50Ti, 2.4 % 47Ti, 22.8 % 48Ti and
595	124	C1650	MONIT-REF	1	A0507002,S.J.Mills+,J,ARI,43,1019,1992	
596		C1650	MONIT-REF	2	,J.B.Cummings,J,ARN,13,261,1963	
597		C1650	MONIT-REF	3	A0100013,R.Michel+,J,NP/A,441,617,1985	

598		C1650	MONITOR	1	29-CU-0(P,X)29-CU-61,,SIG	for E=108 and 195 MeV
599		C1650	MONITOR	2	28-NI-0(P,X)28-NI-57,,SIG	for E=195 MeV
600		C1650	MONITOR	3	13-AL-27(P,N+3P)11-NA-24,,SIG	for E=195 MeV
601	125	C1825	FACILITY	1	VDG,1USANOT	4-MV KN VdG (700 keV < Ep < 1800 keV);
602		C1825	FACILITY	2	CCW,2ITYLGS	LUNA II (130 keV < Ep < 400 keV)
603		C1825	SAMPLE	1		Target used at Notre Dame:
604		C1825	SAMPLE	2		Two targets used at LUNA 2:
605	126	C1936	FACILITY	1	VDG,1USANOT	Protons were accelerated to laboratory
606		C1936	FACILITY	2	CCW,2ITYLGS	At low proton energies a high current
607	127	C1977	MONIT-REF	1	B0022006,J.B.Cumming,J,ARN,13,261,1963	
608		C1977	MONITOR	1	6-C-12(P,X)4-BE-7,,SIG	
609		C1977	MONITOR	2	13-AL-27(P,X)11-NA-22,,SIG	
610	128	C2008	MONIT-REF	1	,S.N.Goshal,J,PR,80,939,1950	
611		C2008	MONIT-REF	2	B0054006,W.Meadows,J,PR,91,885,1953	Meadows monitor
612		C2008	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	for EN < 16MeV
613		C2008	MONITOR	2	29-CU-65(P,X)29-CU-64,,SIG	for EN > 16MeV
614	129	C2010	MONIT-REF	1	B0076003,N.M.Hintz+,J,PR,88,19,1952	
615		C2010	MONIT-REF	2	B0054004,J.W.Meadows,J,PR,91,885,1953	
616		C2010	MONIT-REF	3	B0054006,J.W.Meadows,J,PR,91,885,1953	Scale correction by Crandal Phys.Rev.101,329(1956)
617		C2010	MONITOR	1	13-AL-27(P,X)11-NA-24,,SIG	used at Ep > 35 MeV
618		C2010	MONITOR	2	29-CU-63(P,N)30-ZN-63,,SIG	used around Ep= 8 MeV
619		C2010	MONITOR	3	29-CU-65(P,N+P)29-CU-64,,SIG	used around Ep= 26 MeV
620	130	C2016	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	
621		C2016	MONITOR	2	29-CU-65(P,X)29-CU-64,,SIG	
622	131	C2243	DECAY-MON	1	27-CO-56,77.27D,DG,846.8,1.00,	

623		C2243	DECAY-MON	2	30-ZN-62,9.186HR,DG,596.,0.26,	
624		C2243	DECAY-MON	3	30-ZN-65,244.26D,DG,1115.5,0.5004	
625		C2243	DECAY-MON	4	11-NA-22,2.6018YR,DG,1274.5,0.99944	
626		C2243	MONITOR	1	29-CU-0(P,X)27-CO-56,,SIG	
627		C2243	MONITOR	2	29-CU-0(P,X)30-ZN-62,,SIG	
628		C2243	MONITOR	3	29-CU-0(P,X)30-ZN-65,,SIG	
629		C2243	MONITOR	4	13-AL-27(P,X)11-NA-22,,SIG	
630	132	C2457	DECAY-MON	1	28-NI-57,35.60HR,DG,127.16,0.167,	
631		C2457	DECAY-MON	2	27-CO-57,271.74D,DG,122.06,0.856,	
632		C2457	MONITOR	1	28-NI-0(P,X)28-NI-57,,SIG	
633		C2457	MONITOR	2	28-NI-0(P,X)27-CO-57,,SIG	
634	133	C2601	DECAY-MON	1	27-CO-56,77.2D	
635		C2601	DECAY-MON	2	27-CO-57,271.8D	
636		C2601	DECAY-MON	3	27-CO-60-G,1924.0D	
637		C2601	MONITOR	1	28-NI-0(P,X)27-CO-56,,SIG	
638		C2601	MONITOR	2	28-NI-0(P,X)27-CO-57,,SIG	
639		C2601	MONITOR	3	28-NI-0(P,X)27-CO-60,,SIG	
640	134	C2604	MONIT-REF	1	,,R,IAEA-TECDOC-1211,2001	
641		C2604	MONIT-REF	2	,,R,IAEA-TECDOC-1211,2001	
642		C2604	MONITOR	1	29-CU-0(P,X)30-ZN-62,,SIG	
643		C2604	MONITOR	2	29-CU-0(P,X)30-ZN-65,,SIG	Beam energy was detemined by ratio of
644	135	D0054	DECAY-MON	1	30-ZN-65,244.1D,DG,1115.5,.5075	
645		D0054	DECAY-MON	2	11-NA-24,14.96HR,DG,1368.6,1.	
646		D0054	FACILITY	1	CYCLO,2SWDUPP	Thick stack irradiation Ep=99->40 MeV
647		D0054	FACILITY	2	ISOCY,2GERJUL	Thin stack irradiation Ep=45->30 MeV

648		D0054	METHOD	1	ACTIV	Irradiated for 4 h with 100 nA at TSL
649		D0054	METHOD	2	ACTIV	Irradiated for 12 h with 0.5 to 2 uA at KFA
650		D0054	MONITOR	1	29-CU-0(P,X)30-ZN-65,,SIG	Ep>45 MeV
651		D0054	MONITOR	2	13-AL-27(P,X)11-NA-24,,SIG	Ep>45 MeV
652	136	D0056	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	
653		D0056	MONITOR	2	29-CU-63(P,2N)30-ZN-62,,SIG	Data were taken from Browne, etc. Tables of radioactive
654	137	D0165	MONIT-REF	1	,Tarkanyi+,R,IAEA-1211,2001	
655		D0165	MONIT-REF	2	,Michel+,J,NP/A,441,617,1985	
656		D0165	MONITOR	1	13-AL-27(P,X)11-NA-24,,SIG	
657		D0165	MONITOR	2	13-AL-27(P,N+3P)11-NA-24,,SIG	for proton energies up
658	138	D0168	MONIT-REF	1	,Steyn+,J,ARI,41,315,1990	
659		D0168	MONIT-REF	2	,Mills+,J,ARI,43,1019,1992	
660		D0168	MONITOR	1	13-AL-27(P,X)11-NA-22,,SIG	
661		D0168	MONITOR	2	29-CU-0(P,X)30-ZN-62,,SIG	Both for monitoring proton flux.
662	139	D0431	ERR-ANALYS	T		hese contribute to the absolute value
663	140	D0580	MONIT-REF	1	O0173046,S.V.Foertsch+,J,PR/C,43,691,1991	15 deg
664		D0580	MONIT-REF	2	,A.Bubak+,J,NIM/B,226,507,2004	
665		D0580	MONITOR	1	28-NI-58(P,X)1-H-1,,DA/DE	Absolute normalization of the data was done by
666		D0580	MONITOR	2	28-NI-58(P,X)4-BE-7,,DA/DE	The second method of normalization was performed
667	141	D0699	MONIT-REF	1	A0333003,P.Kopecky,J,ARI,36,657,1985	
668		D0699	MONIT-REF	2	A0333004,P.Kopecky,J,ARI,36,657,1985	
669		D0699	MONITOR	1	29-CU-0(P,X)30-ZN-62,,SIG	
670		D0699	MONITOR	2	29-CU-0(P,X)30-ZN-65,,SIG	
671	142	D0981	DETECTOR	1		.LAFN:
672		D0981	DETECTOR	2		.TANDAR:

673		D0981	FACILITY	1	VDGT,3BZLUSP	8-MV Pelletron (LAFN)
674		D0981	FACILITY	2	VDGT,3ARGCNE	20-MV tandem accelerator (TANDAR)
675		D0981	SAMPLE	1		.LAFN:
676		D0981	SAMPLE	2		.TANDAR
677	143	D4017	DECAY-MON	1	29-CU-61,3.4HR,DG,283.,0.125,	
678		D4017	DECAY-MON	2	31-GA-66,9.5HR,DG,833.,0.060,	
679		D4017	MONIT-REF	1	,E.A.Bryant+,J,PR,130,1512,1963	
680		D4017	MONIT-REF	2	,O.Schwerer+,R,INDC(NDS)-218,1989	
681		D4017	MONITOR	1	29-CU-63(HE3,X)29-CU-61,,SIG	
682		D4017	MONITOR	2	29-CU-65(HE3,2N)31-GA-66,,SIG	
683	144	D4019	DECAY-MON	1	30-ZN-63,38.4MIN,DG,669.8,0.085	
684		D4019	DECAY-MON	2	30-ZN-65,224.25D,DG,1115.5,0.506	
685		D4019	DECAY-MON	3	23-V-48,15.98D,DG,983.5,1.0,	
686		D4019	MONIT-REF	1	,A.GRUETTER+,J,NP/A,383,98,1982	
687		D4019	MONIT-REF	2	,S.J.MILLS+,J,ARI,43,1019,1992	
688		D4019	MONIT-REF	3	,P.KOPECKY,J,ARI,44,687,1993	
689		D4019	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	
690		D4019	MONITOR	2	29-CU-0(P,X)30-ZN-62,,SIG	
691		D4019	MONITOR	3	22-TI-0(P,X)23-V-48,,SIG	
692	145	D4026	MONIT-REF	1	,P.KOPECKY,J,ARI,36,657,1985	
693		D4026	MONIT-REF	2	,R.COLLE+,J,PR/C,9,1819,1974	
694		D4026	MONIT-REF	3	,A.GRUETTER+,J,NP/A,383,98,1982	
695		D4026	MONITOR	1	29-CU-0(P,X)30-ZN-62,,SIG	
696		D4026	MONITOR	2	29-CU-0(P,X)30-ZN-63,,SIG	
697		D4026	MONITOR	3	29-CU-0(P,X)30-ZN-65,,SIG	

698	146	D4027	MONIT-REF	1	,P.Kopecky,J,ARI,36,657,1985	
699		D4027	MONIT-REF	2	,R.Colle+,J,PR/C,9,1819,1974	
700		D4027	MONIT-REF	3	,A.Gruetter+,J,NP/A,383,98,1982	
701		D4027	MONIT-REF	4	,S.Kaufman+,J,PR,117,1532,1960	
702		D4027	MONITOR	1	29-CU-0(P,X)30-ZN-62,,SIG	
703		D4027	MONITOR	2	29-CU-0(P,X)30-ZN-63,,SIG	
704		D4027	MONITOR	3	29-CU-0(P,X)30-ZN-65,,SIG	
705		D4027	MONITOR	4	28-NI-0(P,X)28-NI-57,,SIG	
706	147	D4029	DECAY-MON	1	30-ZN-62,9.1HR,DG,548.,0.141	
707		D4029	DECAY-MON	2	30-ZN-63,38.1MIN,DG,669.,0.084	
708		D4029	MONITOR	1	29-CU-63(P,N)30-ZN-63,,SIG	
709		D4029	MONITOR	2	29-CU-63(P,2N)30-ZN-62,,SIG	
710	148	D4038	FACILITY	1	CYCLO,2SWTPSI	4 irradiations (Ep=46 and 72 MeV)
711		D4038	FACILITY	2	CYCLO,2GERJUL	2 irradiations (Ep=22 MeV)
712		D4038	METHOD	1	ACTIV	PSI, Villigen
713		D4038	METHOD	2	ACTIV	KFA, Juelich
714	149	D4048	MONIT-REF	1	,A.GRUETTER,J,NP/A,383,98,1982	
715		D4048	MONIT-REF	2	,A.GRUETTER,J,NP/A,383,98,1982	
716		D4048	MONIT-REF	3	,P.KOPECKY,J,ARI,36,657,1985	
717		D4048	MONITOR	1	29-CU-63(P,2N)30-ZN-62,,SIG	
718		D4048	MONITOR	2	29-CU-63(P,N)30-ZN-63,,SIG	
719		D4048	MONITOR	3	29-CU-65(P,N)30-ZN-65,,SIG	
720	150	D4059	MONIT-REF	1	,P.A.LENK+,J,PR,116,1229,1959	
721		D4059	MONIT-REF	2	,W.J.RAMLER+,J,PR,114,154,1959	
722		D4059	MONITOR	1	13-AL-27(D,P+A)11-NA-24,,SIG	

723		D4059	MONITOR	2	83-BI-209(D,P)83-BI-210,,SIG	
724	151	D4072	DECAY-MON	1	30-ZN-62,9.1HR,DG,548.,0.141	
725		D4072	DECAY-MON	2	30-ZN-63,38.1MIN,DG,669.,0.084	
726		D4072	MONITOR	1	29-CU-0(P,X)30-ZN-63,,SIG	
727		D4072	MONITOR	2	29-CU-0(P,X)30-ZN-62,,SIG	
728		D4072	MONITOR	C		u monitor foils placed in front and at the back of
729	152	D4074	MONIT-REF	1	,E.GADIOLI+,J,NC/A,22,547,1974	
730		D4074	MONIT-REF	2	,A.GRUETTER+,J,NP/A,383,98,1982	
731		D4074	MONITOR	1	29-CU-65(P,N)30-ZN-65,,SIG	
732		D4074	MONITOR	2	13-AL-27(P,X)11-NA-24,,SIG	
733	153	D4084	MONIT-REF	1	,S.TAKACS+,J,ARI,48,657,1997	,
734		D4084	MONIT-REF	2	,S.TAKACS+,C,96DENTON,,659,1996	
735		D4084	MONITOR	1	22-TI-0(D,X)23-V-48,,SIG	
736		D4084	MONITOR	2	26-FE-0(D,X)27-CO-56,,SIG	
737	154	D4098	MONITOR	1	13-AL-27(D,X)11-NA-22,,SIG	
738		D4098	MONITOR	2	13-AL-27(D,X)11-NA-24,,SIG	
739	155	D4205	ERR-ANALYS	T		he total uncertainty is evaluated at 8-13%.
740	156	D6097	SAMPLE	T		arget thickness: 5 keV at 4 MeV proton.
741	157	D6103	DETECTOR	1	GE	Compton suppressed Clover detector placed at
742		D6103	DETECTOR	2	HPGE	HPGe detector placed at 125 deg. with respect
743		D6103	FACILITY	1	VDGT,3INDTRM	14 MV Pelletron
744		D6103	FACILITY	2	VDGT,3INDIPB	3 MV Pelletron
745		D6103	SAMPLE	1		192 ug/cm2 natural silicon sandwiched between two thin
746		D6103	SAMPLE	2		A self supported thin target of 28Si (175 ug/cm2) and
747	158	D6206	MONIT-REF	1	B0174002,H.J.Probst+,J,ARI,27,431,1976	

748		D6206	MONIT-REF	2	B0174003,H.J.Probst+,J,ARI,27,431,1976	
749		D6206	MONITOR	1	13-AL-27(A,X)11-NA-24,CUM,SIG	
750		D6206	MONITOR	2	13-AL-27(A,X)11-NA-22,CUM,SIG	
751	159	D6317	DETECTOR	1	MAGSP,MWPC	For on-line measurements, evaporation
752		D6317	DETECTOR	2	HPGE	For off-line measurements, evaporation
753		D6317	FACILITY	1	VDGT,3INDNSD	15UD Pelletron-LINAC accelerator for
754		D6317	FACILITY	2	VDGT,3INDTRM	BARC-TIFR Pelletron-LINAC facility for
755		D6317	METHOD	1	ASEP	Evaporation residue production cross sections
756		D6317	METHOD	2	ACTIV	Irradiated for 2 to 3 hrs.
757		D6317	SAMPLE	1		The 176Yb an electrodeposited target of thickness
758		D6317	SAMPLE	2		For off-line measurements, 176Yb targets of
759	160	D7022	DECAY-MON	1	79-AU-196-G,6.1669D,DG,333.03,0.229,	
760		D7022	DECAY-MON	2	79-AU-194-G,38.02HR,DG,293.548,0.106,	
761		D7022	DECAY-MON	3	11-NA-24,14.997HR,DG,1368.626,0.999936,	
762		D7022	MONITOR	1	79-AU-197(P,X)79-AU-196,,SIG	- Au foils (30 um thickness)
763		D7022	MONITOR	2	79-AU-197(P,X)79-AU-194,,SIG	- Au foils (30 um thickness)
764		D7022	MONITOR	3	13-AL-27(P,X)11-NA-24,,SIG	- Al foils (100 um thickness)
765		D7022	MONITOR	T		he averaged value of beam intensities from monitor
766	161	D7037	DECAY-MON	1	79-AU-196-G,6.1669D,DG,333.03,0.229,	
767		D7037	DECAY-MON	2	79-AU-194-G,38.02HR,DG,293.548,0.106,	
768		D7037	DECAY-MON	3	11-NA-24,14.997HR,DG,1368.626,0.999936,	
769		D7037	MONITOR	1	79-AU-197(P,X)79-AU-196,,SIG	- Au foils (30 um thickness)
770		D7037	MONITOR	2	79-AU-197(P,X)79-AU-194,,SIG	- Au foils (30 um thickness)
771		D7037	MONITOR	3	13-AL-27(P,X)11-NA-24,,SIG	- Al foils (100 um thickness)
772	162	F0417	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG	

773		F0417	MONITOR	2	41-NB-93(N,2N)41-NB-92-M,,SIG	
774		F0417	MONITOR	3	41-NB-91(N,2N)41-NB-90-M,,SIG	
775		F0417	MONITOR	4	41-NB-91(N,2N)41-NB-90-M,,SIG	
776	163	F0589	MONIT-REF	2	C0091002,Leavitt+,J,NIM/B,44,260,1990	
777		F0589	MONIT-REF	3	C0748002,Leavitt+,J,NIM/B,40,776,1989	
778		F0589	MONITOR	1	13-AL-27(P,G)14-SI-28,,DA	
779		F0589	MONITOR	2	8-O-16(A,EL)8-O-16,,DA	
780		F0589	MONITOR	3	6-C-12(A,EL)6-C-12,,DA	
781		F0589	MONITOR	4	13-AL-27(P,N)14-SI-27,,DA	
782	164	F0736	MONIT-REF	1	,A.TRIER+,J,PRL,18,915,1967	
783		F0736	MONIT-REF	2	,J.A.R.GRIFFITH+,J,NP/A,146,193,1970	
784		F0736	MONITOR	1	2-HE-4(D,EL)2-HE-4,,DA	The polarimeter was cross
785		F0736	MONITOR	2	6-C-12(D,P)6-C-13,,POL/DA	The beam polarization was
786	165	F1377	DECAY-MON	1	30-ZN-62,9.13HR	
787		F1377	DECAY-MON	2	11-NA-22,2.6YR	
788		F1377	MONITOR	1	29-CU-0(P,X)30-ZN-62,,SIG	
789		F1377	MONITOR	2	13-AL-27(P,X)11-NA-22,,SIG	
790	166	G0079	DETECTOR	1	HPGE	resolution of 2.0 keV at 1332.0 keV
791		G0079	DETECTOR	2	HPGE	resolution of 1.8 keV (FWHM) at 1332.5 keV
792		G0079	FACILITY	1	LINAC,2GERZFK	ELBE (E0=12,14,16 MeV)
793		G0079	FACILITY	2	LINAC,3KORPUE	PAL (E0=65,75 MeV)
794		G0079	INC-SOURCE	1	BRST	Electron beam on solid graphite
795		G0079	INC-SOURCE	2	BRST	Electron beam on W metal foil (0.1 mm thick,
796		G0079	METHOD	1	ACTIV	Irradiated for 8.5-10.5 hr
797		G0079	METHOD	2	ACTIV	Irradiated for 60 min

798		G0079	SAMPLE	1		Three high purity (99.999%) natural Dy metal foils
799		G0079	SAMPLE	2		Two high purity (99.999%) natural Dy metal foils
800	167	O0276	MONIT-REF	1	,J.Tobaillem+,R,CEA-N-1466,1981	For E>200 MeV
801		O0276	MONIT-REF	2	A0507001,S.J.Mills+,J,ARI,43,1019,1992	For E<45 MeV
802		O0276	MONITOR	1	13-AL-27(P,X)11-NA-22,,SIG	
803		O0276	MONITOR	2	29-CU-0(P,X)30-ZN-65,,SIG	For E<45 MeV
804	168	O0298	FACILITY	1	LINAC,4RUSFVE	LU-100 at the Institute For High Energy
805		O0298	FACILITY	2	CYCLO,3POLIPJ	Additional measurement at Ep=35.4 MeV.
806		O0298	MONITOR	1	13-AL-27(P,X)11-NA-24,,SIG	
807		O0298	MONITOR	2	29-CU-63(P,2N)30-ZN-62,,SIG	
808		O0298	SAMPLE	1		High purity metal foils of Tc were used. The thickness
809		O0298	SAMPLE	2		The stack used at Rez contained 10 Tc foils.
810	169	O0605	FACILITY	1	SYNCY,2ZZZCER	590 MeV
811		O0605	FACILITY	2	SYNCH,2FR SAC	2.9 GeV
812		O0605	FACILITY	3	SYNCH,2ZZZCER	11, 18, 23 GeV
813		O0605	MONITOR	1	13-AL-27(P,X)11-NA-24,CUM,SIG	
814		O0605	MONITOR	2	6-C-12(P,X)6-C-11,,SIG	
815		O0605	MONITOR	3	13-AL-27(P,X)11-NA-24,CUM,SIG	
816	170	O0621	DETECTOR	1	PROPC	Windowless 2Pi-flow proportional counter.
817		O0621	DETECTOR	2	NAICR	Na-I crystal.
818		O0621	PART-DET	1	B-	
819		O0621	PART-DET	2	DG	
820	171	O0634	DETECTOR	1	PROPC	Windowless 2-Pi Proportional Counter.
821		O0634	DETECTOR	2	NAICR	Na-I-Tl Scintilation Crystal.
822		O0634	PART-DET	1	B-	.

823		O0634	PART-DET	2	DG	.
824	172	O0650	DETECTOR	1	SCIN	Ne102 Plastic Scintillator 11 Cm Diam., 5 Cm
825		O0650	DETECTOR	2	SCIN	Pair of Plastic Scintillators For Monitoring of
826		O0650	PART-DET	1	N	.
827		O0650	PART-DET	2	P	Protons Scattered from the Beam Monitor Foil.
828	173	O0655	DETECTOR	1	COIN,SCIN,SCIN	A 7.62 Cm Diameter, 7.62 Cm Long Ne-
829		O0655	DETECTOR	2	IOCH	An Ionization Chamber, with Total Thickness of
830		O0655	DETECTOR	3	IOCH	The Same Chamber was Placed Aside the Primary
831		O0655	PART-DET	1	N	.
832		O0655	PART-DET	2	P	Protons of the Primary Beam.
833		O0655	PART-DET	3	P	Protons Scattered by the Monitor Film.
834	174	O0660	DETECTOR	1	SCIN	A Bc501a or Ne213 Scintillator was Placed at
835		O0660	DETECTOR	2	TELES,SOLST,NAICR	A Proton Recoil Telescope
836		O0660	PART-DET	1	N	Neutrons from the Lithium Target.
837		O0660	PART-DET	2	P	Recoil Protons from a Polyethylene Plate, 0.12-1.0
838	175	O2000	MONIT-REF	1	,J.Tobailem+,R,CEA-N-1466,1971	for MONIT1
839		O2000	MONIT-REF	2	O0501003,H.R.Heydegger+,J,PR/C,14,1506,1976	MONIT2
840	176	O2415	DETECTOR	1	TELES,SI,SI	SiRi detector array consisting of 64 dE
841		O2415	DETECTOR	2	NAICR	CACTUS detector array using 25 (233U) or 26
842		O2415	DETECTOR	3	PPAC	NIFF detector consisting of 4 PPAC at 45 deg,
843		O2415	PART-DET	1	P	
844		O2415	PART-DET	2	G	
845		O2415	PART-DET	3	FF	
846	177	S0068	DETECTOR	A		ngular resolution (2.06 deg) is due to
847	178	V0008	DECAY-MON	1	11-NA-24,15.0HR	

848		V0008	DECAY-MON	3	25-MN-56,2.576HR	
849		V0008	DECAY-MON	4	29-CU-64,12.8HR,B+,,0.19	to Ni-64 ground state
850		V0008	DECAY-MON	5	29-CU-62,9.8MIN,B+,,0.97	to Ni-62 levels
851		V0008	MONIT-REF	1	,P.G.Young+,3,ENDF/B-IV,6193,1974	
852		V0008	MONIT-REF	2	,N.C.Paik,3,ENDF/B-IV,6262,1974	
853		V0008	MONIT-REF	3	,N.D.Dudey+,3,ENDF/B-IV,6410,1974	
854		V0008	MONIT-REF	4	,P.F.Rose,3,ENDF/B-IV,6412,1974	
855		V0008	MONIT-REF	5	,S.M.Offord,R,AWRE-O-63/67,1967	UKNDL (DFN 250)
856		V0008	MONITOR	1	13-AL-27(N,A)11-NA-24,,SIG,,,EVAL	
857		V0008	MONITOR	2	92-U-238(N,F),,SIG,,,EVAL	
858		V0008	MONITOR	3	26-FE-56(N,P)25-MN-56,,SIG,,,EVAL	
859		V0008	MONITOR	4	29-CU-65(N,2N)29-CU-64,,SIG,,,EVAL	
860		V0008	MONITOR	5	29-CU-63(N,2N)29-CU-62,,SIG,,,EVAL	