

**Nuclear Data Section
International Atomic Energy Agency
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Memo CP-D/633

Date: 4 April 2010
To: Distribution
From: N. Otsuka. E. Dupont
Subject: Automatic test of EXFOR with TALYS (2)
Reference: Memo CP-D/627

As a continuation of testing of EXFOR with TALYS, a new list was generated using the following constraints

1. F and $(R \text{ or } 1/R) > 100$
2. For the same reaction (SF2,SF3), target (SF1), product (SF4), and in a similar energy range:
 - a) at least 2 independent subentries are available
 - b) at most 20% (or $1/n$ with $n < 10$) of these subentries satisfy criteria 1
3. The following data are excluded:
 - a) SF8=RAW or SF8=FCT (not to be compared with evaluated/calculated cross sections)
 - b) SF8=MXW with $kT = 25.3$ meV (in C4) because part of these data are now incorrectly converted from EXFOR data with $kT \sim 30$ keV (stellar temperature spectra).
 - c) SF5=PAR (choice of the excited state to be compared is ambiguous)

Finally 12 suspicious data sets (not yet reported) were checked with original articles by NDS and 8 real coding mistakes were found in data sets.

Please find proposed corrections in “Report to WPEC SG30” appended to this memo. A short summary is also shown in the NRDC webpage:

http://www-nds.iaea.org/nrdc/error/exfor_err3.html.

Plots prepared by the NEA Data Bank were also added to the web page.

Common remark for action to the lists from WPEC SG30 activity:

1. Occasionally additional mistakes were found during checking at NDS. It is also written in the comment field.
2. Addition of CRITIQUE may help users even if deviation is not attributed to coding mistake!!

Table 1: Deviation factors of suspicious data sets after filtering of the list provided by A. Koning

# EXFOR	<i>E</i> -min (eV)	<i>E</i> -max (eV)	<i>F</i>	<i>R</i>	χ^2	Δ
10835.014	1.48E+01	1.48E+01	405	2.47E-03	107	1.24E+03
11399.003	2.40E-02	2.40E-02	369	2.71E-03	0	14
30079.042	2.40E-02	2.40E-02	1.29E+04	7.74E-05	42.2	6.5
31419.005	7.50E+00	7.50E+00	215	4.66E-03	366	2.54
31556.003	5.00E-10	5.00E-10	9.44E+03	9.44E+03	4.93E+12	3.11E+05
31615.007	1.35E+01	1.48E+01	2.96E+03	2.99E+03	1.2	895
40244.009	2.70E+00	2.70E+00	2.71E+03	2.71E+03	0	14.1
40244.050	4.00E+00	4.00E+00	3.89E+03	3.89E+03	6.04E+07	10.1
41504.002	1.50E-03	1.50E-02	110	121	0	10.2
C0738.002	2.04E+00	4.19E+00	2.06E+03	6.26E+03	8.29E+11	57.9
C0739.008	1.92E+00	4.14E+00	8.50E+03	1.38E+04	3.25E+12	36.1
F0794.003	1.46E+01	1.73E+01	150	150	2.09E+07	258

Table 2: Summary of checking with articles

Not in error	3
Error (corrected)	1
Error (to be corrected)	7
Not resolved yet	1
Total	12

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Report to WPEC SG30

Analysis of a selected suspicious data from Arjan Koning's list (x4.sort) (Draft Ver. 2010-04-03 by Naohiko)

Source:

Table: Table of data is given in the reference.

Author: Data received from authors.

Trans: EXFOR transmission number if corrected

Subentry	Reference	Reaction	Comments (AK+ED)	Source	Error?	Trans	Comments (NO)
10835.014	T, SOTHRAS, 1977	50-SN-116(N,P)49-IN-116-M2, ,SIG	1000 times too large	Author	?		<i>Checking by NNDC</i>
11399.003	J, PR, 107, 504, 1957	12-MG-26(N,G)12-MG-27, ,SIG	1000 times too large	Table	No		Upper limit (14 mb) given
30079.042	J, PR, 152, 1055, 1966	82-PB-208(N,G)82-PB-209, ,SIG	1000 times too large	Table	No		β spectroscopy
31419.005	R, INDC(ARG)-012, 1993	22-TI-50(N,A)20-CA-47, ,SIG	30 times too large? (threshold)	Table	No		Their decay data (74.9% for 1297.1 keV gamma lines is good.).
31556.003	J, NIM/B, 213, 32, 2004	17-CL-35(N,G)17-CL-36, ,SIG	10000 times too low	Table	Yes		DATA(-ERR): MB → B
31615.007	J, IPC, 77, 854, 2008	35-BR-79(N,2N)35-BR-78, ,SIG	3000 times too low	Table	Yes	3139	Add EN-ERR in the 2nd column
40244.009	C, 58GENEVA, 15, 50(2219)1958	28-NI-64(N,G)28-NI-65, ,SIG	1000 times too low	Table	Yes		DATA: MB → B (See also CP-D/627)
40244.050	C, 58GENEVA, 15, 50(2219)1958	28-NI-64(N,G)28-NI-65, ,SIG	1000 times too low	Table	Yes		DATA(-ERR): MB → B (See also CP-D/627)
41504.002	R, INDC(CCP)-368, 1991	24-CR-0(N,G) , ,SIG, ,AV	1000 times too low	Table	Yes		DATA: MB → B DATA: 0.119 → 0.118 @ 1-2 keV
C0738.002	T, QIANG, 1990	29-CU-65(P,N)30-ZN-65, ,SIG	1000 times too low	Table	Yes?		MICRO-B → MB? Misprint by authors? (See also CP-D/623)
C0739.008	T, QIANG, 1990	29-CU-65(P,N)30-ZN-65, ,SIG	1000 times too low	Table	Yes?		MICRO-B → MB? Misprint by authors? (See also CP-D/623)
F0794.003	J, NP/A, 275, 269, 1977	9-F-19(P,A)8-O-16, ,SIG	20 times too low (or 8-O-16-G production?)	Table	Yes		Add PAR in SF5 and E-LVL=0.0

