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**Memo CP-C/465**

**Date:** 30 January 2019  
**To:** Distribution  
**From:** O. Schwerer, B. Pritychenko  
**Subject:** **Completeness check EXFOR vs. NSR: Photofission Yields**  
**Reference:** CP-C/464

We performed a cross-check between NSR and EXFOR for references containing fission yield data. The results for photon-induced fission are listed in the Appendix. (For yields from spontaneous fission see CP-C/464). Again, the responsible centres are asked to go through the respective parts of the list and compile/update the appropriate entries with priority. The general remarks of CP-C/464 apply here also. In addition, the following should be noted:

- If in the section „No action for EXFOR“ we say „Probably not relevant“, the responsible centre may want to double-check our conclusion.
- In case of conferences, if instead of a code from dictionary 7 the title of the conference is given, a proposal for a dictionary code will have to be submitted at time of compilation.
- If after a conference code it says „(Abstract)“, the page number refers to a book of abstracts, not to proceedings.

**Distribution:**

a.koning@iaea.org  
abhihere@gmail.com  
aloks279@gmail.com  
cgc@ciae.ac.cn  
dbrown@bnl.gov  
draj@barc.gov.in  
dvoytenkov@ippe.ru  
ebata@nucl.sci.hokudai.ac.jp  
fukahori.tokio@jaea.go.jp  
ganesan555@gmail.com  
gezg@ciae.ac.cn  
iwamoto.osamu@jaea.go.jp

j.c.sublet@iaea.org  
jhchang@kaeri.re.kr  
jmwang@ciae.ac.cn  
kaltchenko@kinr.kiev.ua  
jim.gulliford@oecd.org  
manuel.bossant@oecd.org  
marema08@gmail.com  
masaaki@nucl.sci.hokudai.ac.jp  
mmarina@ippe.ru  
mwherman@bnl.gov  
nicolas.soppera@oecd.org

n.otsuka@iaea.org  
nrhc@jcprg.org  
nurzat.kenzhebaev@gmail.com  
ogritzay@kinr.kiev.ua  
oscar.cabellos@oecd.org  
otto.schwerer@aon.at  
pikulina@expd.vniief.ru  
pritychenko@bnl.gov  
samaev@obninsk.ru  
sbabykina@yandex.ru  
scyang@kaeri.re.kr  
selyankina@expd.vniief.ru

sonzogni@bnl.gov  
stakacs@atomki.hu  
stanislav.hlavac@savba.sk  
s.a.dunaeva@yandex.ru  
sv.dunaeva@gmail.com  
taova@expd.vniief.ru  
tarkanyi@atomki.hu  
vvvarlamov@gmail.com  
v.zerkin@iaea.org  
yolee@kaeri.re.kr  
zholdybayev@inp.kz  
zhuangyx@ciae.ac.cn

## APPENDIX

### Area 1 references

| NSR Key# | First Author    | Publication                         | Vol | Issue | Page | Year | Lab     | Area | Action                                                                        |
|----------|-----------------|-------------------------------------|-----|-------|------|------|---------|------|-------------------------------------------------------------------------------|
| 2000CO03 | T.E.Cowan       | J,PRL                               | 84  |       | 903  | 2000 | 1USALRL | 1    | New entry (U-238(g,f) mass distr.)                                            |
| 1991SM04 | J.R.Smith       | J,PR/C                              | 44  |       | 1198 | 1991 | 1USANMS | 1    | NewEntry                                                                      |
| 1990WI15 | W.Wilke         | J,PR/C                              | 42  |       | 2148 | 1990 | 1USAUI  | 1    | NewEntry (U(g,f) cross section, rel.mass distr.)                              |
| 1987VA18 | W.J.Varhue      | J,ARI                               | 38  |       | 561  | 1987 | 1USAVIR | 1    | NewEntry (Cross section, nothing on fission products)                         |
| 1977KNZW | J.W.Knowles     | P,INDC(SEC)-                        | 62  |       | 129  | 1977 | 1USAUI  | 1    | Abstract, no data. Related to M0504                                           |
| 1976JA08 | W.D.James       | J,JIN                               | 38  |       | 1109 | 1976 | 1USAWSA | 1    | NewEntry                                                                      |
| 1973ALYV | J.W.Knowles     | C,Asilomar (Photonuclear Reactions) | 1   |       | 647  | 1973 | 1CANCRC | 1    | Related to M0504. Add ref.and (g,n), (g,abs) cs data from graphs. No FY data. |
| 1973CH15 | A.Chattopadhyay | J,JIN                               | 35  |       | 2621 | 1973 | 1CANTOR | 1    | NewEntry                                                                      |

| Area 2 references |               |             |     |       |       |      |         |       |                                                           |
|-------------------|---------------|-------------|-----|-------|-------|------|---------|-------|-----------------------------------------------------------|
| NSR Key#          | First Author  | Publication | Vol | Issue | Page  | Year | Lab     | Area  | Action                                                    |
| 2017GO16          | A.Gook        | J,PR/C      | 96  |       | 44301 | 2017 | 2GERTHD | 2     | NewEntry                                                  |
| 2003HA18          | H.Haba        | J,CZJ       | 53  |       | A265  | 2003 | 2JPNKEK | 2 / K | Add mass distr. and data for Au-197(g,f) to K2022         |
| 2003SC25          | H.Schwoerer   | J,EUL       | 61  |       | 47    | 2003 | 2GERJEU | 2     | NewEntry                                                  |
| 1998TA13          | N.Takahashi   | J,RCA       | 80  |       | 171   | 1998 | 2JPNTOH | 2     | NewEntry                                                  |
| 1997BO17          | C.Bockstiegel | J,PL        | 398 |       | 259   | 1997 | 2GERGSI | 2     | NewEntry                                                  |
| 1997PE09          | K.Persyn      | J,NP/A      | 620 |       | 171   | 1997 | 2BLGGHT | 2     | NewEntry                                                  |
| 1994PO06          | S.Pomme       | J,NP/A      | 572 |       | 237   | 1994 | 2BLGGHT | 2     | NewEntry                                                  |
| 1993PI05          | M.Piessens    | J,NP/A      | 556 |       | 88    | 1993 | 2BLGGHT | 2     | NewEntry                                                  |
| 1993PO10          | S.Pomme       | J,NP/A      | 560 |       | 689   | 1993 | 2BLGGHT | 2     | NewEntry                                                  |
| 1992KA26          | T.Kase        | J,NSE       | 111 |       | 368   | 1992 | 2JPNTOH | 2     | NewEntry (mass distr.)                                    |
| 1990VE08          | M.Verboven    | J,PR/C      | 42  |       | 453   | 1990 | 2BLGGHT | 2     | NewEntry (mass distr.)                                    |
| 1988WI15          | W.Wilke       | J,PL/B      | 207 |       | 385   | 1988 | 2GERJLU | 2     | NewEntry                                                  |
| 1988WI20          | W.Wilke       | J,NIM/A     | 272 |       | 785   | 1988 | 2GERJLU | 2     | Combine with 1988WI15                                     |
| 1987LO19          | S.Lo Nigro    | J,NC/A      | 98  |       | 643   | 1987 | 2ITYFRA | 2     | NewEntry                                                  |
| 1985BE16          | V.Bellini     | J,NC/A      | 85  |       | 75    | 1985 | 2ITYFRA | 2     | NewEntry (cs, nothing on fiss.products)                   |
| 1985DR01          | J.Drexler     | J,NP/A      | 437 |       | 253   | 1985 | 2GERTHS | 2     | NewEntry (photofiss.ratio of nsec isomer)                 |
| 1984DE13          | D.De Frenne   | J,PR/C      | 29  |       | 1777  | 1984 | 2BLGGHT | 2     | NewEntry                                                  |
| 1983BE15          | V.Bellini     | J,NCL       | 36  |       | 587   | 1983 | 2ITYFRA | 2     | Probably to be added to M0789                             |
| 1983CA27          | G.P.Capitani  | J,NIM       | 216 |       | 307   | 1983 | 2ITYFRA | 2     | Mainly descr.of facility; perhaps Fig.12 related to M0789 |
| 1982DE38          | D.De Frenne   | J,PR/C      | 26  |       | 1356  | 1982 | 2BLGGHT | 2     | New entry. (Similar to L0066, but at different EN)        |
| 1982TH04          | H.Thierens    | J,PR/C      | 25  |       | 1546  | 1982 | 2BLGGHT | 2     | NewEntry                                                  |
| 1980JA01          | E.Jacobs      | J,PR/C      | 21  |       | 237   | 1980 | 2BLGGHT | 2     | NewEntry                                                  |
| 1979JA02          | E.Jacobs      | J,PR/C      | 19  |       | 422   | 1979 | 2BLGGHT | 2     | NewEntry                                                  |
| 1979JA28          | E.Jacobs      | J,PR/C      | 20  |       | 2249  | 1979 | 2BLGGHT | 2     | NewEntry                                                  |
| 1978GA22          | H.Gaggeler    | J,JIN       | 40  |       | 1859  | 1978 | 2SWTUBE | 2     | NewEntry                                                  |
| 1978LI06          | L.J.Lindgren  | J,NP/A      | 298 |       | 43    | 1978 | 2SWDLND | 2     | NewEntry                                                  |
| 1977DE10          | D.De Frenne   | J,PR/C      | 15  |       | 1440  | 1977 | 2BLGGHT | 2     | New entry                                                 |
| 1976AL15          | A.Alm         | J,NP/A      | 271 |       | 1     | 1976 | 2SWDLND | 2     | NewEntry. Possibly combine with 1978LI06                  |
| 1976DE10          | A.De Clercq   | J,PR/C      | 13  |       | 1536  | 1976 | 2BLGGHT | 2     | New entry                                                 |
| 1972AN19          | G.Andersson   | J,NP/A      | 197 |       | 44    | 1972 | 2GERHAM | 2     | New entry                                                 |
| 1966SA17          | K.Sakamoto    | J,JIN       | 28  |       | 679   | 1966 | 2JAPTOK | 2     | New entry                                                 |
| 1965KI02          | T.Kivikas     | J,NP        | 64  |       | 420   | 1965 | 2SWDLND | 2     | New entry                                                 |

#### Other new data found

|          |         |              |      |  |    |      |         |   |                                          |
|----------|---------|--------------|------|--|----|------|---------|---|------------------------------------------|
| 1979NIZX | T.Nishi | R,NEANDC(J)- | 61/U |  | 68 | 1979 | 2JPNKTO | 2 | Th-232(alpha,f), nothing on photofission |
|----------|---------|--------------|------|--|----|------|---------|---|------------------------------------------|

#### No action for EXFOR

|          |              |         |     |  |     |      |         |   |                                                                              |
|----------|--------------|---------|-----|--|-----|------|---------|---|------------------------------------------------------------------------------|
| 2002IB01 | F.Ibrahim    | J,EPJ/A | 15  |  | 357 | 2002 | 2ZZZCER | 2 | Probably not relevant for Exfor                                              |
| 1993PI17 | M.Piessens   | J,NIM/B | 82  |  | 7   | 1993 | 2BLGGHT | 2 | Probably not relevant for Exfor                                              |
| 1982DE53 | E.De Sanctis | J,NIM   | 203 |  | 227 | 1982 | 2ITYFRA | 2 | Similar to 1983BE15. Some continuous curves for demo, Probably not for Exfor |

### Area 3 references

| NSR Key# | First Author      | Publication                                                                 | Vol | Issue | Page | Year | Lab     | Area | Action                                  |
|----------|-------------------|-----------------------------------------------------------------------------|-----|-------|------|------|---------|------|-----------------------------------------|
| 2011RA37 | H.G.Raj Prakash   | J,IMP/E<br>C,Int.School on Contemporary Physics-III, Ulaanbaatar, Mongolia, | 20  |       | 2361 | 2011 | 3INDMNG | 3    | Add Fig.8 data to G0504 ?               |
| 2005NOZZ | N.Norov           | Aug. 8-15, 2005                                                             |     |       | 30   | 2005 | 3MGLNUM | 3    | NewEntry                                |
| 1985KA24 | S.Kahane          | J,PR/C                                                                      | 32  |       | 1944 | 1985 | 3ISLNEG | 3    | NewEntry                                |
| 1979AR12 | J.D.T.Arruda Neto | J,NCL                                                                       | 26  |       | 487  | 1979 | 3BZLUSP | 3    | New entry                               |
| 1979KAYW | S.Kahane          | C,Conf.Nucl.Spectrosc.Fission Products, Grenoble                            |     |       | 315  | 1979 | 3ISLNEG | 3    | NewEntry                                |
| 1978WOZS | Wolf              | C,78BNL                                                                     |     |       | 811  | 1978 | 3ISLNEG | 3    | NewEntry                                |
| 1978WOZZ | Wolf              | C,78BNL                                                                     |     |       | 808  | 1978 | 3ISLNEG | 3    | New entry, Gam(n)/Gam(f), nothing on FY |

## Area 4 references

| NSR Key# | First Author        | Publication                                                          | Vol  | Issue | Page | Year | Lab     | Area | Action                                                                                       |
|----------|---------------------|----------------------------------------------------------------------|------|-------|------|------|---------|------|----------------------------------------------------------------------------------------------|
| 2017ZH17 | V.O.Zheltonozhskiy  | J,UJP                                                                | 62   |       | 285  | 2017 | 4UKRIEP | 4/M  | NewEntry                                                                                     |
| 2014IS05 | B.S.Ishkhanov       | J,PAN                                                                | 77   |       | 824  | 2014 | 4RUSMOS | 4/M  | NewEntry                                                                                     |
| 2013DE15 | V.V.Denyak          | J,EPJ/A                                                              | 49   |       | 51   | 2013 | 4UKRKFT | 4/M  | NewEntry (fragm.mass distr., graphs)                                                         |
| 2013GA45 | Yu.P.Gangrskii      | J,PPN/L                                                              | 10   |       | 422  | 2013 | 4ZZZDUB | 4/M  | M0868 needs correction (Table 2 compiled incorrectly)                                        |
| 2011KA44 | V.I.Kasilov         | Vis.Khar.Nat.Univ.                                                   | 95   | 2(50) | 37   | 2011 | 4UKRKFT | 4/M  | Check for relevance (article in ?Ukrainian)                                                  |
| 2010GA21 | Yu.P.Gangrsky       | J,PAN                                                                | 73   |       | 1523 | 2010 | 4ZZZDUB | 4/M  | NewEntry                                                                                     |
| 2010ZHZZ | V.A.Zheltonozhskij  | C,2010STPETR (Book of abstracts)                                     |      |       | 170  | 2010 | 4UKRIEP | 4/M  | Data are in G4038. Possibly SIG/RAT can be replaced by FY/RAT (numerically equivalent)       |
| 2009BAZU | J.Badamsambuu       | S,AIP-                                                               | 1109 |       | 16   | 2009 | 4ZZZDUB | 4/M  | New entry; compare M0868                                                                     |
| 2008DE01 | N.A.Demekhina       | J,PAN                                                                | 71   |       | 27   | 2008 | 4ARMJER | 4/M  | NewEntry                                                                                     |
| 2008VIZY | I.N.Vishnevsky      | C,58th Ann.Conf.Nucl.Spectrosc.and Nucl.Structure, Moscow (Abstract) |      |       | 134  | 2008 | 4UKRIEP | 4/M  | This short abstract could be added as 3 <sup>rd</sup> ref.to G4028                           |
| 2005BEZW | O.A.Bezshyyko       | S,AIP-                                                               | 769  |       |      | 2005 | 4UKRIEP | 4/M  | Add ref.to M0681 (same data)<br>Table 1 (most probable mass) could be compiled in new entry; |
| 2005GA62 | Yu.P.Gangrsky       | J,BAS                                                                | 69   |       | 1796 | 2005 | 4ZZZDUB | 4/M  | However not clear whether this is orig.experiment                                            |
| 2005GAZP | Yu.P.Gangrski       | P,JINR-P15-                                                          |      |       | 210  | 2005 | 4ZZZDUB | 4/M  | Add ref.to M0811; correct in sub.6: CM-238 → CM-248                                          |
| 2004GAZV | Yu.L.Gangrsky       | P,JINR-P15-                                                          |      |       | 119  | 2004 | 4ZZZDUB | 4/M  | Add ref.to M0683 (same data)                                                                 |
| 2004GAZY | Yu.P.Gangrsky       | C,2004BELGOR (Abstract)                                              |      |       | 81   | 2004 | 4ZZZDUB | 4/M  | Add ref.to M0683                                                                             |
| 2004GAZZ | Yu.P.Gangrsky       | C,2004BELGOR (Abstract)                                              |      |       | 80   | 2004 | 4ZZZDUB | 4/M  | Add ref.to M0813                                                                             |
| 2003GAZX | Yu.P.Gangrsky       | C,2003MOSCOW (Abstract)                                              |      |       | 182  | 2003 | 4ZZZDUB | 4/M  | Add ref.to M0683                                                                             |
| 2004GA60 | Yu.P.Gangrsky       | J,BAS                                                                | 68   |       | 1298 | 2004 | 4ZZZDUB | 4/M  | Add ref.to M0683                                                                             |
| 2003GAZS | Yu.P.Gangrsky       | P,JINR-P15-                                                          |      |       | 192  | 2003 | 4ZZZDUB | 4/M  | Add ref.to M0683 and/or M0655 (Pu-244) (in Russian)                                          |
| 2003PE17 | Yu.E.Penionzhkevich | J,PAN                                                                | 66   |       | 1407 | 2003 | 4ZZZDUB | 4/M  | Add ref.to M0655 (overview article)                                                          |
| 2003RA23 | D.N.Rassadov        | J,CZJ                                                                | 53   |       | A339 | 2003 | 4ZZZDUB | 4/M  | NewEntry                                                                                     |
| 2002GAZR | Yu.P.Gangrsky       | P,JINR-P15-                                                          |      |       | 188  | 2002 | 4ZZZDUB | 4/M  | Add ref.to M0655                                                                             |
| 2002GAZT | Yu.P.Gangrsky       | P,JINR-E15-                                                          |      |       | 147  | 2002 | 4ZZZDUB | 4/M  | Add ref.to M0655                                                                             |
| 2001GAZU | Yu.P.Gangrsky       | C,2001SAROV (Abstract)                                               |      |       | 212  | 2001 | 4ZZZDUB | 4/M  | Compare M0655 (in Russian)                                                                   |
| 2000GA60 | Yu.P.Gangrsky       | J,Part. and Nucl., Lett. (=PPN/L ?)                                  | 103  |       | 5    | 2000 | 4ZZZDUB | 4/M  | Compare M0655 (in Russian)                                                                   |
| 2000KA25 | S.A.Karamian        | J,PAN                                                                | 63   |       | 718  | 2000 | 4ZZZDUB | 4/M  | Data are in both M0620 and M0621, combine entries?                                           |
| 2000OGZY | Yu.Ts.Oganessian    | P,JINR-E7-                                                           |      |       | 83   | 2000 | 4ZZZDUB | 4/M  | New entry? (Graph of Rel.yield of Sn isotopes)                                               |
| 1996KAZT | S.A.Karamian        | P,JINR-P15-                                                          |      |       | 229  | 1996 | 4ZZZDUB | 4/M  | NewEntry                                                                                     |
| 1995SO25 | A.S.Soldatov        | J,AE/T                                                               | 78   |       | 386  | 1995 | 4RUSFEI | 4/M  | New entry, Pa-131(g,f) cross section                                                         |
| 1992IV03 | D.I.Ivanov          | J,SNP                                                                | 55   |       | 1464 | 1992 | 4RUSSIB | 4/M  | NewEntry (graph, mass distr.of fiss.fragm.)                                                  |
| 1991TO10 | A.P.Tonchev         | J,JRN                                                                | 155  |       | 299  | 1991 | 4ZZZDUB | 4/M  | NewEntry                                                                                     |
| 1989GA23 | P.P.Ganich          | J,SJA                                                                | 66   |       | 245  | 1989 | 4UKRIEP | 4/M  | NewEntry (Delayed neutron yield ratio U/Th)                                                  |
| 1987SO17 | A.S.Soldatov        | J,SNP                                                                | 46   |       | 389  | 1987 | 4RUSFEI | 4/M  | NewEntry (Pa-131(g,f) cross section)                                                         |
| 1984GAZN | P.P.Ganich          | C,83KIEV                                                             | 2    |       | 275  | 1984 | 4UKRIEP | 4/M  | Add ref.to M0167                                                                             |
| 1984KOZD | M.Ya.Kondratko      | C,83KIEV                                                             | 2    |       | 47   | 1984 | 4RUSTIL | 4/M  | Compare M0089; possibly Pu-239 data to be added                                              |
| 1983OS06 | Yu.B.Ostapenko      | J,JEL                                                                | 37   |       | 666  | 1983 | 4RUSIFP | 4/M  | Add to M0075                                                                                 |
| 1981AN09 | A.P.Antipenko       | J,YF                                                                 | 33   |       | 310  | 1981 | 4UKRKFT | 4/M  | Check (In Russian), probably nothing on fiss.prod.                                           |
| 1980KOYL | M.Ya.Kondratko      | C,80KIEV                                                             | 3    |       | 148  | 1980 | 4RUSTIL | 4/M  | Add ref.to M0076                                                                             |
| 1980TEZX | V.F.Teplykh         | C,80KIEV                                                             | 3    |       | 171  | 1980 | 4RUSTIL | 4/M  | Add ref.to M0082                                                                             |
| 1975ZH02 | V.E.Zhuchko         | J,JEL                                                                | 22   |       | 118  | 1975 | 4RUSIFP | 4/M  | Add ref.to M0004                                                                             |
| 1973KO08 | M.Y.Kondratko       | J,SJA                                                                | 34   |       | 69   | 1973 | 4RUSTIL | 4/M  | Compare M0198                                                                                |

## No action for EXFOR

|          |             |       |    |  |      |      |         |     |                                                   |
|----------|-------------|-------|----|--|------|------|---------|-----|---------------------------------------------------|
| 2004BE40 | A.D.Belyaev | J,PAN | 67 |  | 1424 | 2004 | 4CCPKUR | 4/M | Cannot find data for Exfor, probably not relevant |
| 1984GA35 | P.P.Ganich  | J,SJA | 57 |  | 797  | 1984 | 4UKRIEP | 4/M | Paper rather not relevant for Exfor               |
| 1983GA21 | P.P.Ganich  | J,SJA | 55 |  | 693  | 1983 | 4UKRIEP | 4/M | Paper rather not relevant for Exfor               |