**Nuclear Data Section**

**International Atomic Energy Agency**

**P.O.Box 100, A-1400 Vienna, Austria**

**Memo CP-D/1013**

**Date:** 27 April 2021

**To:** Distribution

**From:** N. Otsuka

**Subject: EXFOR Formats Manual “FACILITY”**

**Reference:** Memo CP-C/476

Memo CP-C/476 proposes addition of a new facility code SFASS (spontaneous fission assembly) for spontaneous fission samples with EXFOR 13067 and 13583 as examples.

***Example***:

ENTRY C 13067 20200424

SUBENT C 13067001 20200424

BIB 7 8

TITLE Precise kinetic energy measurements and fine

structure in the spontaneous fission of Cf252

AUTHOR (J.S.Fraser, J.C.D.Milton, H.R.Bowman, S.G.Thompson)

REFERENCE (J,CJP,41,2080,1963)

INSTITUTE (1CANCRC,1USALRL)

FACILITY (**SFASS**,1CANCRC)

SAMPLE ~3 mm in diameter on VYNS backing

…

SUBENT 13067002 20200207

BIB 3 7

REACTION (98-CF-252(0,F)MASS,CHN,FY)

NOCOMMON 0 0

DATA 2 89

…

I agree that the spontaneous fission sample is small (~ 3 mm in diameter on VYNS backing for the 13067 experiment) but its presence is essential in measurements of spontaneous fission quantities such as neutron multiplicity, fission fragment/product yield etc. The sample is always followed by various instruments such as detectors, and it can be a large measurement system. But it is not clear for me if such a measurement system is known as a “spontaneous fission assembly” (Google found this term only in WP2021-09 and Memo CP-C/476.) The keywords SAMPLE and DETECTOR look more appropriate place to accommodate relevant information.

Use of a new facility code for a “spontaneous fission assembly” also may add redundancy to EXFOR entries since REACTION SF2=0 always means a spontaneous fission material is used. It would be also confusing if some datasets with REACTION SF2=0 are coded with FACILITY=SFASS but others not. (According to Memo CP-C/476, there are about 1600 relevant EXFOR entries.)

At the same time, I also see the problem is originated from the FACILITY format rule. Currently the Facility Field of this keyword must be always present, and we can indicate the location of the experimental site in the Institute Field only when an appropriate facility code exists. A possible solution to solve this problem is to allow a code in the Institute Field without a code in the Facility Field. I suggest the following amendment of the formatting rule agreed in the NRDC 2016 meeting (Conclusion 20).

**FACILITY**. Defines the main apparatus used in the experiment. See also **LEXFOR, Measurement Techniques**.

1. Keyword must be present except when not relevant. At least one of the keywords method, facility, detector, or analysis must be present with coded information. Within this restriction, coded information for facility is optional.

2. The format of coded information is: (facility, institute).

Facility Field: a code from Dictionary 18. ~~This field must be present~~. This field may be omitted, in which case the following comma must be included.

Institute Field: a code from Dictionary 3, which specifies the location of the facility. This field must be present except when the location is not known.

***Example***:

…

REFERENCE (J,CJP,41,2080,1963)

INSTITUTE (1CANCRC,1USALRL)

FACILITY **(,1CANCRC)**

SAMPLE ~3 mm in diameter on VYNS backing

NOCOMMON 0 0

DATA 2 89

MASS DATA-MAX

NO-DIM PC/FIS

80. 0.0145

…

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