EXFOR-2008-05-16
JANIS IMPORT LOG

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I. Format

A. Corrupted ENTRY records

Entry	Field	Comment
13511	N2 (date of entry or last update)	Illegal value "3" plus unsafe YY->YYYY conversion?
40158		Unsafe YY->YYYY conversion? Should be read as 19990902?
C0476		Column shift
C1202		Illegal value
M0546		Column shift
M0592		Column shift

In EXFOR backup file:

Sample correct records:

```
ENTRY          C1201   20050406   20050610   20050926        C073
SUBENT      C1201001   20050406   20050610   20050926        C073
```

Corrupted records:

```
ENTRY          13511   19      3  20000306   20050926        0000
SUBENT      13511001   19      3  20000306   20050926        0000
ENTRY          40518    9990902  20000118   20050926        0000
SUBENT      40518001    9990902  20000118   20050926        0000
ENTRY          C0476   19990723  19990901   20050926        0000
SUBENT      C0476001   19990723  19990901   20050926        0000
ENTRY          C1202          2  20051109   20051018        C075
SUBENT      C1202001          2  20051109   20051018        C075
ENTRY          M0546   19990226  19990429   20050926        0000
SUBENT      M0546001   19990226  19990429   20050926        0000
ENTRY          M0592   19990331  19990429   20050926        0000
SUBENT      M0592001   19990331  19990429   20050926        0000
```

Only the first SUBENT record is given in previous listing, but others in the same entry may be corrupted as well.

Note that when JANIS meets these records it actually skips the whole entry.

B. Corrupted SUBENT records

Subentry	Comment
14059.003	Column 23 should be blank
22906.005	"C" in column 12 is probably a "Changed" flag which should have been written in column 11. See latest EXFOR format manual, chapter 8
30496.003	N1 should contains a date
30791.002	Probably an unsafe YY->YYYY conversion. Year is probably 2001 instead of 1920!

32649.003	Probably an unsafe YY->YYYY conversion. Year is probably 2002 instead of 1902!
T0085.003	N1 should contains a date
V0034.003	Columns 13-14 should be blank

In EXFOR backup file:

```
ENTRY            14059   20051213   20060315   20060314        1339
SUBENT        14059001   20051213   20060315   20060314        1339
SUBENT        14059002   20051213   20060315   20060314        1339
SUBENT        140590032  20051213   20060315   20060314        1339

SUBENT        22906004   20080317   20080516   20080514        2196
SUBENT      C 22906005   20080317   20080516   20080514        2196

SUBENT        30496002   20050623   20050801   20050926        3117
SUBENT        30496003          1   20050801   20050926        3117
SUBENT        30496004   20050623   20050801   20050926        3117

ENTRY            30791   20010516   20011221   20050926        0000
SUBENT        30791001   20010516   20011221   20050926        0000
SUBENT        30791002   19200105 15 20011221   20050926        0000

ENTRY            32649   20030117   20030317   20050926        0000
SUBENT        32649001   20030117   20030317   20050926        0000
SUBENT        32649002   20030117   20030317   20050926        0000
SUBENT        32649003   19021205   20030317   20050926        0000
SUBENT        32649004   20030117   20030317   20050926        0000

ENTRY            T0085   20010302   20010514   20050926        0000
SUBENT        T0085001   20010302   20010514   20050926        0000
SUBENT        T0085002   20010130   20010514   20050926        0000
SUBENT        T0085003          D   20010514   20050926        0000

ENTRY            V0034     840706              20050926        0000
SUBENT        V0034001     840706              20050926        0000
SUBENT        V0034002     840706              20050926        0000
SUBENT      V00V0034003    840706              20050926        0000
```

C. Corrupted COMMON record

Sample correct record:

```
COMMON                 1           3
```

Corrupted record in subentry 40653.002:

```
COMMON                 2          3
```

N2 field should be right adjusted to column 33.

D. Indicated and actual number of columns in DATA or COMMON tables mismatch

Subentry	Table	DATA/COMMON N1 field	Actual number of columns/fields
10091.002	DATA	5	4
22500.006		5	4
A1003.004		5	4
A1443.002		4	3

A1053.003	COMMON	3	2
A1488.005		3	2
A1488.006		3	2
A1488.007		3	2
F0623.005		6	4
F0623.006		6	4

E. Columns shift

Subentry D5010.002:

Column 11 is reserved to define EXFOR pointers and contains free text in this entry. 'w' may not be a valid EXFOR pointer but 'J' is a legal one.

```
SUBENT        D5010002   20061023   20070306   20070306       D050
BIB                  5         15
REACTION  1(14-SI-30(P,0),,WID/STR,,FCT) Factor=1/(2Jp+1)(2Jt+1),
          where is Jp = spin of incident projectile and
          Jt = spin of target nucleus.
          In the formula of resonance strength:
                    g*Gamma(i)Gamma(j)/Gamma(tot)
          instead of usual statistical weight:
             g=(2J+1)/(2Jp+1)(2Jt+1), the authors used g=(2J+1)
          2(14-SI-30(P,G),,WID)
          3(14-SI-30(P,0),,J)
          4(14-SI-30(P,0),,PTY)
MONITOR    (14-SI-30(P,0),,WID/STR,,FCT) In monitor the authors
           used the same formula as in REACTION code.
MONIT-REF  (,M.Riihonen+,J,NP/A,313,251,1979)
ADD-RES    (STRUC)
STATUS     (TABLE) tbl.1
ENDBIB              15
```

Probably the same problem arises for subentries D5011.002, D5012.002, D5014.002, D5016.002 and D5017.002.

II. BIB sections

A. Empty/duplicate keyword

Subentry 13049.001: ERR-ANALYS keyword is empty (no code, nor free text)

```
SUBENT        13049001     870309              20050926       0000
BIB                9         10
INSTITUTE  (1USANCS)
REFERENCE  (J,NP,80,237,66)
AUTHOR     (W.M.TONEY,A.W.WALTNER)
TITLE      AN INVESTIGATION OF THE 10B(N,ALPHA)7LI*,7LI
            BRANCHING RATIO.
FACILITY   (REAC) RALEIGH RESEARCH REACTOR
INC-SOURCE (THCOL)
DETECTOR   (SOLST) SURFACE BARRIER SEMICONDUCTOR DETECTOR
ERR-ANALYS
HISTORY    (870225C)
ENDBIB              10
```

Subentry 30587.001: duplicate keyword ADD-RES:

```
SUBENT        30587001     840911              20050926       0000
BIB               13         211
INSTITUTE  (3SAFPEL)
REFERENCE  (J,ZP/A,296,295,8009) CURVE GIVEN.
           (J,ZP/A,260,197,7305) PREVIOUS AND DIFFERENT MEASUREM'T
             EXFOR 30179.
AUTHOR     (E.BARNARD,D.W.MINGAY,D.REITMANN)
TITLE      THE LEVEL STRUCTURE OF RB-85 AND RB-87 FROM (N,N'G)
           REACTION MEASUREMENTS.
FACILITY   (VDG,3SAFPEL) 3.75 MV VAN DE GRAAFF ACCELERATOR, PULSED
            1 NS AT REPETITION RATE OF 6 MHZ.
INC-SOURCE (P-LI7)
          1 THINNER LI-7 TARGETS (ABOUT 10KEV THICK), FOR TIME OF
            FLIGHT MEASUREMENTS.
          2 LI TARGETS USED FOR (N,N'G) MEASUREMENTS WERE 50 TO
            100 KEV THICK.
SAMPLE     A RIGHT CYLINDER OF 99.9 PERCENT PURE NATURAL RUBIDIUM
            (72.2 PC RB-85, 27.8 PERCENT RB-87) CONTAINED IN A
           THIN-WALLED STAINLESS STEEL CAN, 35 MM HIGH AND 35 MM
           IN DIAMETER, HAVING A WALL THICKNESS OF 0.25 MM.
DETECTOR   (SCIN) PLASTIC SCINTINTILLATOR.
           (GELI) GE(LI)-DETECTOR, USED AS TIME GATE.
           (LONGC) CONVENTIONAL LONG COUNTERS, POSITIONED AT 0,50,
            AND 90 DEG., WERE USED TO MONITOR THE NEUTRON FLUX.
ADD-RES    DETAILS OF GAMMA RAY TRANSITIONS AND BRANCHING RATIOS
           FOR RB-85 AND RB-87 LEVELS SCHEMES ARE GIVEN. (PRIV.
            COMM. FROM THE AUTHOR,80/12/09.)
            ** RB-85 **
            ------------------------------------------------------
            LEVEL(KEV)   * SPIN    * DECAY-GS(KEV)  *REL.BRANCH.R.
            ------------------------------------------------------
            151.17+-0.04 *  2/3 -  *  151.20+-0.05  *  100.0
            281.00+-0.06 *  1/2 -  *  129.83+-0.04  *  100.0
            513.88+-0.08 *  9/2 +  *  513.83+-0.10  *  100.0
            731.56+-0.08 *  3/2 -  *  731.5 +-0.1   *  100.0+-2.7
                         *         *  580.4 +-0.2   *    4.8+-0.4
                         *         *  450.5 +-0.2   *   67.3+-2.3
…
                         *         * 1175.0 +-0.3   *  100.0+-10.6
           1740.61+-0.17 *(3/2- OR * 1740.7 +-0.2   *  100.0+-5.0
                         *   5/2-) * 1337.9 +-0.3   *   35.8+-2.1
                         *         *  894.2 +-0.8   *    2.3+-0.7
           1850.0 +-0.3  * (1/2 -) * 1949.5 +-0.8   *   60.0+-60.0
                         *         * 1547.4 +-0.3   *  100.0+-1.4
           1999.3 +-0.7  * (1/2 )  * 1999.3 +-0.7   *  100.0
                         *         * (RB-85 Q.)     *    QUESTION
            ------------------------------------------------------
ADD-RES    DETAILS OF GAMMA RAY TRANSITIONS AND BRANCHING RATIOS
           FOR RB-85 AND RB-87 LEVELS SCHEMES ARE GIVEN. (PRIV.
            COMM. FROM THE AUTHOR,80/12/09.)
```

```
            ** RB-85 **
            ------------------------------------------------
            LEVEL(KEV)   * SPIN    * DECAY-GS(KEV)  *REL.BRANCH.R.
            ------------------------------------------------
            151.17+-0.04 *  2/3 -  *  151.20+-0.05  *  100.0
            281.00+-0.06 *  1/2 -  *  129.83+-0.04  *  100.0
            513.88+-0.08 *  9/2 +  *  513.83+-0.10  *  100.0
            731.56+-0.08 *  3/2 -  *  731.5 +-0.1   *  100.0+-2.7
                         *         *  580.4 +-0.2   *    4.8+-0.4
…
```

The whole chapter is duplicated (89 lines)

Subentry M0346.002: duplicate keyword COMMENT:

```
SUBENT        M0346002     920826              20050926       0000
BIB                9          21
REACTION    (18-AR-40(G,N)18-AR-39,PAR,DA/DE,,BRA,EXP)
EN-SEC      (E-EXC,18-AR-39) THE EXCITATION  ENERGY AFTER  NEUTRON
            EMISSION.
COMMENT     ALL NEUTRON TRANSITIONS BELOW  AN EXCITATION ENERGY OF
            13 MEV PROCEEDED DIRECTLY TO THE GROUND STATE OF AR-39
ANALYSIS    THE  EFFICIENCY-CORRECTED  NEUTRON  SPECTRA FROM AR-40
            WERE DIVIDED BY THE BREMSSTRAHLUNG INTENSITY DISTRIBU-
            TIONS.
ERR-ANALYS  NO INFORMATION.
MISC-COL    (MISC) THE RESONANCE ENERGY OF AR-40.
ADD-RES     (COMP). THE THEORETICAL INTERPRETATION OF RESONANCE AS
            PHOTON DOORWAY STATES FOR FORMALISM OF COMPOUND NUCLEI
            WAS MADE.
COMMENT     BY COMPILER : DATA WERE READ FROM SOLID CURVE WITH CO-
            NSTANT STEP BY COMPILER. THE SOLID CURVE  WAS OBTAINED
            BY AUTHORS.
REL-REF     (N,,K.H.LOKAN+,J,PRL,28,1526,72).THE INTERPRETATION OF
            THE STRUCTURE AT ABOUT 11 MEV IN THE PHOTONEUTRON CRO-
            SS SECTION OF AR-40.
            (N,,S.C.FULTZ+,J,PR/C,4,149,71).THE THEORETICAL INTER-
            PRETATION OF RESONANCES.
ENDBIB             21
```

Merge the two chapters or use CRITIQUE?

B. ANALYSIS keyword

Subentry	Code	Comment
K2064.002	(INTAD,**INTPD**)	INTPD is an unknown code Reaction is (6-C-12(G,X)0-K0-0,,IPA) ,IPA=Diff.cs integrated over partial angular range INTAD=Integration of angular distribution
M0346.003	(EN-ERR)	EN-ERR is not a valid code Probably a missing keyword, see below.

```
SUBENT        M0346003     920826              20050926       0000
BIB                4           9
REACTION    (18-AR-40(G,N)18-AR-39,PAR,DA,,BRS,EXP)
EN-SEC      (E-EXC,18-AR-39) THE EXCITATION  ENERGY  AFTER NEUTRON
            EMISSION.
ANALYSIS    THE CROSS SECTION WAS AVERAGED OVER 200 KEV ENERGY IN-
            TERVALS TO ILLUSTRATE THE GROSS BEHAVIOR OF THE PHOTON
            ABSORPTION IN THIS REGION.
            (EN-ERR) HALF OF THE ENERGY REGION  IN WHICH THE CROSS
            SECTION WAS AVERAGED.
ERR-ANALYS  NO INFORMATION.
ENDBIB             9
```

Missing ERR-ANALYS keyword in front of (EN-ERR) code?

C. ASSUMED keyword

From EXFOR manual: "The format of the code is: (heading,reaction,quantity)" with "Reaction field and quantity field: coded as under the keyword REACTION". It is not clearly written that parenthesis should not be used around the reaction but I would argue those parentheses are not part of simple REACTIONs codes. They are in fact the parenthesis which delimits the beginning and end of coded data, and so are not part of the reaction code. So they should not be put in ASSUMED keyword codes.

For reaction combinations the problem is more complicated: EXFOR manual say that "The complete reaction combination must be enclosed in parentheses" but in practice it is not the whole reaction which should be put in parentheses but the combination operands.

For simple reactions in ASSUMED keyword there are ~1700 correctly coded values in EXFOR master. For combinations reaction there are ~10 correctly coded values (e.g. 10680.004, 20889.014, 21180.003, 22735.002, 22735.003, 22947.002, 40607.002, 40824.001, C0024.003, C0166.003, and T0404.004)

Subentry	Code	Comment
10674.003	(ASSUM,**(**92-U-238(N,G),,WID**)**)	Remove parenthesis
13118.002	(ASSUM1,**(**92-U-238(N,EL)92-U-238,BA,AMP**)**) (ASSUM2,**(**92-U-236(N,EL)92-U-236,BA,AMP**)**) (ASSUM3,**(**92-U-234(N,EL)92-U-234,BA,AMP**)**)	Remove parenthesis
13280.002	(ASSUM1,((92-U-233(N,F)54-XE-139,CUM,FY,,SPA)/ (92-U-233(N,F)MASS,CHN,FY,,SPA))) (ASSUM2,((92-U-233(N,F)54-XE-140,CUM,FY,,SPA)/ (92-U-233(N,F)MASS,CHN,FY,,SPA)))	Remove parenthesis?
13823.002	(ASSUM,**(**42-MO-95(N,G),,WID**)**)	Remove parenthesis
14029.002	(ASSUM1,**(**79-AU-197(N,G)79-AU-198,,SIG,,MXW**)**)	Remove parenthesis
21103.003	(6-C-12(N,TOT),,SIG)	Missing heading in code, and no ASSUM column in data.
21198.002	(98-CF-252(0,F),DL,NU)	Missing heading in code, ASSUM and ASSUM-ERR columns given in DATA
22152.001	(ASSUM,((92-U-235(N,F),PRE,AKE,LF)+ (92-U-235(N,F),PRE,AKE,HF)))	Remove parenthesis?
22306.002	(ASSUM,(((47-AG-107(N,G)47-AG-108,,SIG)+ (47-AG-107(N,G)47-AG-108-M,PAR,SIG))/ (47-AG-107(N,G)47-AG-108,,SIG)))	Remove parenthesis?
22306.003	(ASSUM,(((47-AG-109(N,G)47-AG-110,,SIG)+ (47-AG-109(N,G)47-AG-110-M,PAR,SIG))/ (47-AG-109(N,G)47-AG-110,,SIG)))	Remove parenthesis?

22448.002	(ASSUM1,((55-CS-135(N,G)55-CS-136,,SIG)/ (55-CS-135(N,G)55-CS-136,,RI))) (ASSUM2,((75-RE-185(N,G)75-RE-186,,SIG)/ (75-RE-185(N,G)75-RE-186,,RI))) (ASSUM3,((75-RE-187(N,G)75-RE-188,,SIG)/ (75-RE-187(N,G)75-RE-188,,RI)))	Remove parenthesis?
22977.002	(ASSUM1,((27-CO-59(N,G)27-CO-60,,RI,,RNV/FCT)/ (27-CO-59(N,G)27-CO-60,,SIG))) (ASSUM2,((79-AU-197(N,G)79-AU-198- G,,RI,,RNV/FCT)/ (79-AU-197(N,G)79-AU-198-G,,SIG)))	Remove parenthesis?
31523.001	(ASSUM,((98-CF-252(0,F)51-SB-133,CUM,FY)/ (98-CF-252(0,F)53-I-133,CUM,FY)))	Remove parenthesis?

D. AUTHOR keyword

Subentry	Code	Comment
33006.001	(A.K.Pandy, H.Naik, R.J.Singh, A.Ramaswami, P.C.Kalsi, A.G.C.Nair, **and** R.H.Iyer)	Delete 'and'
C1295.001	(D.J.Horen,F.E.Bertrand,E.E.Gross,T.P.Sjoreen, D.K.McDaniels,J.R.Tinsley,**and**J.Lisantti,L.W.Swenson, J.B.McClelland,T.A.Carey,S.J.Seestrom-Morris,K.Jones)	Delete 'and'
C1296.001	(T.S.Bauer,G.S.Adams,G.J.Igo,G.Pauletta,**and**C.A.Whitten, G.R.Smith,J.R.Shepard,R.E.Anderson,R.L.Boudrie, N.J.DiGiacomo,J.J.Kraushaar,R.J.Peterson,G.Hoffmann)	Delete 'and'
C1493.001	(K.Sabourov,M.W.Ahmed,S.R.Canon,B.Crowley,K.Joshi, J.H.Kelley,S.O.Nelson,B.A.Perdue,E.C.Schreiber, A.Sabourov,A.Tonchev,H.R.Weller,**and**E.A.Wulf, R.M.Priorand,M.C.Spraker,H.M.Hofmann**and**M.Trini)	Delete 'and's Missing comma

E. DECAY-DATA keyword

Subentry	Code	Comment
20986.003	(11-NA-24,,DG,1369.**,**)	Trailing comma should be omitted
20986.007		
20986.008		
20986.009		
21205.001	(90-TH-231,25.6HR,DG,25.6**,**)	
21329.002	(29-CU-62,9.73MIN,AR,511.**,**)	
21400.002	(15-P-30,2.50MIN,AR,511.**,**)	
21401.002	(29-CU-62,9.73MIN,AR,511.**,**)	
21403.005	(38-SR-85,70.MIN,DG,388.**,**)	

21403.006		
21403.009	(72-HF-178,4.24SEC,DG,427.**,**)	
21521.003	(92-U-237,6.75D,DG,59.6**,**)	
21530.002	(44-RU-111,1.5SEC,B-**,**)	
21590.004	… ((23.)60-ND-147,11.08D,DG,531.0,0.131) ((24.)60-ND-149,1.70HR,DG,424.0,0.082,DG,541.0,0.066) ((25.)**L1-PM-151**,1.18D,DG,339.9,0.24)	Bad nuclide code 61-PM-151-L1?
30237.005	(11-NA-22-M,266.NSEC,DG,583.**KEV**)	Unit should not be included
32665.002	((1.)35-BR-86,55.0SEC,DG,1564.9,0.644, DG,1534.7,0.093) ((2.)35-BR-87,55.7SEC,DG,1419.8,0.32, DG,1476.2,0.117) ((3.)35-BR-88,16.3SEC,DG,775.3,0.65, DG,802.1,0.136) ((4.)53-I-134-M,221.4SEC,DG,271.9,0.79) ((5.)53-I-134-**M+G**,3156.0SEC,DG,847.0,0.954, DG,884.1,0.649) ((6.)53-I-136-M,45.0SEC,DG,381.4,0.998, DG,197.3,0.783, DG,370.1,0.175) ((7.)53-I-136-**M+G**,84.0SEC,DG,1313.0,0.675, DG,1321.1,0.251) ((8.)53-I-137,24.2SEC,DG,1218.0,0.128, DG,601.0,0.048) ((9.)53-I-138, 6.45SEC,DG,588.9,0.774)	Isotopic mixture, see below *)
40841.005	(94-PU-241,**6.04E+5**)+-0.06E+5 YR.	Missing half-life unit.
41298.035	(40-ZR-89-**M+G**,78.41HR)	Isotopic mixture, see below *)
41298.089	(63-EU-152-**M2+G**,13.57YR)	
41406.005	(63-EU-152-**M2+G**,13.54YR,DG,121.8,0.284, DG,244.7,0.0751, DG,344.3,0.2658, DG,778.9,0.1296, DG,1112.1,0.1354, DG,1408.0,0.2085)	
41406.007	(63-EU-152-**M2+G**,13.54YR,DG,121.8,0.284, DG,244.7,0.0751, DG,344.3,0.2658, DG,778.9,0.1296, DG,1112.1,0.1354, DG,1408.0,0.2085)	
M0733.005	(34-SE-77-G,7.1**H**,DG,361.,.949)	Bad half-life unit HR should be used for hours
M0738.002	(79-AU-196,6.1669D,DG,332.98,,	Missing commas

	DG,355.68,, DG,426.,, DG,1091.33) (79-AU-195,186.098D,DG,98.85,, DG,129.7) (79-AU-194,38.02HR,DG,293.54,, DG,328.455,, DG,482.83,, DG,528.76,, DG,621.974,, DG,1104.05,, DG,1175.36) (79-AU-193,17.65HR,DG,173.,, DG,186.17,, DG,255.57,, DG,**268.22** **DG**,439.04,, DG,491.28) (79-AU-192,4.94HR,DG,295.95,, DG,308.45,, DG,316.508,, DG,**582.63** **DG**,612.46,, DG,1140.81) (79-AU-191,3.18HR,DG,277.88,, DG,586.45)	

*) Isotopic mixture: these codes are not yet supported by JANIS but are probably valid.

F. DECAY-MON keyword

Subentry	Code	Comment
21582.002	(27-CO-60,5.272YR,DG,1173./1333.**,**)	Trailing comma should be omitted
21742.003	(11-NA-24,,DG,1369.**,**)	
21742.004	(27-CO-58-G,,DG,810.**,**)	
32655.001	(11-NA-24,14.96HR,DG,1368.63,1.0) (41-NB-92-M,10.15D,DG,934.44,1.0) (40-ZR-89-**M+G**,78.4HR,DG,908.96,0.9987)	Isotopic mixture, see below
D0380.001	(30-ZN-62,9.26HR,DG,596.6,0.257,DG,548.4,0.152) (30-ZN-65,244.1D,DG,1115.5,0.507) (73-TA-183,5.1D,DG,246.1,0.267,DG,354.**D**,0.116) (74-W-87,23.9HR,DG,479.5,0.253,DG,685.8,0.262)	Bad decay radiation energy

*) Isotopic mixture: these codes are not yet supported by JANIS but are probably valid.

G. DETECTOR keyword

Codes from dictionary 22

Subentry	Code	Comment

F0776.001	(**SPECT**,SCIN,BGO)	SPECT is not a valid code. Valid codes for spectrometers are: BPAIR, HE3SP, MAGSP, SPEC. There is also D4PI for "4pi detector"

Full EXFOR:

```
DETECTOR   (SPECT,SCIN,BGO)A 4pi spectrometer, LAMPF BGO-ball,
           consisting of 30 phoswich detectors were used. Each
           detector had a solid angle of about(1/32)*4pi sr,
           0.05-mm-thick nickel entrance window and consists of
           a 3-mm-thick NE102 plastic scintillator optically
           coupled to the front of a 5.6-cm-thick bismuth
           germanate (BGO) crystal with a 7.62-cm-diameter
           photomultiplier tube on the back. The crystal was thick
           enough to stop the protons of energy up to 185 MeV.
           The energy calibration of the BGO crystals was obtained
           by using the elastic peak from the pi+ and 12C
           scattering.
```

H. FACILITY keyword

Subentry	Code	Comment
13498.001	**(,**1USALRL) RTNS-II	Empty facility code Only one institute in this subentry: 1USAAI
13528.003	**(,**1USAANL) INTENSE PULSED NEUTRON SOURCE	Empty facility code Two institute codes in this entry : 1USAORL and 1USAANL
13528.004	(REAC,1USAORL) TRIPLE-AXIS SPECTROMETER AT ORR **(,**1USAANL) INTENSE PULSED NEUTRON SOURCE	
13528.005		
13528.006		
13528.007		
13528.008		
A0193.001	(CYCLO,**2GERCRC**)	Unknown institute Memo CP-N/015 suggest to replace with 2GERDKZ
D0437.001	(VDG,**2FR CNO**)	Unknown institute Was proposed in memo CP-D/484

I. HISTORY keyword

Subentry	Code	Comment
10913.006	(830330**A T**ARGET Z ADDED, DATA SORTED.	Missing closing parenthesis

10913.006 subentry:

```
HISTORY    (820108A) CORRECTED REACTION.
           (820326A) CORRECTED REACTION, DATA TABLE.
           (830330A TARGET Z ADDED, DATA SORTED.
```

J. INC-SOURCE keyword

Subentry	Code	Comment
L0037.001	(MPH=1-H-3(P,G)2-HE-4)	Missing parenthesis around reaction (*) see below
L0038.001	(MPH=1-H-3(P,G)2-HE-4)	
M0283.010	(MPH=(26-FE-0(N,G)**,FE)**	Missing closing parenthesis around reaction + FE meaning?
M0283.015	(MPH=(24-CR-0(N,G)	Missing closing parenthesis

(*) EXFOR format manual is unclear about formatting of 'MPH=' codes, it states that:

"If the code MPH, followed by the separator = is present, the next field contains a reaction string coded as under the keyword REACTION, SF1-4."

In REACTION keyword the reaction itself is not surrounded by parenthesis, the parentheses are the beginning and end of the coded part of REACTION keyword. See ASSUMED keyword.

For code 'MPH=' the manual gives only one example:

```
INC-SOURCE (MPH=(13-AL-27(N,A)11-NA-24))
```

So it looks like the reaction has to be put in parenthesis.

Note that it is already the case for more than 160 occurrences of this code.

K. INSTITUTE keyword

Codes from dictionary 3

Subentry	Code	Comment
A0193.001	(2GERCRC)	Unknown code Memo CP-N/015 suggest to replace with 2GERDKZ
D0437.001	(2FR CNO)	Unknown code Was proposed in memo CP-D/484
O1597.001	(2GERNME)	Unknown code Was proposed in memo CP-N/067

L. MONITOR keyword

Subentry	Code	Comment
40020.001	(RATIO)	Bad reaction
40116.001	(STANS)	Bad reaction
40105.006	(79-AU-197,NG,MXW)	Bad reaction

40105.007		
40587.001	((MONIT1)(5-B-10(N,A+G)3-LI-7,,SIG))	Reaction should not be surrounded by parenthesis
A0344.015	((MONIT)13-AL-27(P,3D)11-NA-22,UND,SIG, ,,EVAL)	Spaces in reaction

Subentry 40105.006:

```
MONITOR    (79-AU-197,NG,MXW)
           =99.1 B CAPTURE CROSS-SECTION AT
           0.0253 EV ENERGY WAS EQUAL TO (98.6+-0.3) B
```

Subentry 40105.007:

```
MONITOR    (79-AU-197,NG,MXW)
           =99.1 B. AURUM CAPTURE CROSS-SECTION
           AT 0.0253 EV NEUTRONS ENERGY WAS EQUAL TO (98.6+-0.3)B
           (90-TH-232(N,G)90-TH-233,,SIG)
             RESOLVED RESONANCES
```

Subentry 40020.001:

```
DETECTOR   (SCIN)     LIQUID SCINTILLATION DETECTOR  WITH
                      VOLUME 400 LITRE
           (LONGC)    LONG COUNTER WAS USED FOR  NEUTRONS
                      FLUX  MONITORING
MONITOR    (RATIO)
PART-DET   (G)        PROMPT GAMMA-RAYS OF FISSION
```

Subentry 40116.001:

```
PART-DET   (G)        GAMMAS
MONITOR    (STANS)    SOURCES OF KNOWN ACTIVITY
                      (ACCURACY LESS 5 PERCENT )
           G-RAY OF REACTIONS CL-36(N,G),S-33(N,G),SI-29(N,G)
                      WERE USED
```

Subentry 40587.001

```
MONITOR    ((MONIT1)(5-B-10(N,A+G)3-LI-7,,SIG))
           ((MONIT2)(5-B-10(N,A)3-LI-7,,SIG)/(5-B-10(N,TOT),,SIG))
```

M. MONIT-REF keyword

Subentry	Code	Comment
30671.001	(30523002, LU HAN-LIN+,J,PHE,3,(1),88,197901)	Embedded blank in code (before author

In EXFOR format manual:

"The code contains 3 main fields which may be preceded by a heading field:
((heading)subaccession#,author,reference)
Embedded blanks are not permitted within the code, except within an author's name"

N. PART-DET keyword

There are 36 occurrences of code 'LCP' from dictionary 33, meaning "Light Charged Particle (Z less than 7)" but this dictionary does not allow this code to be used in keyword PART-DET (or should allow?).

Subentries:

- 22925.001-013
- 22938.001
- 22947.001
- E2007.002-004, 007-009, 015, 019, 028, 032-034, 044-046, 049, 050, 058, 059, 065, 068

O. RAD-DET keyword

Subentry	Code	Comment
20931.001	(G)	Missing nuclide field
21289.004	(B)	
21289.006	(B)	
21289.007	(B)	
21289.008	(B)	
21289.011	(B)	
21289.012	(B)	
21290.002 to 21290.009	(DG) or (G)	
31485.002 to 31485.012	(DG)	Missing nuclide See below
31521.001	(DG)	Missing nuclide field
A0338.002	(43-TC-94-M,DG) (43-TC-94-G,DG) (43-TC-94-**M+G**,DG)	Isotopic mixture, see below *)
A0338.003	(43-TC-95-M,DG) (43-TC-95-G,DG) (43-TC-95-**M+G**,DG)	Isotopic mixture, see below *)
D4167.002 to D4167.005	(40-ZR-88) and/or (39-Y-88)	Missing radiation field
O0397.001	(DG)	Missing nuclide field
O1503.001	(DG)	

*) Isotopic mixture: these codes are not yet supported by JANIS but are probably valid.

Entry 31485

Illegal RAD-DET code 'DG' is used in all subentries and HISTORY keywords contains:

"(19980610U) HW.- PART-DET replaced by RAD-DET."

But 'DG' would be a valid code for keyword PART-DET, at least since 2006/11 (date of introduction or last modification of this line of dictionary 33)

P. REACTION keyword

1. Formatting errors

Subentry	Code	Comment
10531.006.2	(((67-HO-165(N,EL),,WID,,G)*(67-HO-165(N,G),,WID))/ **(**(67-HO-165(N,TOT),,WID)**)**)	Double parenthesis
13744.013.5	(40-ZR-91(N,E**L)**,,WID)	Embedded space in code
21999.039	(56-BA-138(N,A)54-XE-135,,SI**G)**	
A0062.002.E	((53-I-127(P,5N)54-XE-123,,SIG)/ (53-I-127(P,3N)54-XE-125,,SIG**,**))	Trailing comma in reaction component
A0136.004	See below	Parenthesis mismatch
G3004.002	(92-U-238(E,N)92-U-237,,SI**G)**	Embedded space in code
M0571.003	(81-TL-0(G,EL)81-TL-**0 ,**,DA)	
M0725.008	(12-MG-0(G,P),PAR,D**A ,**,BRA/REL)	
M0736.002	(79-AU-197(G,N)79-AU-196,,SIG,**, B**RS)	

Subentry A0136.004:

```
REACTION  A(((50-SN-112(A,X)2-HE-6,,DA,,,EXP)/
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)2-HE-6,,DA,,,EXP)/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
          B(((50-SN-112(A,X)2-HE-8,,DA,,,EXP)/
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)2-HE-8,,DA,,,EXP)/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
          C(((50-SN-112(A,X)3-LI-6,,DA,,,EXP)/
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)3-LI-6,,DA,,,EXP))/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
          D(((50-SN-112(A,X)3-LI-7,,DA,,,EXP)/
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)3-LI-7,,DA,,,EXP)/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
          E(((50-SN-112(A,X)3-LI-8,,DA,,,EXP)/
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)3-LI-8,,DA,,,EXP)/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
          F(((50-SN-112(A,X)3-LI-9,,DA,,,EXP)/
```

```
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)3-LI-9,,DA,,,EXP)/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
          K(((50-SN-112(A,X)3-LI-11,,DA,,,EXP)/
           (50-SN-112(A,X)2-HE-4,,DA,,,EXP))/
           ((50-SN-124(A,X)3-LI-9,,DA,,,EXP)/
           (50-SN-124(A,X)2-HE-4,,DA,,,EXP)))
```

To make the problem obvious reaction components have been replaced with 'X':

```
A(((X)/(X))/((X)/(X)))
B(((X)/(X))/((X)/(X)))
C(((X)/(X))/((X))/(X)))
D(((X)/(X))/((X)/(X)))
E(((X)/(X))/((X)/(X)))
F(((X)/(X))/((X)/(X)))
K(((X)/(X))/((X)/(X)))
```

2. Illegal SF2 field

C0905.002: (83-BI-209(**HE6**,FUS+F),,SIG)
According to dictionary 33 'HE6' code is not allowed in SF2 field.
It should be written '2-HE-6', like in other subentries (more ~120 occurrences of this form)

C1468.005: (14-SI-0(9-F-18**-L**,NON),,SIG)
DECAY-DATA keyword in this subentry give an half-life of 162ns for 9-F-18-L
Code '-L', (quasi-metastable state) is not yet supported by JANIS

3. Illegal SF4 field

26 reactions (or reaction components) make use of isomer code '-T', "sum of all isomers".

EXFOR format manual state that '-T' isomer code is "limited to use within an isomeric ratio in SF4 of the reaction string"

E1853.009: (92-U-238(P,F)59-PR-148-T,(CUM),SIG)

O0715.002: (92-U-238(P,F)37-RB-86-T,,SIG)
O0715.006: (92-U-238(P,F)37-RB-90-T,IND,SIG)
O0715.014: (92-U-238(P,F)55-CS-130-T,,SIG)
O0715.018: (92-U-238(P,F)55-CS-134-T,,SIG)
O0715.019: (92-U-238(P,F)55-CS-135-T,IND,SIG)
O0715.020: (92-U-238(P,F)55-CS-136-T,,SIG)
O0715.022: (92-U-238(P,F)55-CS-138-T,IND,SIG)
O0715.028: (92-U-238(P,F)55-CS-144-T,IND,SIG)

O0736.013: (4-BE-9(28-NI-58,X)27-CO-53-T,,SIG)
O0736.014: (4-BE-9(28-NI-58,X)27-CO-54-T,,SIG)
O0736.023: (4-BE-9(28-NI-58,X)26-FE-52-T,,SIG)
O0736.024: (4-BE-9(28-NI-58,X)26-FE-53-T,,SIG)
O0736.030: (4-BE-9(28-NI-58,X)25-MN-50-T,,SIG)
O0736.032: (4-BE-9(28-NI-58,X)25-MN-52-T,,SIG)
O0736.042: (4-BE-9(28-NI-58,X)23-V-44-T,,SIG)
O0736.057: (4-BE-9(28-NI-58,X)21-SC-42-T,,SIG)
O0736.059: (4-BE-9(28-NI-58,X)21-SC-44-T,,SIG)

O0995.002: this one may be considered as valid but would probably be better coded as (92-U-238(P,F)53-I-132-M/T,IND,DA)

O1143.002: this one also can also be coded as (93-NP-237(P,F)53-I-132-M/T,IND,DA)

T0132.003: (50-SN-118(P,N)51-SB-118-T,IND,SIG)
T0132.005: (50-SN-120(P,N)51-SB-120-T,,SIG)
T0132.006: (50-SN-122(P,N)51-SB-122-T,,SIG)
T0132.007: (50-SN-124(P,N)51-SB-124-T,,SIG)

T0138.003: ((48-CD-113(P,N)49-IN-113-T,IND,SIG)/(48-CD-116(P,N)49-IN-116-T,IND,SIG))

T0138.008: ((52-TE-128(P,N)53-I-128,,SIG)/(52-TE-130(P,N)53-I-130-T,IND,SIG))

4. Unknown Quantity codes

Some subentries use quantity codes not defined (yet) in dictionary 236:

```
,AKE,LF+HF in O1269.010, O1269.011
,ARE,,VGT in 22890.004, 22965.003
,DA,,CS2/RS in M0133.007
,DA,,SN2/RS in M0179.002, M0184.002-005, M0186.012-016, M0191.002
,DA,A+RSD in F0880.008
,DA,FF+FF in O0375.007-011
,DA,P+P,TT in C0988.003
,DA,P+RSD in F0880.007
,DE,P+P,TT in C0988.004
,POL/DA,P,AZI in M0536.004
,POL/DA/DA/DE,P/A/RSD in C1559.003
,SPC/DA,,TT in A0388.002-007
,WID/STR,,VGT in 22890.004
1,WID/STR,,VGT in 22890.004
NN/PAR,DA,,NSF in E1406.023-025, E1466.008,009,017,018,026,027,035,036
PAR,AKE,N/FF in 14065.007, 14065.008, 14065.010
PAR,DA,G+G,LEG/RS in O1193.003
PAR,DA,P,IPA in C0988.002
PAR,DA,P+A in C1559.002
PAR,POL/DA,P/A,ASY in C0157.003
TER/CHG,FY,4-BE-10 in 41464.005
TER/CHG,FY,6-C-14 in 41464.006
TER/CHG,FY,A in 41464.004
TER/CHG,FY,LCP in 41464.002
TER/PAR,FY in 22063.002-004
```

JANIS uses quantity code to organize EXFOR data in a tree so cannot understand these subentries.

Q. REFERENCE keyword

Subentry	Code	Comment
20011.001 20012.001	See below	Space in column 12 of continuation records is considered as part of code, and embedded spaces are forbidden
21665.001	(C,82ANTWE**R ,**,131,8209)	Embedded space
21688.001	(R,**INDC(TUK)-**4/L,,8005)	INDC(TUK)- is not a valid code in dict 6, and this dict contains this note: "Some copies of INDC(TUR)-3 are erroneously labelled as INDC(TUK)-3"
22583.001	(J,**PSPS**,42,(3),227,1994)	Unknown code

30032.001	(R,EANDC-50,(2),**(102)**,1965)	Page(paper#) field without page indication ? 102 is page? other EANDC-50,(2): EANDC-50,(2),114,196507 EANDC-50,(2),160,196507
30038.001	(R,EANDC-50S,(2),**(102)**,6507)	Page(paper#) field ? see 30032.001 similar reference Other EANDC-50S: EANDC-50-S,(95),196507 EANDC-505,198,196507 EANDC-50S,,196507 EANDC-50S,1,196507 EANDC-50S,93,1966
30191.001 30192.002	(S,EANDC-50/S,(1),**(22)**,6507)	Page(paper#) field ?
40096.001	(J,IZV,35,(11),23**,**45,7111)	Too many parts, suspicious comma, see other IZV,35: IZV,35,(1),180,1971 IZV,35,(1),180,197101 IZV,35,(11),2341,197111 IZV,35,(4),823,197104 IZV,35,165,1971 IZV,35,1718,1971 IZV,35,211,197101 IZV,35,2364,197111
40114.001	(C,66PARIS,**CM-23/107**)	Missing date, meaning of CM-23/107? see other 66PARIS:
40565.001	(C,**83MOSKOW**,,313,8304)	Should be 83MOSCOW
41503.001	(R,**JIA-**1182,200705)	Code not in dict 6 One of the institute is (4RUSJIA)
A0203.001	(C,**82KHARKV**,(2),134,83)	In dict 7: 67KHARKOV 74KHARKOV (obs) 74KHARKV 86KHARKO
F0301.001	(C,64PARIS,2**,,**1054,1964)	Remove one comma
O1597.001	(C,**96VANCOU**,,84,1996)	In dict 7: 99VANCOU 2006VANCOU
O1598.001	(C,**96VANCOU**,,60,1996)	
S0020.001	(P,**BNAL**,103,8912) PROGRESS REPORT FOR BEIJING NATIONAL TANDEM ACCELERATOR LABORATORY 1988-1989.	Unknown code in dict 6, but dict contains: A-BNT- "Beijing Nat. Tandem Accel. Lab., Prog. Report" (not used)
V0002.001	(B,LAPENAS**,**75)	One comma missing

V0003.001		

Subentry 20011.001:

```
REFERENCE  ((R,KFK-1000,(SUPP.2),6902)=(R,EUR-3963,(SUPP.2),6902)=
            (R,EANDC(E)-111,(SUPP.2),6902))   GRAPHS ONLY.
           ((R,KFK-1000,6806)=(R,EUR-3963E,6806)=
            (R,EANDC(E)-111,6806))   ABOVE 0.9 MEV SODIUM IS TAKEN
            FROM THIS REFERENCE.
           (W,NEBE,7012) DATA ON TAPE.
```

Subentry 20012.001:

```
REFERENCE  ((R,KFK-1000,(SUPP.1),6810)=(R,EUR-3963,(SUPP.1),6810)=
            (R,EANDC(E)-111,(SUPP.1),6810))   GRAPHS ONLY.
           (W,NEBE,7012) DATA ON TAPE.
```

R. REL-REF keyword

Subentry	Code	Comment
20770.001	**(,**20673001,VALKONEN,J,JIN,36,715,7406)	Code from dict 17 must be present (first field)
21282.003	**(,**21023002,MERRISON+,J,PRS/A,215,278,5211)	
21334.001	(N,20465002,MOXON,W,MOXON**,,,**7112)	Only one comma to separate author and date
21544.001	(N,21313001,ASGHAR+,**J,NP/A,311,3,413,7812**)	Other references NP/A,311: NP/A,311,205,197811 NP/A,311,492,197812 NP/A,311,93,1978
21545.001	(N,21313001,ASGHAR+,**J,NP/A,311,3,413,7812**)	
21651.006	(R,21543001,ASGHAR+,J,NP/A,292**,,**225,79)	Other references NP/A,292: NP/A,292,195,1977 NP/A,292,225,197711
A0234.001	(R,,C.M.LEDERER+,B,LEDERER-7**,**78)	Book code (LEDERER-7) and date should be separated by two commas
A0253.001	(N,,M.BLANN,**R,COO-3494-29**)	Missing date subfield
M0635.023	See below	
O1228.001	(C**,**2004BORMIO,,303,2004)	Subaccession# field is omitted but following comma should always be included
V0015.007	(E,,M.C.MARTIN+,R,**LASL-P-3-76**,54)	Unknown report code in dict 6

Subentry M0635.023

```
REL-REF     (E,L0027009,A.LEPRETRE+,J,NP/A,175,609,1971)
            (E,0027010,A.LEPRETRE+,J,NP/A,175,609,1971)          M
            (E,L0011003,B.L.BERMAN+,J,PR,162,1098,1967)
            (E,L0011004,B.L.BERMAN+,J,PR,162,1098,1967)
```

S. SAMPLE keyword

3 subentries contain an opening parenthesis in column 12, and this is explicitly forbidden:

"Free text may be entered in columns 12-66 under each of the information-identifier keywords in the BIB section and may be continued onto any number of records. It may include parentheses, if necessary, although, in general, a left parenthesis in the text must not be used in column 12 (as this implies the opening parenthesis of coded information)"

- 31515.001
- 40105.007
- D0282.001

On the other hand the keyword SAMPLE cannot contains coded information (only free text) so it is possible for JANIS or other program to understand correctly theses keywords but the rule given in EXFOR format manual is not difficult to follow and avoid introducing this specific case in EXFOR handling programs.

T. STATUS keyword

Subentry	Code	Comment
22683.002	(COREL,22844**OO**2)	Wrong subaccession#, 'O' (letter) should be replaced by '0' (digit)
22683.003	(COREL,22844**OO**3)	
22683.004	(COREL,22683006) (COREL,22844**OO**4)	
22683.006	(COREL,22683004) (COREL,22844**OO**4)	

III. DATA sections

A. Suspicious numerical values

Subentry	Current value	Comments
22307.016	Only a dot character	In DATA and MONIT columns, first Empty point: remove row
22393.009		In DATA column, ERR-T=0. Empty point: remove row
22405.003 22405.005 22405.006		In DATA column, ERR-T and FLAG not empty for these points Leave field empty
40937.047		In DATA column, ERR-S and FLAG not empty for this point Leave field empty
40962.003 40962.005		In DATA column, DATA-ERR and E-LVL-INI/E-LVL-FIN not empty for these points Leave field empty
41186.039		In ERR-T column Leave field empty
41191.002		In DATA and MISC column, SPIN J not empty for this point Leave fields empty
C0765.032		In Data column, ERR-S not empty for this point Leave field empty
41389.005	-.	In DATA column, ERR-S empty for this point
D4151.002	7.06+	In ERR-T column, see below
13346.002	1.64E -05	Two points given with "E", others without To be considered as legal? Even with only two occurrences in EXFOR…
T0034.004	5.03 -	"-" sign probably in the wrong column for 8 points **Affect DATA-CM sign for these 8 points**
C1291.006	0.045 -	"-" sign probably in the wrong column for 3 points **Affect DATA sign for these 3 points**

Subentry D4151.002:

```
SUBENT        D4151002   20060818   20070306   20070306       D050
BIB                 3          8
REACTION  1(48-CD-106(P,G)49-IN-107,,SIG,,SFC)
             measured on enriched target
          2(48-CD-106(P,G)49-IN-107,,SIG,,SFC)
             measured on natural target
DECAY-DATA (49-IN-107,32.4MIN,DG,204.96,.472)
            Decay data are from Nucl. Data Sheets 89,213,2000
STATUS     (CURVE) Data and error bars were digitized from
                   figure 2 of the paper.
ENDBIB              8
NOCOMMON            0          0
DATA                5         14
```

```
EN-CM      DATA      1ERR-T     1DATA      2ERR-T     2
MEV        B*MEV      B*MEV      B*MEV      B*MEV
      2.35    202.4+6       23.3+6
      2.56    129.8+6       15.6+6
      2.76    128.0+6       14.5+6
      2.90    165.8+6       18.7+6
      3.16     69.9+6        7.9+6     79.6+6     9.9+6
      3.35                             111.3+6    13.6+6
      3.50     74.3+6        8.4+6
      3.56                              80.9+6     9.7+6
      3.70     60.7+6       7.06+
      3.89                              52.8+6     6.4+6
      4.09                              55.4+6     6.6+6
      4.29                              44.9+6     5.3+6
      4.49                              29.5+6     3.7+6
      4.68     29.0+6        5.5+6     35.6+6     4.0+6
ENDDATA             16
ENDSUBENT           29
```

B. Unknown data heading codes

Subentry	Heading codes	Comment
C0316.002	E2-RL	EN-SEC keyword gives the following meaning to the column: "Relative energy of 2 detected alphas" Addition to dictionary 24?
A0540.002	ANG-DN-CM ANG-NM-CM	Correct heading codes are ANG-CM-DN and ANG-CM-NM.
M0739.001	ANG1-MIN ANG1-MAX ANG2-MIN ANG2-MAX	Only ANG-MIN and ANG-MAX are given in dict 24. Addition to dictionary 24?
M0740.001		

C. Other

1. Subentry 20688.011:

```
SUBENT        20688011     840127              20050926       0000
BIB                2           8
REACTION  1(56-BA-134(N,0),,EN)
          2(56-BA-134(N,EL),,WID,,G)
          3(56-BA-134(N,EL),,WID)
          4(56-BA-134(N,TOT),,WID)
          5(56-BA-134(N,0),,J)
COMMENT    .THE FOLLOWING TABLE IS EXTRACTED FROM TABLE 4 OF
           NUCL.PHYS.,A134(1969)118 WHICH CONTAINS ALSO DATA
           OF OTHER ISOTOPES.
ENDBIB             8
NOCOMMON           0          0
DATA               7          2
DATA      1DATA      2DATA-ERR  2DATA      3DATA      3DATA-ERR  4
DATA      5
EV         MILLI-EV   MILLI-EV   MILLI-EV   MILLI-EV   MILLI-EV
NO-DIM
 1.0180E+02 1.6000E+02 1.0000E+01 1.6000E+02 2.3000E+02 1.5000E+01
 5.0000E-01
 5.0000E+02 5.0000E+01 5.0000E+00
 5.0000E-01
ENDDATA            8
ENDSUBENT         21
```

Reaction pointer 4 only gives an error column (DATA-ERR) whereas reaction pointer 3 defines two DATA columns.

2. Subentry 20804.002:

```
SUBENT        20804002     840208              20050926       0000
BIB                  8         22
REACTION    (49-IN-115(N,G)49-IN-116,,SPC,,MXW/REL) THERMAL
             CAPTURE GAMMA SPECTRUM.
             INTENSITIES ARE NORMALISED TO THE 162KEV LINE
             FOR WHICH AN ABSOLUTE INTENSITY OF 147+-17 GAMMAS
             PER 1000 NEUTRON CAPTURES IS DERIVED FROM THE
             MEASURED ISOMERIC CROSS SECTION RATIO, K-CONVERSION
             RATIO, AND K/LM RATIO.
DETECTOR    (GELI ) HIGH RESOLUTION PLANAR DETECTOR (400 EV FWHM
             AT 60KEV), AND A 25CM-3 5 SIDED GE(LI) DETECTOR.
MISC-COL    (MISC1) INTENSITY PER 1000 NEUTRON CAPTURES.
            (MISC2) ERROR IN RELATIVE INTENSITY PER 1000 CAPTURES
COMMENT     .LOW ENERGY SPECTRUM.
STATUS      .TABLE 2 IN TEXT. NP/A,197,129,7212.
HISTORY     (781212C)
            (790219E)
CORRECTION .NON LINEARITY CORRECTION FROM A PRECISION HG PULSER.
ERR-ANALYS .ONLY ONE STANDARD DEVIATION IN RELATIVE QUANTITIES
             IS GIVEN. FOR ABSOLUTE INTENSITIES THE SYSTEMATIC
             CALIBRATION ERROR MUST BE INCLUDED.
             THE ENERGY CALIBRATION IS FROM THE 121.97+-0.03KEV
             LINE OF CO-57 AND THE 661.635+-0.076KEV LINE OF
             CS-137.
ENDBIB               22
NOCOMMON              0          0
DATA                  4        213
E           E-ERR      MISC1      MISC2
KEV         EV         NO-DIM     NO-DIM
 2.2780E+01 5.0000E-02 4.5000E+01 1.5000E+01
 4.2150E+01 5.0000E-02 1.3000E+00 3.0000E-01
 4.5000E+01 5.0000E-02 1.1000E+00 3.0000E-01
…
1.0532E+03 3.3000E-01 1.3000E+00 4.0000E-01
 1.0771E+03 1.6000E-01 8.6000E+00 1.2000E+00
ENDDATA            215
ENDSUBENT          242
```

This subentry does not define any dependent variables and make use of two misc columns. A human reader can read that MISC2 is an error linked with MISC1 column but software cannot do clever things with data.