Memo 4C-3/195

CP/D-20

To: Distribution   1977-02-28

From: P.M. Attree

Subject: 1. Dictionary 2, EXFOR Manual, Sections VII and VIII,
               dictionaries and coding rules

           2. STATUS

Reference: 1. Memo 4C-1/109(CP-C/8), II and CP-B/6, page 2, 2nd paragraph
           2. Memo 4C-1/101

1. At present, many of the coding (formatting) rules are in
Dictionary 2, when they should be in the EXFOR Manual; many of the coding
rules are in section VIII mixed in with information about the dictionaries
and also with other information which should more properly be in LEXFOR,
and often is. The result of this is that it is extremely difficult for people
concerned with system modifications and programming to be sure they have
found and considered all the details when coding rules are modified or
new ones introduced.

I therefore propose that all information concerning dic-
tionaries (structure, code-length restrictions etc) be removed from
Section VIII and placed in Section VII, and that Section VIII be devoted
solely to information-identifier keywords and the associated coding, omitting
any information of use only to compilers, which is not necessary for the
understanding of the formatting rules. How much information should be kept
in dictionary 2 can then be discussed.   (Continued)

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Attachment

Note   Holders of NDS EXFOR Manual should not revise their manuals with the
       attached pages until 4-centre approval has been obtained.

I would be grateful if this proposal could be discussed at the next 4-centre meeting. I am afraid that if something along these lines is not accepted, then I shall have to maintain my own separate chapter, similar to the one proposed, for the use of systems and programming staff at NDS.

Attached are the following.

- Proposed addition to Section VII. This is a continuation of Section VII as distributed with CP-D/15, and includes all information on dictionaries from the present Section VIII, plus information which did not exist anywhere.

- A start for the proposed Section VIII. The contents are self-explanatory. All the information on keywords from the present Section VIII is included except for REACTION and MONITOR (pages VIII.20 a,b,c), and ASSUMED and DECAY-DATA (page VIII.25), so in principle it could now replace Section VIII.

- The information from present Section VIII has been supplemented by information from dictionary 2 (although not all of this may yet have been transferred) and even from LEXFOR, where rules were sometimes buried! It is not complete. If the feed-back from this memo is positive I will complete and distribute it as soon as possible.

- Paragraphs from the present section VIII which contained LEXFOR information have been omitted if they already existed in LEXFOR. For the few cases where this was not the case, Hans Lemmel has kindly prepared revised LEXFOR pages, which are attached.

> From page VIII.9, the note on conference-proceedings and report-numbers; see revised LEXFOR-entry "References".
> From page VIII.6, the paragraph on REL-REF; see the revised LEXFOR-entry "References".
> From page VIII.25, the section on the purpose of half-life values in EXFOR; see the proposed new LEXFOR-entry "Half-Life".

2. STATUS. Memo 4C-1/101 proposes that an additional field containing a subaccession number may follow the status code. I presume that if this form is used, and more than one code is used, then each piece of coded information must be entered separately, starting in col.12. This follows the practice used for FACILITY, when the code from dictionary 18 is followed by an institute code. This interpretation is reflected in the attached EXFOR manual page for STATUS in Section VIII.

Is it true that a subaccession number may only be attached to the codes SPSDD, DEP and COREL? This was implied in Memo-CP/D-21, but not explicitly stated.

VII. DICTIONARIES

Additional information on specific dictionaries

3. Institute

The 7 character code ABBBCCC is constructed as follows:

A = service-area code, 1, 2, 3 or 4 as defined among neutron data centres

BBB = country code

CCC = lab code (may be less than 3 characters, left adjusted)

The 3 character lab codes include all laboratory, university, institute, agency and commission codes in use by the CINDA and data centres, and must be unique.

In those cases where the code identifies only a country, the information in the country-code field (in columns 2-4) is duplicated in the lab code field (in columns 5-7), as for example:

1CANCAN   (CANADA)

For this reason it is forbidden to introduce a lab-code which is identical to an existing country code and vice-versa.

Obsolete codes remain in the dictionary because of their previous use for old data and CINDA entries. These obsolete codes are marked as such and an indication as to which code to use instead should be given in all cases.

The dictionary is sorted by the code, thus grouping together the institutes for each area and country.

NOTE: The 3 character lab code is used by CINDA.

5. Journals

The actual journal code is restricted to 4 characters or less. Where journals are sub-divided into parts, the part is included in the dictionary with the journal code, separated from it by a slash.

E.g. ND/A = Nuclear Data, Part A.

The dictionary is sorted by code.

The area code and country code (country of publication) are in columns 63 to 66.

The "expanded form" follows ACCESS "A key to the Source Literature of the Chemical Sciences, Edition 1969", a publication of the Chemical Abstracts Service of the American Chemical Society. The "expanded form", as it appears in that publication, has been abbreviated according to the "American Standard for Periodical Title Abbreviations: Z39.5 (1963)" and represents the commonly accepted abbreviation used in the scientific literature. This practice should in general be maintained.

NOTE: The journal codes are used by CINDA.

Table of Dictionaries

Number	Name	Code length	Expansion provided	Use presently restricted to:
1.	System-Identifier Keywords	≤10	-	
2.	Information-Identifier Keywords	≤10	-	
*3.	Institutes	5 to 7	✓	
4.	Reference Type	1	✓	
*5.	Journals	≤6*	✓	
*6.	Reports	≤11	-	
*7.	Conferences and Books	≤10	✓	
8.	Elements	3	✓	
*9.	Chemical Compounds	7 to 10*	✓	
10.-14.	**ISO-QUANT subfields**			NND
10.	Process/Parameter (Quantity SF1)	≤3	-	NND
11.	Function (Quantity SF2)	≤3	-	NND
*12.	Modifier (Quantity SF3)	≤3	*	NND
13.	Particle (PART-DET and Quantity SF4)	≤3	✓	NND
*14.	Quantity (SF1 – 4)	≤18	✓	NND
16.	Status	≤5	✓	
17.	REL-REF SF1	1	✓	CPND
18.	Facility	≤5	✓	
19.	N-Source	≤5	✓	NND
20.	Additional Results	≤5	✓	CPND
21.	Method	≤5	✓	
22.	Detectors	≤5	✓	
23.	Analysis	≤5	✓	
*24.	Data-Heading Keywords	≤10	-	
*25.	Data-Units Keywords	≤10	-	
30.-36.	**REACTION subfields**			CPND
30.	Process (REACTION SF3)	≤3	-	CPND
31.	Branch (REACTION SF5)	≤3+	-	CPND
32.	Parameter (REACTION SF6)	≤3	-	CPND
33.	REACTION Particles (REACTION SF2, 3, 7)	≤3	✓	CPND
*34.	Modifiers (REACTION SF8)	≤3	*	CPND
35.	Data-Type (REACTION SF9)	≤5	✓	CPND
*36.	Quantities (REACTION SF5-8)	≤18	✓	CPND
*41.	Conversion table of Quantity (Dict.14) to REACTION formalism (one-to-one correspondence to Dict.14)	≤18	✓	future NND→CPND conversion

*   Additional information given on the following pages.

+   Exceptionally, one code in this dictionary has 5 characters.

6. Reports

Each code in the dictionary consists of the alphanumeric character string which precedes the actual report number. The final character of the codes given in the dictionary is always a hyphen (-), except in a few cases where the report codes are 11 characters and the 12th character a hyphen. In such cases the hyphen is dropped in the dictionary.

The 7-character institute code (as in dictionary 3) of the institute where the report was issued is in columns 60 to 66.

The dictionary is sorted on this institute code and within the institute code, by report code.

7. Conferences and books

Conference codes are composed of the "year of the conferences" given in the first 2 digits of the code, followed by the "place of the conference", which may have up to 8 characters.

Examples: 66PARIS
             68COPENHGN

Book codes are up to 10 characters long and give a concise short title of the book, or the family name of the first author.

Examples: ABAGJAN for the "Group Constants for nuclear reactor calculations" by Abagjan et al.
             NEJTRONFIZ for "Nejtronnaja Fizika".

In the Dictionary, books, sorted alphabetically by code, precede conferences, which are sorted alphabetically by code, within year.

NOTE: The codes in this dictionary are used by CINDA, where there is a restriction to 8-character codes. For this reason, new entries to this dictionary, should, whenever possible be restricted to 8-characters.

9. Chemical Compounds

The general compound code 'CMP' can be combined with any element in the form (Z-S-CMP) without entry in this dictionary, which lists only special cases.

The actual compound codes (e.g. OXI for oxide) are restricted to a length of three characters. They are also used in CINDA.

12. Modifiers (ISO-QUANT)

An expanded form is only given for those modifiers, at the beginning of the dictionary, which may be included in the ISO-QUANT code, but are not included in the codes in dictionary 14.

14. Quantity (ISO-QUANT)

The format of this dictionary is as follows:

> col. 1 - 18 quantity code
> col. 19 - 22 dimension code
> col. 23 - 66 expanded form and free text.

1. The quantity code is composed of the codes for the quantity-subfields given in dictionaries 10 - 13. All meaningful combinations of the subfield-codes that are in use are included.

   Note, however, that these quantity codes do not include the general modifiers RAW, REL, FCT, AV, SPA, MXW, FIS, from the beginning of dictionary 12.

2. The dimension code has the purpose to link the quantities-dictionary with the units-dictionary, in order to facilitate computer checks whether, in a data-table, quantities and units are consistent.

3. The expanded form is a short definition of the quantity. It may be used for the edited output for customers.

   For the expansion, some conventions have been adopted:

   1) "differential cross-section" means differential with respect to angle of outgoing particle.

   2) "double differential" means differential with respect to angle and energy of outgoing particle.

   3) "energy distribution" or "spectrum" means differential with respect to energy of outgoing particle.

   4) * means "times"
      / means "division".

24. Data-heading keywords

These keywords are used in the COMMON and DATA sections, as columns headings for defining the contents of these columns.

No expanded form of the codes is given.

Column 66 is reserved for a flag.

For rules concerning the sequence of columns see page VI.3. For checking purposes, a series of flags is given in Dictionary 24, Column 66, which defines the category and the family within each category, according to the scheme in the following table.

Family	FLAGS Variables	Associated Quantities	Class
EN	A	B	)
EN-RES	C	D	)
E **	E	F	) 1
ANG	G	H	)
F. Prod. THICKNESS	I K	*	)
FLAG	*	Z	)
TEMP	8	9	)
HL	6	7	) 2
J	4	*	)
L	2	*	)
Parity	0	*	)

* No heading exist.

** Except E-LVL-INI, E-LVL-FIN and E-NRM.

Class 1 pertains to independent variables.

Class 2 pertains to additional information which in certain cases may act as an independent variable (cf. VI.3 point (5)).

25. Data-unit keywords

The data units are entered in the "COMMON" and "DATA" section below the data heading to define the units of the contents of each column.

The format of the dictionary is as follows:

col. 1 – 10   code
      11   blank
      12 – 44 explanation of code
               (no expanded form given)
      45 – 48 dimension code
      49 – 55 blank
      56 – 66 conversion factor

The dimension code provides a cross-link with dictionary 14, where the dimension code is also given. This facilitates computerized cross-checks, whether quantities and units given in a table are consistent.

The conversion factor is a floating point number which may be used for transforming units with the same dimension to standard units, namely:

energies   to electron-volts;
angles   to degrees;
time   to seconds;
length   to metres;
cross-sections to barns.

34. Modifiers (REACTION)

An expanded form is only given for those modifiers, at the beginning of the dictionary, which may be included in the REACTION code, but are not included in the codes in dictionary 36.

36. Quantities (REACTION)

The format of this dictionary is the same as that of dictionary 14, namely:

col. 1 - 18 quantity code
19 - 22 dimension code
23 - 66 expanded form and free text.

1. The quantity code is composed of the codes for the REACTION subfields 5 to 8. All meaningful combinations of the sub-fields codes that are in use are included. Note, however, that these quantity codes do not include the general modifiers RAW, REL, FCT, AV, SPA, MXW, FIS, from the beginning of dictionary 34.

2. The dimension code has the purpose to link the quantities – dictionary with the units – dictionary, in order to facilitate computer checks whether, in a data-table, quantities and units are consistent.

3. The expanded form is a short definition of the quantity. It may be used for the edited output for customers.

41. Conversion table of quantities

This dictionary is used to convert the quantity, in the ISO-QUANT formalism, as given in dictionary 14 to the REACTION formalism. There is a one-to-one correspondence between dictionaries 14 and 41.

The format of the dictionary is as follows:

col. 1 - 18 quantity code, as given in
dictionary 14
19 - 22 blank
23 - 66 equivalent reaction code, including
enclosing parentheses, and free text.

Introduction

This section gives the rules for information-identifier keywords and the structure of the codes associated with them. It does <u>not</u> give any information about the specific codes to use from any dictionary, nor does it go into details of the physics content or additional free text explanation which may be required. For such information compilers should refer to LEXFOR.

The general format for coding is given on page VIII.1.2. If the coding required for a keyword deviates in any way (restrictions or extensions) from the general format then a page for this keyword <u>must</u> be included in part 3 of this section.

Part 2 of this section gives a concise over-view of all keywords and the coding for them.

Part 3 of this section is devoted to the specific rules for each keyword and the associated coding rules when there is any deviation from the general format. However, keywords which require only free text, and no coding, are not included. There is a recognisable structure to the way the information for each keyword is given, which should be maintained when pages are updated or new pages added.

There is a specific link between certain data-heading keywords and keywords with their codes in the BIB-Section. This is dealt with in part 4.

Parts 5 and 6 deal with repeated data-column headings and numerical data formats respectively.

General information about information-identifier keywords and codes.

All valid information-identifier keywords are in Dictionary 2.

These keywords are used in the BIB section to identify specific information; these may then be coded, with or without free text explanation, or may have only free text associated with them. Codes are used for retrieval purposes. Information in free text cannot be used for retrieval purposes. The keywords may, in general, appear in any order within the BIB section.

Codes for use with a specific keyword are found in the relevant dictionary. In general, codes may be used singly or in conjunction with one or more codes from the same dictionary. Two possibilities exist if more than one code is used:

a) Both codes within the same set of parentheses, separated by a comma, for example:

KEYWORD   (CODE1,CODE2) + free text , or

b) Each code enclosed in own set of parentheses followed by free text, with the stipulation that each new code entry start in column 12, for example:

KEYWORD   (CODE1) + free text ...

free text ...,

(CODE2) + free text

Both of these possibilities, or a combination of the two, are allowed, although for some keywords only b) is permitted.

For some keywords the coded string (i.e. between the parentheses), may include retrievable information, other than a code from a dictionary.

See Part 3 of this Section for the explicit coding format associated with each keyword.

Refer to page IV.1 for information on keywords and codes.
Refer to page IV.2 for codes and free text.
Refer to page IV.3 for information on pointers, which may be used with some keywords.
Refer to LEXFOR for the information to be included for each keyword.

Keyword categories:

In the following list of information-identifier keywords certain flags indicate which keywords must, or need not, be present and which keywords must, or need not, be followed by coded information:

Bibliographic keywords

Use of keyword presently restricted to:

	O	TITLE
	*	AUTHOR (( ))
	*	INSTITUTE ((3))
		EXP-YEAR (( ))
	*	REFERENCE ((4,5/6/7))
CPND		REL-REF ((17,Author,Ref.))

Data Specification keywords

CPND	X	REACTION ((Z-S-A(P,N+P)Z-S-A,31,32,33,34,35)) See note 1.
NND	X	ISO-QUANT ((Z-S-A,14))
NND	X	NUC-QUANT ((Z-S-A,14))
NND	X	CMPD-QUANT ((Z-S-9,14))
CPND	O	MONITOR ((Reaction,Acc#, Author,Ref.)) See note 1.
NND	O	STANDARD (Z-S-A,14) See note 2.
CPND		RAD-DET ((Z-S-A-MX,13))
CPND		DECAY-DATA ((Z-S-A-MX,HL,13,E,abund.))
		PART-DET ((13)) or (Z-S-A)
		EN-SEC
NND		RESID-NUC (Z-S-A-M)
		HALF-LIFE (HL,Z-S-A-M)

Experimental and data description keywords

	O	METHOD (21)+
	O	FACILITY (18)+ See note 3.
	O	DETECTOR (22)+
	O	ANALYSIS (23)+
		N-SOURCE (19)+
		INC-SPECT
		SAMPLE
CPND		ADD-RES (20)
		CORRECTION
	O	ERR-ANALYS (DATA-ERR) See note 2.

Miscellaneous keywords

```
COMMENT
MISC-COL ((MISC1))
ASSUMED (ASSUM1)
FLAG ((1.))
O  STATUS (16)+   or (CODE,Acc#)
*  HISTORY ((   ))
```

Obsolete keywords

GEOMETRY } These keywords are obsolete but
TABLE-NR } may still exist in old entries.

For explanation of flags and notes see next page. 4C-3/195 = CP-D/20 77/

Explanations:

* This keyword must always be present. (Incidentally, all of these keywords must always be followed by coded information in parantheses as indicated by (( )).)

X One of these keywords must be present; they are mutually exclusive.

— At least one of these keywords must be present; if a pertinent code in the relevant dictionary exists, then keyword and code should be given. It is advisable that all four of these keywords be given except when not relevant. For example: FACILITY is "not relevant" for spontaneous fission data.

O This keyword must always be present except when it is not relevant. For explanation of "not relevant" see in LEXFOR. For example: ERR-ANALYS is "not relevant" for quantum-numbers.

(( )) If the keyword is present, coded information in parentheses must be given. ((3)) refers to the relevant dictionary, No. 3. In other cases an example of coded information is shown in the table.

(19)+ Either free text or coded information in parentheses plus possibly free text may be given. The number refers to the relevant dictionary. If a pertinent code in the relevant dictionary exists, then keyword and code should be given. The "+" sign indicates that the coded information in parentheses must be repeated in the free text. Except when a point is entered in the position following the closing parenthesis, or when the free-text field up to col.66 is totally blank.

NOTES.

1. REACTION   replaces ISO-/NUC-/CMPD-QUANT·
   MONITOR   replaces STANDARD

2. STANDARD and ERR-ANALYS   The compiler should treat these items with special care, and whenever necessary, he should request further information from the author.

3. FACILITY   For CPND an institute code from dictionary 3 may follow the facility code, separated from it by a comma.

AUTHOR * Keyword obligatory and must have coded information.

The normal way of writing a name is A.B.NAME, and this is the they should be entered, each separated by a comma. This will permit hyphenated family names, '2-character' initials, as in the transliteration of some Russian names, and any other deviations from what may be normal. To code a family name modified by "Junior," JR should be entered following the family name and separated from it by a blank. For example:

(A.B.JONES, L.POZA-LOBO, YA.M.IVANOV, NGO-DINH-LONG, A.MORALES AMADO)

(W.W.HAVENS JR)

All names entered between one set of parentheses.

See LEXFOR for other conventions, concerning Cyrillic transliterations, etc.

CMPD-QUANT (used only for NND)

1. The keywords ISO-QUANT, CMPD-QUANT and NUC-QUANT are mutually exclusive. One of them is obligatory and must have coded information. For CPND the keyword REACTION is used instead.

2. The keyword CMPD-QUANT is used when the quantity defined refers to a target which is a compound, alloy or mixture.

3. The coding rules for CMPD-QUANT are all identical to those for ISO-QUANT, except that the isotope-field contains a compound-code.

4. The compound-code is either a code from dictionary 9 or of the form Z-S-CMP; e.g. 26-FE-CMP.

5. See LEXFOR for further information on compounds.

ERR-ANALYS

1. This keyword is used to give free text explanation of the sources of errors and the values given in the COMMON- or DATA-sections under data-headings having the modifier -ERR.

2. The keyword is optional.

3. If only one data-error is given, which is the most frequent case, the code (DATA-ERR) need not be given under the keyword ERR-ANALYS.

4. If two or more error columns are given, then the data-headings are repeated as codes for this keyword, each starting in col.12, followed by free text explanation.

    For example:

    BIB
    ...
    ERR-ANALYS   (EN-ERR) followed by explanation of energy error
                  (DATA-ERR1) followed by explanation of first error,
                  perhaps a statistical error.
                  (DATA-ERR2) followed by explanation of second error,
    ...   perhaps a systematic error.
    ENDBIB
    ....
    ....
    DATA
    EN   EN-ERR   DATA   DATA-ERR1   DATA-ERR2
    MEV   MEV   MB   MB   PER-CENT
    ...   .
    ENDDATA

5. Refer to LEXFOR for further information on error analysis.

FLAG

1. This keyword is used to supply information to specific lines in a data table.

2. The keyword is optional, but if present it must have coded information. It must be present if flags are used in the data table.

3. The general format of the code is (n.), where n will have a numerical value which appears in the DATA-section under the data-heading FLAG.

4. If two or more codes are given, they must each start in col.12, followed by a free text explanation of the meaning of the flag.

5. Example:

```
BIB
...
FLAG           (1.)  Data averaged from 2 runs
               (2.)  Modified detector used at this energy
...
ENDBIB
...
DATA
EN             DATA         FLAG
KEV            MB           NO-DIM
1.2            123.         1.
2.3            234.
3.4            456.         2.
ENDDATA
```

See also VIII.5

HALF-LIFE

1. Keyword optional, with or without coded information. However coded information <u>must</u> be included when the corresponding data is given in the COMMON- or DATA-sections.

2. The general coding format is (HLn, Z-S-A-X), where

   n may have the values 1, 2, 3 etc., corresponding to the data-headings HL1, HL2, HL3 etc in the COMMON- or DATA-sections.
   Z is the mass number, up to 3 digits, no leading zeroes;
   S is the element symbol; 1 or 2 characters;
   A is the atomic weight; up to 3 digits, no leading zeroes;
   X is an isomer code denoting the isomeric state. This subfield may be omitted if there is no isomeric state.

   X may have the following values:
   G for ground state,
   M for an unknown metastable state,
   M1 for the first metastable state,
   M2 for the second, etc.

   Note that the coding of the second field is the same as for RESID-NUC.

3. The data-columns headed by HL1, HL2, etc then each contains the numerical value of the half-life of the nucleus specified in the second part of the code.

4. If two or more half-lives are given, each must be coded separately starting in col.12.

   See Example 17. See also VIII.5.

5. For CPND half-life values may be entered under the keyword DECAY-DATA.

HISTORY*

1. This keyword is obligatory and must have coded information.

2. Each piece of coded information must start on a separate line, in col.12.

3. The general format of the code is (yymmddX)

    where yymmdd is a date (year,month,day) on
    which some action was taken on
    the entry or sub-entry;
    X is a code denoting what action
    was taken. X may be omitted.

4. The permitted values which X may have and their meanings are as follows:

    R - DATA RECEIVED AT THE CENTRE
    C - COMPILED AT THE CENTRE
    L - ENTERED INTO LIBRARY
    T - CONVERTED FROM PREVIOUS COMPILATION
    E - TRANSMITTED TO OTHER CENTRES
    A - IMPORTANT ALTERATIONS
    U - UNIMPORTANT ALTERATIONS
    D - ENTRY OR SUBENTRY DELETED. THIS MUST BE FOLLOWED BY
        FREE TEXT JUSTIFYING THE DELETION

5. For further information about which codes to use see LEXFOR.

INSTITUTE * Keyword obligatory and must have coded information.

One or more codes from dictionary 3.

In cases where the institute-code is less than 7 characters, trailing blanks may be omitted, however embedded blanks must be included, as they are considered part of the code.

Refer to page IV.2 (4) concerning free text associated with the code(s).

For which codes to enter, see LEXFOR.

ISO-QUANT   (used only for NND)

1. The keywords ISO-QUANT, CMPD-QUANT and NUC-QUANT are mutually
    exclusive. One of them is obligatory and must have coded information.
    For CPND the keyword REACTION is used instead.

2. The keyword ISO-QUANT is used when the quantity defined refers to a
    target nucleus which is an isotope or an isotopic mixture.

3. This keyword is used to specify the data which is presented in the data-table
    in columns headed by DATA and RATIO (and similar headings such as
    DATA-MIN, DATA-MAX etc.)

4. An isoquant-unit consists of two major fields,

        (isotope, quantity)

    The detailed coding for each field is given on the next page.

5. In most cases a single isoquant-unit is sufficient to specify the
    data, however in order to deal with experimental data sets referring
    to complex combinations of materials and reactions, isoquant-units
    can be connected into a single machine-retrievable field, with
    appropriate separators and properly balanced parentheses. In all cases
    of combined isoquant-units, parentheses are used in exactly the same manner
    as in FORTRAN to define algebraic operations. The permitted separators are:

        Plus   +   Minus   −

        And   ,   Times   *

        Over   /   Also   =

6. The complete isoquant-combination must be enclosed in parentheses.

    An isoquant-unit may not be broken for continuation on the next line.
    The separator should appear last on any line, with the first parenthesis
    of the next isoquant-unit beginning in column 12 of the next line. Thus blanks
    may follow a separator if the isoquant-combination is continued on the next line.

    Examples of isoquant-combinations are given on page VIII.3.ISO-QUANT.4.

7. Pointers may be used with this keyword, in which case the coding associated
    with each pointer may be an isoquant-unit or an isoquant-combination.

    See page IV.3 for general information on pointers.

    Examples of multiple isoquants (i.e using pointers) are given on
    page VIII.3.ISO-QUANT.5.

8. The <u>isoquant-unit</u> consists of two major fields,

   (isotope, quantity)

   Embedded blanks within an isoquant-unit are not permitted.

9. <u>Isotope field</u>. The isotope compiled is the <u>target nucleus</u>.

   The general format of the code is Z-S-A-X, where

   Z is the atomic number; up to 3 digits, no leading zeroes;

   S is the element symbol; 1 or 2 characters;

   A is the atomic weight; up to 3 digits, no leading zeroes;
   a single zero denotes natural isotopic composition;

   X is an isomer code denoting the metastable state. It
   has the form M or M1, M2 etc. . This subfield may be
   omitted.

   Examples of isotope coding:

       1-H-1
       1-H-2
       6-C-12
       40-ZR-90
       92-U-234
       94-PU-239
       95-AM-242-M1

10. An extension to the isotope coding is foreseen but <u>not yet implemented in EXFOR</u>.

    If Z occurs as a variable in the data-table then the characters 'Z' and 'EL' are included in the isotope code. Similarly if A occurs as a variable in the data-table then the character 'A' is included in the isotope code.

    Examples of such coding:

        Z-EL-106
        Z-EL-0
        54-XE-A
        Z-EL-A

11. <u>Quantity field</u>. The coding consists of 4 subfields, each separated by a comma.

    (isotope,SF1,SF2,SF3,SF4)

    Any subfield may contain a combination of codes from the same dictionary, separated by a slash.

    If a subfield is omitted, the extra separating comma must be included, except that no trailing commas need follow the last coded subfield.

    e.g. (isotope,SF1,SF2,,SF4)
          (isotope,SF1)

12. Only certain combinations of codes in the quantity field are meaningful. These are listed in <u>dictionary 14</u>. Note that if two or more codes are entered in a subfield, they must be in the same sequence as in dictionary 14.

13. <u>SF1. Process/parameter designator</u>
    Code(s) from dictionary 10.
    This subfield specifies the nuclear (or collective) process under study and/or parametric quantity derived for nucleus under study by experiment.

14. <u>SF2. Function designator</u>
    Code(s) from dictionary 11.
    This subfield specifies the aspect or parameter studied or a useful collective term.

15. <u>SF3. Modifier designator</u>
    Code(s) from dictionary 12.
    This subfield provides flags to indicate departure from the standard meaning of SF1 and SF2 or provides a combination of process/parameters and functions.

    Note that the codes at the beginning of dictionary 12 which may be included in SF3 are not included in the code combinations in dictionary 14.

16. <u>SF4. Particle designator</u>
    Code(s) from the first part of dictionary 13.
    This subfield provides particle code(s) indicating which of several outgoing particles the quantity refers to.

    The particle-designator can be omitted if there is no ambiguity. For a quantity describing the correlation between outgoing particles, two particle-designators are entered, separated by a slash.

Isoquant combinations

Examples of ISØ-QUANT combination fields:

1. Single isotope; sum or ratio of 2 of more quantities
   ((28-NI-58,NNP)+(28-NI-58,ND))   a sum
   ((28-NI-58,NP)/(92-U-235,NF))   a ratio
   (((28-NI-58,NNP)+(28-NI-58,ND))/(13-AL-27,NA))   a sum
   and a ratio

2. Single isotope; Quantity "tautologies."

   The ISO-QUANT separator "=" (equal sign) means "also." It has been
   defined as describing quantity "tautologies" and should only be used
   for this purpose. Its use is optional, i.e., at the discretion of the
   compiler. If it is used, the ISO-QUANT defined by the narrower defini-
   tion (as outlined below) is used first and other ISO-QUANTS appear to
   the right of the equal-sign.

   Two types of quantity "tautologies" were considered:

   1. Below a threshold, two quantities can be equal:
      EXAMPLE: total scattering and elastic scattering below in-
               elastic threshold; etc.
      For such cases the CINDA rules exist, that the narrower defini-
      tion should be used first, and that sum cross-sections like
      total scattering or non-elastic should only be used when two
      (or more) reactions are present. This rule seems to avoid any
      real case of a tautology.

   2) The energy range of a measurement may extend beyond a threshold.

      EXAMPLE:
      $$\sigma_{tot\ scat} = \sigma_{el} \quad \text{for } E < E_{th}$$

      $$\sigma_{tot\ scat} = \sigma_{el} + \sigma_{inel} \quad \text{for } E > E_{th}$$

      In this case the wider definition, total scattering, must be
      used.

   3) In old papers obsolete designations like "inelastic collision
      cross-section" for nonelastic or "absorption" for (n,γ)
      may have been used.

      In these cases the presently valid definition should be used
      and the author's designation may be given in free text.

3. <u>More than one isotope and more than one reaction.</u> (Not necessarily a
   mathematical sum.)

   ((28-NI-58,NP)+(28-NI-60,NT))

4. <u>Ratio followed by a derived quantity separated by a comma.</u> Example:
   (((79-AU-197,NG)/(5-B-10,NA)),(79-AU-197,NG))

   This formalism, which may exist in old entries, is no longer used. It
   was replaced by the Multiple ISO-QUANT formalism as follows.

Multiple isoquants

The coding associated with each pointer may be an isoquant-unit or an isoquant-combination.

The use of <u>multiple isoquant is presently restricted to</u>:

a) resonance parameters of the same isotope; for example
ISO-QUANT 1(92-U-235, TOT/WID)
           2(92-U-235,EL/WID,,2G)
           3(92-U-235,J,RES)

with the pointers being repeated in the data-headings DATA 1, DATA 2, DATA 3, respectively, and perhaps elsewhere.

b) multiple representations of the same quantity, for example
ISO-QUANT 1(92-U-235,NF,,REL)
           2(92-U-235,NF)

with the pointers being repeated in the data-headings DATA 1 and DATA 2, and perhaps elsewhere.
or:
ISO-QUANT 1((92-U-235,NF)/(79-AU-197,NG))
           2(92-U-235,NF)

with the pointers being repeated in the data-headings RATIO 1 and DATA 2, and perhaps elsewhere.

MISC-COL

1. This keyword is used to give free text explanation for columns in the COMMON- or DATA-sections headed by MISC and its derivatives.

2. This keyword is optional, but must be present if miscellaneous columns are present in the sub-work.

3. If only one miscellaneous column is given, (namely MISC) then no coding is required.

4. If two or more miscellaneous columns are given, then the data-headings are repeated as codes for this keyword, each starting in col.12, followed by free text explanation.

NUC-QUANT (used only for NND)

1. The keywords ISO-QUANT, CMP-QUANT and NUC-QUANT are mutually exclusive.
    One of them is obligatory and must have coded information. For CPND
    the keyword REACTION is used instead.

2. The keyword NUC-QUANT is used when the quantity defined does not refer
    to a target-nucleus. These quantities are:

        SF = spontaneous fission
        LDP = level-density parameter
        TEM = nuclear temperature
        SCO = spin-cut-off factor

    as well as any other quantities having one of the above codes in the
    first quantity-subfield, e.g., SF/NU; compare Dictionary 14.

3. The coding rules for NUC-QUANT are all identical to those for
    ISO-QUANT. The isotope-field contains the code for the nucleus to which
    the data is pertinent instead of the target nucleus.

NUC-QUANT (used only for NND)

PART-DET

1. This keyword is not compulsory, but should always be present
   when the particle detected is not evident from the data-specification
   coding under ISO-QUANT, CMPD-QUANT, NUC-QUANT or REACTION.

2. If the keyword is present, then coded information is complusory.

3. The code is <u>either</u> a code from dictionary 13,

   <u>or</u> takes the form Z-S-A if the particle
   directly detected is heavier than an
   alpha-particle.

   e.g.   PART-DET   (P)

           PART-DET   (8-0-16)

<u>Two or more particles detected</u>

4. If the particles detected refer to a single isoquant-unit they
   may be coded together or on separate lines. (For the meaning
   of isoquant-unit see ISO-QUANT in this section.)

   e.g.   either PART-DET (G,N) free text

              or PART-DET (G) free text
                           (N) free text

5. The particles detected pertaining to isoquant-units in an
   isoquant-combination should be coded on separate lines, in the
   same order as the corresponding isoquant-units. (For the meaning
   of isoquant-combination see ISO-QUANT in this section.)

6. Pointers may be used to link the particle-detected codes to the
   corresponding isoquant-units and/or isoquant-combinations if
   multiple isoquants have been used. (For the meaning of
   multiple-isoquants see ISO-QUANT in this section.) See also
   page IV.3.

7. For further information on which codes to enter see LEXFOR.

REFERENCE* Keyword compulsory and must have coded information.

1. Each reference is coded separately with the opening parentheses in col.12. An effort should be made to have the main reference the first in the list.

2. The coding consists of up to 6 sub-fields, each separated by a comma, and with no embedded blanks allowed.

3. The order of the subfields is important and must be maintained, even though some subfields may be omitted. If a subfield is omitted, the extra separating comma must be included, except in the case:

    a) of parenthesised subfields

    b) when the omitted subfields is the page number.

4. The first subfield (type-of-reference) and the second subfield (code) may not be omitted.

5. The last subfield must contain the reference date, coded in the form yymmdd (year, month, day, two digits each). The year must always be present; the month and the day may be omitted if unknown.

6. The actual format for coding depends upon the type of reference, see next page for details.

7. The remaining character positions on the line following the closing parenthesis of the coding are reserved for a "mini-comment", giving further information about the reference.

    e.g. GRAPH ONLY
     or ABSTRACT.

This "mini-comment" could then be used in a printed index. Any further information about the reference cab be given on a second line starting in Col. 12, following the normal practice in the exchange format.

8. When referencing a document which has more than one identification number, all these numbers shall be included within one set of parentheses, each one being in parentheses connected by an = sign.

    e.g. ((R,USNDC-7,143,7306)=(R,EANDC(US)-181,143,7306))

The same rules apply for continuation cards as those given under ISO-QUANT, see ISO-QUANT in this section.

9. For information on which references should be included see LEXFOR.

10. The first subfield contains the type-of-reference, a code from dictionary 4.

   The format of the coding for each type-of-reference follows.

11. Type-of-reference = J; Journals

   The second subfield contains on code from dictionary 5.

   General coding form: (J,Code,Vol,(Issue-number),Page,Date)

   e.g.

   a) (J,PR,104,1319,5612) = Phys.Rev. Volume 104, page 1319, December 1956.

   b) (J,XYZ,5,(2),89,6602) = Journal XYZ, Volume 5, issue-number 2, page 89, February 1966.

In the few cases, particularly with abstracts, when two works must be referenced which appear on the same page of a journal, the following practice should be followed:

   i) If a paper-number or paragraph-number is available it should be enclosed in parentheses following the page number.

   e.g., (J,XYZ,9,999(1122),6912)
         (J,XYZ,9,999(1573),6912)

   ii) If this is not possible then the order in which they appear on the page should be used.

   e.g., (J,XYZ,8,888(1),6911)
         (J,XYZ,8,888(2),6911)

12. Type-of-reference = R or P; Reports and Progress Reports

   The second subfield contains a code from dictionary 6.

   General coding form: (R,Code-Number,(Volume or Part),page,date)
                      or   (P,Code-Number,(Volume or Part),page,date)

   (Note: the report code must be connected to the number by a hyphen. This hyphen is usually included in dictionary 6, except when the code itself is 11 characters long.)

   e.g.

   a) (R,UCRL-5341,5806) = UCRL report number 5341, published in June 1958.

   b) (R,JINR-P-2713,6605) = Dubna report, series P, number 2713, published in May 1966.

   c) (R,AERE-C/R-159,6403) = AERE-C/R report number 159, published in March 1964.

   d) (P,WASH-1068,185,6603) = WASH progress report number 1068, page 185, published in March 1966.

In the few cases when two works must be referenced which appear on the same page as a report, the practice outlined above for journals should be followed.

13. <u>Type-of-reference = C or B; Conferences or Books</u>

The second subfield contains a code from dictionary 7.

General coding form: (C,Code,Volume,Page or (Paper Number),Date)

or   (B,Code,Volume,(Part),Page,Date)

e.g.

a) (C,67KHARKOV,,(56),6702) = 1967 Kharkov Conference proceedings, paper number 56, February 1967.

b) (C,66WASH,1,456,6603) = 1966 Washington Conference proceedings, Volume No. 1, page 456, March 1966.

c) (B,ABAGJAN,,123,64)= Book by Abagjan, page 123, published in 1964.

d) (B,MARION,4,(1),157,60) = Book by Marion, Volume 4, part 1, page 157, published in 1960.

14. <u>Type-of-reference = T or W; Thesis or Private Communication</u>

The second subfield contains the family name of the author.

General coding form: (W,Author,page,date)

or   (T,Author,pagepdate)

e.g.

a) (W,BENZI,661104) = private communication from Benzi received in November 4, 1966.

b) (T,ANONYMOUS,58,6802) = Page 58 of thesis by Anonymous, published in February 1968.

<u>REL—REF</u> (so far used for CPND only)

1. Keyword optional, if present it must have coded information.

2. Each relevant reference is coded separately with the opening parenthes in col. 12.

3. The coding consists of up to 8 subfields, each separated by a comma, and with no embedded blanks allowed.

4. The first subfield contains a code from dictionary 17, and may <u>not</u> be omitted.

5. The second subfield contains the family name of the first author, followed by '+', if more than one author; this subfield may <u>not</u> be omitted.

6. The remaining subfields follow exactly the format of the coding for the keyword REFERENCE.

   e.g.

   (C,ANON+,J,XYZ,5,(2),90,7701)=Critical remarks by ANON et al.
   in Journal XYZ, Volume 5,
   issue—number 2, page 90, January
   1977.

7. For information about what should be coded under this keyword see LEXFOR.

RESID-NUC   (used only for NND)

1.   Keyword optional with coded information and/or free text.

2.   This keyword is used to specify the nucleus of the residual nucleus.

3.   The general format of the code is (Z-S-A-X), where

> Z is the mass number, up to 3 digits, no leading zeroes;
> S is the element symbol; 1 or 2 characters;
> A is the atomic weight; up to 3 digits, no leading zeroes;
> X is an isomer code denoting the isomeric state. This
>   subfield may be omitted if there is no isomeric state.

> X may have the following values:
>   G for ground state,
>   M for an unknown metastable state,
>   M1 for the first metastable state,
>   M2 for the second, etc.

Note that this is the same as for the isotope-field under ISO-QUANT, except that here, X may also have the value 'G'.

Two or more residual nuclei

4.   If the residual nuclei refer to a single isoquant-unit they may be coded together or on separate lines. (For the meaning of isoquant-unit see ISO-QUANT in this section.)

> e.g. either RESID-NUC (CODE1,CODE2) free text
>
> or RESID-NUC (CODE1) free text
>   (CODE2) free text

5.   The residual nuclei pertaining to isoquant-units in an isoquant-combination should be coded on separate lines, in the same order as the corresponding isoquant-units. (For the meaning of isoquant-combination see ISO-QUANT in this section.)

6.   Pointers may be used to link the residual nucleus codes to the corresponding isoquant-units and/or isoquant-combinations if multiple isoquants have been used. (For the meaning of multiple-isoquants see ISO-QUANT in this section.) See also page IV.3.

7.   In the COMMON- or DATA-section, data given in a column headed by 'HL' gives the half-life life of the residual nucleus.

8.   For CPND the residual nucleus is coded in SF4 under REACTION.

STANDARD   (used only for NND)

1. For CPND, where the data are specified under the keyword REACTION, then the keyword MONITOR is used instead of STANDARD. The keywords MONITOR and STANDARD are mutually exclusive.

2. Keyword obligatory, except when not relevant. Information may be entered either in free text only or in coded form with or without free text. However, coded information must be included when the corresponding data is given in the COMMON- or DATA-sections.

3. If coded information is given the coding rules for STANDARD are all identical to those for ISO-QUANT. However, the foreseen extension of variable Z and/or A will not be permitted for STANDARD.

4. If coded information is given, the numerical data of the standard used may be entered in the COMMON- or DATA-sections under the data-heading keyword STAND.

Two or more standards given in coded form.

5. Each standard must be coded separately, starting in col.12.

6. The coded information can then linked to the COMMON- or DATA-sections by:

      either using pointers and the repeated data-heading keyword STAND, as for multiple isoquants;

      or using the data-heading keywords STAND1, STAND2 etc., where the 1 will refer to the first code entered under STANDARD, the 2 will refer to the second code, etc.

(The latter convention is no longer used at NDS).

32000off

STATUS

1. Keyword optional with coded information and/or free text*.

2. The coded information may be entered in either of the general forms (see page VIII.2.1), with codes from dictionary 16.

   e.g.

   a) STATUS (PRELM,OUTDT) free text .

   b) STATUS (PRELM) free text

   - - - - - - - -

   (OUTDT) free text

3. With form b) a second field, containing a valid subaccession number, may follow the code.

   e.g. STATUS (DEP,10048007) free text

   - - - - - - - - - -

   (SPSDD,10048009) free test.

   This is only permitted for the codes SPSDD, DEP and COREL.

   The subaccession number indicates a cross-reference,

   e.g. (SPSDD,10048009) - this means that the present subentry is superseded by subentry 10048009.
   (DEP,B0001004) - this means that the data of the present subentry have been deduced from the data in subentry B0001004.
   (COREL,B0123004) - this means that the data of the present subentry are correlated with the data of subentry B0123004 since both were obtained, e.g. by different analysis, from the same experimental raw data.

4. For information on which codes to use see LEXFOR.

   The keyword STATUS is not relevant, only when the source of the data is given under REFERENCE and no other STATUS information applies.

* Note that at NDS this keyword is obligatory.

Links between data-heading keywords and information-identifier keywords

In the COMMON- and DATA-sections some data-heading keywords require specific keywords and codes in the BIB-section. These are listed below. See also part 3 of this section for further information about the keywords, and page IV.3 for information about pointers.

DATA, RATIO, SUM

The data-heading keywords DATA, RATIO, SUM, and their derivatives such as DATA-MAX etc., are defined in the BIB-section under ISO-QUANT, NUC-QUANT, CMPD-QUANT, or REACTION. The use of RATIO and SUM is restricted to explicit ratios or sums expressed in the form

REACTION $((\ldots)/(\ldots))$
     or $((\ldots)+(\ldots))$ respectively.

Any implicit ratios, such as the quantity "alpha" (capture-to-fission cross-section ratio), and implicit sums, such as a total cross-section deduced from partial cross-sections, are coded with the data-heading DATA.

Note: The data-heading keyword SUM is at present used only in combination with REACTION. When ISO-QUANT is used, SUM is replaced by DATA.

Pointers are used to link the data columns to the relevant codes in the BIB-section.

STAND

The data-heading keyword STAND and its derivatives STAND1, STAND2 etc are defined in the BIB-section under STANDARD. (This is used only in combination with ISO-/NUC-/CMPD-QUANT.)

STAND is used when only one standard is given. STAND1, STAND2 etc are used when two or more standards are given. STAND1 refers to the first standard entered, STAND2 to the second, etc.

Instead of using STAND1, STAND3 etc, pointers may be used to link the data columns to the relevant codes in the BIB-section.

MONIT

The data-heading keyword MONIT and its derivatives are defined in the BIB-section under MONITOR. (This is used only in combination with REACTION.)

HL

A data-column headed by HL contains the half-life of the residual nucleus, which may or may not be coded under RESID-NUC. (see also VIII.5)

HL1, HL2 etc.

Data columns headed by HL1, HL2 etc contain the half-lives of the nuclei specified with these headings in the codes under HALF-LIFE. See example 17. (See also VIII.5)

-ERR

Free text explanation can be given for any data-heading keyword having the modifier -ERR by repeating the data-heading as a code with the keyword ERR-ANALYS.

FLAG

This data-heading may not be used in the COMMON- section, nor may it be used in a DATA-section containing only one data point.

The columns headed by FLAG contains numbers (in fixed point format). These numbers are repeated as codes with the keyword FLAG, where free text explains their meaning.

Flags are used to supply information to specific lines in a data-table. (They should not be used for entire sub-works).

There may be more than one column in the DATA-section with the heading FLAG, see VIII.5.

MISC

This data-heading and its derivatives MISC1, MISC2 etc are used for miscellaneous numerical data. Free text explanation for such data can be given by repeating the data-heading as a code with the keyword MISC-COL.

Repetition of column-headings

An actual column-heading may consist of a data-heading keyword (see Dict.24) and, perhaps, a pointer (see page VI.3).

Within the three sections   COMMON section of subentry nnn ≠ 001,
DATA section of subentry nnn ≠ 001,
COMMON section of subentry 001 of same entry,

no column-heading (= data-heading keyword plus pointer) may be repeated except for the following cases. (Any further case of repeated column-headings which the centers may agree to accept, must be described here.)

Any columns with identical column-heading must be adjacent and may appear within only one of the three sections mentioned above.

1.) Two or more <u>unresolved energy levels</u> are entered by repeating the data-heading keyword E-LVL as follows:

E-LVL	E-LVL	E-LVL
MEV	MEV	MEV
0.107	0.125	0.177

2.) An <u>angle given in degrees and minutes</u> must be entered in two separate columns with the data-heading ANG repeated as follows:

ANG	-ANG
ADEG	AMIN
90.	47.

Similarly, any other data-heading keyword starting with ANG-... may be repeated in the same way.

3.) If a column is to contain <u>half-life values in different units</u> such as SEC, D, YR, these units need not be converted into a common unit. Instead the data-heading keyword, e.g. HL, may be repeated and a separate column for each unit may be entered as follows:

HL	HL	HL
SEC	D	YR
	15.	
		28.3
	100.3	
4.8		

Similarly, any other data-heading keyword starting with HL... may be repeated in the same way. This case cannot occur in a COMMON section.

4.) If two or more <u>flags</u> defined under the BIB keyword FLAG apply to the same line of the data table, a column-heading with the data-heading keyword FLAG may be repeated as follows:

FLAG	FLAG
NO-DIM	NO-DIM
1.	
3.	
2.	3.
1.	2.
etc.	

The data-heading keyword FLAG cannot occur in a COMMON section.

Numerical Data Formats
=========================

The prescribed format of numerical data entered in the COMMON or DATA
section of an EXFOR-entry is defined as "FORTRAN readable according to
an E-format" (compare pages V.2 and VI.3 of the EXFOR-Manual).

That means in detail:

* A decimal-point is always required, also for integers.

* A decimal number without an exponent can have any position within
  the 11-characters field.

* No blank is allowed behind a sign (+ or -).

* A plus sign can be omitted, except that of the exponent when there is
  no E.

* In a notation with exponent the exponent must be right-adjusted
  within the 11-characters field.

All the following examples are valid entries:

0.14		+0..0014E+02
0..14		0..0014E+2
0.14		0..0014E2
+0.14		..0014+2
-0..140		-0..140E+00
-..14		-..14E0
		1..4E-1
		1..4-1
		1..40 -0.1 *
		1..40 E 00 *

Compilers should aim at a nice-looking and easy-readable arrangement of
the numbers.

_____
* Note: Centers using PL/1 may have to apply special manipulation when
          numerical fields include embedded blanks.

Half-life values in Exfor entries may serve different purposes:

1.) They may define a metastable state; or they may be, like a standard, basic parameters for deducing the cross-section values from the experiment. Consequently, the half-life should be coded in computer-intelligible form

- whenever a code indicating a metastable state occurs in target-nucleus, quantity, or residual nucleus;

- whenever the half-life of a nucleus occurring in the reaction considered or in a monitor reaction is an essential parameter in the analysis of the experimental data given in the data table.

For the coding rules see pages "VIII.3 DECAY-DATA" resp. "VIII.3 HALF-LIFE". The free text must include the source of the half-life value.

See also in Lexfor under Isomeric States.
                          ================

2.) For certain data types the half-life functions as an independent variable to be coded under the data heading keyword "HL" without an explanation under the information-identifier keyword HALF-LIFE. - Compare in Lexfor under Delayed Fission Neutron Data.
                       ============================

Under the information-identifying keyword REFERENCE, not only should the reference from which the data was taken be mentioned, but also other important references such as journal articles, conference papers, and laboratory reports. Progress reports and abstracts may be excluded.

For the coding rules see page "VIII.3 REFERENCE".

The purpose of the bibliography is to help the compilers

- to avoid duplicate entry of data in EXFOR

- to help identifying a data set when data are requested by reference,

and to help the users of EXFOR

- to get easy access to any additional information he may wish to look up in the published references

- to check whether a given reference has been considered by the compiler or not.

Therefore, the free text should indicate to the user of EXFOR:

* which is the main reference,

* the kind of information contained in each given reference, e.g. "instrumentation only, graphs only, no data, theoretical analysis, etc..."

When translations of references exist, these should be included also, for the convenience of the users of EXFOR.

Important references which are published only after the first compilation of the EXFOR entry, should be added subsequently and the entry be retransmitted according to page IX.2 of the Manual. Usually such a new reference will provide additional information on the experiment or the numerical data, which should be added and retransmitted simultaneously.

Note on the coding of Conferences: If conference proceedings are issued within a report-series, so that they can be identified with a report-number, then the report-number must be used — not the conference-code. Example: The proceedings of the standards panel 67BRUSSELS were issued as report IAEA-107. In this case, the code 67BRUSSELS must not be used. See also corresponding directions in Dict.7.

References pertaining to the data given but originating from another author should not be entered under REFERENCE. For NID they may be given in free text under COMMENT. For CPND they may be entered under REL-REF. Examples are: critical remarks or corrections applied by another author, e.g. within a data review or evaluation.

If the coding of the references in EXFOR in the case of NND is coordinated with the blocking of the same references in CINDA, both systems will benefit.

If data have been received by private communication, name and date of the private communication may be entered as a reference (see page "VIII.3 REFERENCE") or under "STATUS".

Point of disagreement:

NDS feels that a private communications should only be entered under REFERENCE if there is no other reference.

NNCSC considers private communications as valid references, often containing information not given in published articles and prefers to code them under reference so they can be accessed by computer. They do agree that in the case where there is no additional information in a private communication, it should not be entered.