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Institut für Neutronenphysik und Reaktortechnik
Projekt Schneller Brüter

The KEDAK Program Compendium
Part II
KEDAK Basic Management

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Abstract

In this report the structure of the neutron nuclear data library KEDAK and the computer program system KEMA for updating the KEDAK library e.g. for deletion, insertion and change of data records is presented. Besides this the program REFORM for preparation of an input for KEMA is described here. Both programs are written in FORTRAN IV and are presupposing the direct access form of the KEDAK library as used in Karlsruhe.

Das KEDAK Programm Compendium
Teil II
Verwaltung der Kerndatenbibliothek

Zusammenfassung

In diesem Bericht wird der Aufbau der Neutronenkerndatenbibliothek KEDAK sowie das Programmsystem KEMA, das zur Aufdatierung der KEDAK Daten z.B. zum Löschen, Einfügen, Ändern von Datensätzen dient, beschrieben. Ferner wird das Programm REFORM, das die Erstellung einer Eingabe für KEMA erleichtert, dargestellt. Beide Programme sind in FORTRAN IV geschrieben und setzen die in Karlsruhe benutzte Direct Access Form der KEDAK Bibliothek voraus.

II KEDAK Basic Management

1. The direct access KEDAK library
2. The basic management program system (KEMA)

Introduction

The data file KEDAK contains the evaluated neutron nuclear data for a number of materials important for reactor physics, specific physical experiments, burn up calculations, shielding and others. It is maintained and updated in Karlsruhe. It is used there in the direct access form whereas the sequential card image format is in use for the external exchange of the KEDAK library.

In this part the structure of the KEDAK library in direct access form is described. Also the program system KEMA for the management of the KEDAK library in particular for deletion, insertion, exchange of data records and the program REFORM which facilitates the input for KEMA are presented here. Both are presupposing the direct access form of the KEDAK library and are written in FORTRAN IV. The nomenclature used in this description follows that described in KFK 880 /1/. For the direct understanding of the following the most important terms will be shortly explained.

Each data type and each material is characterized by a numerical and an alphamerical name. Numeric names are used for storage purposes and in external transmission. The user of the direct access library alternatively may employ alphamerical names which might be kept in mind more easily since they are abbreviations containing the chemical symbols. For some data types additional so-called "further names" are necessary for their complete and unique description e. g. for the inelastic excitation cross section it is not sufficient to know its numerical data type name, but in addition the level excitation energy must be specified. The level energy is called a further name of this data type.
"Arguments" of the data type are called those quantities on which the data type considered is dependent and in dependence on which it is stored on the file, e. g. all cross section types have only one argument, the incident neutron energy. The numerical values of the nuclear data types corresponding to specific values of the arguments are termed "functional values". The number and kind of arguments and functional values for a single data item and also the number and kind of further names for a single data item are contained in 2.9
for each of the data types at present available on KEDAK. This table supersedes the corresponding table in KFK 880 /1/.

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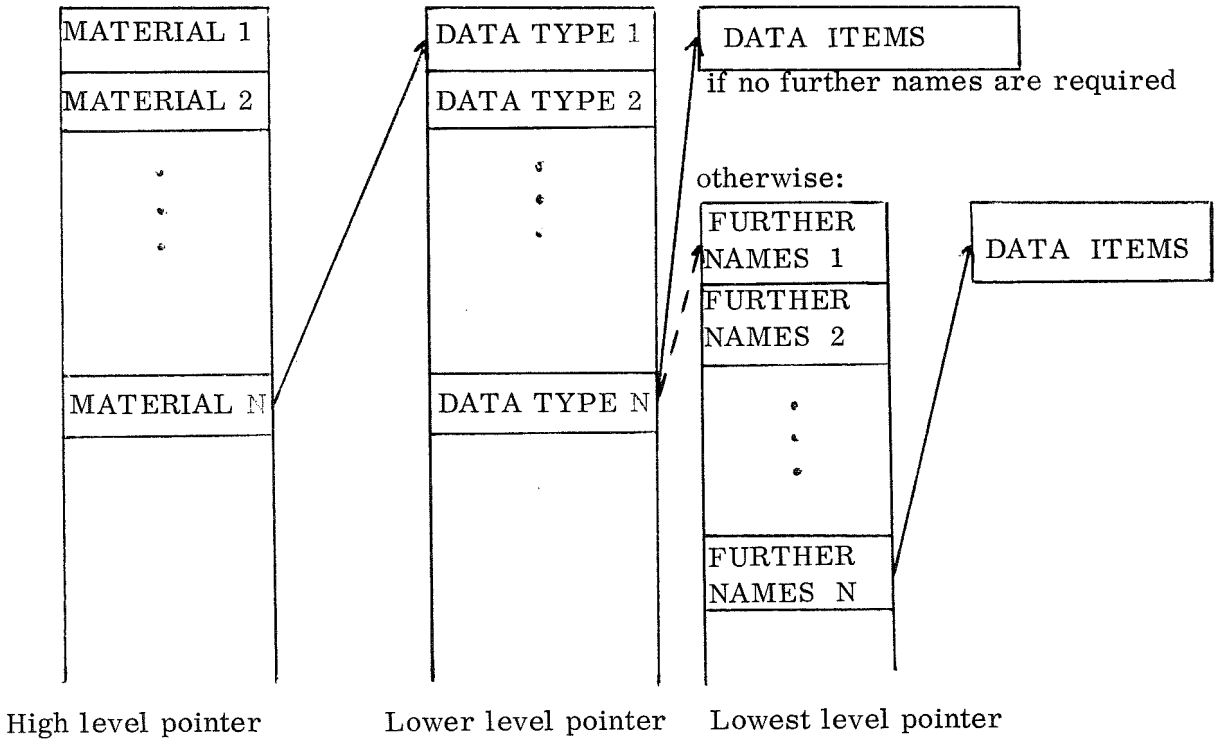
1. Direct access KEDAK library

The sets of data are written on a disk storage in direct access form without format control in form of fixed-length unblocked records. The entire information is divided into a declaration and a data part. All records are filled up to avoid unnecessary storage requirements. The structure of the declaration and data part is presented below in more detail.

Declaration part

The purpose of the declaration part is to provide necessary addressing information to access the data on the library. Addressing is performed by a hierarchy of pointers. Each pointer points to a table containing the next lower level of pointers. The lowest level pointer points to the starting address of a single data type.
An example may illustrate that: A table of pointers locates the starting address of the materials in the library. At this starting address another table provides the starting address of the various data types available for that material. If this data type requires further names, e.g. inelastic excitation levels, this address actually will point to a third table containing the starting address of the uniquely defined data types (see figure below).



Here the arrows indicate that the high level pointer contains the starting address of the next lower level pointer table or of data items.
The declaration part only includes the high level pointer table, the "material address table". As was pointed out before, numeric names are internally used to identify material or data type names. Therfore a link has to be established between the alphameric names and their numeric correspondent. This is obtained by two "conversion tables" stored in the declaration part.
In addition the declaration part contains an identifier for the library, its creation date and the information necessary to access the three tables described above.

Structure of the declaration part:

The declaration part starts at the first word of the first record in the library.

The content of the different records in the declaration part is outlined below.

Starting address[1] (record, word)	length (in words)	contents
1, 1	3	Library identification: the alphameric text 'KEDABIBLIOTH' is stored to enable identification of the library
1, 4	1	creation date: contains the date of the last update run for the library in decimal digits ddmmyy specifying day, month, year
1, 5	1	number of isotopes in the conversion table for material names ("material conversion table")
1, 6	2	starting address[1] of the "material conversion table"
1, 8	1	number of data type names appearing in the conversion table for data type names ("type conversion table")
1, 9	2	starting address[1] of the "type conversion table"
1, 11	1	number of materials in the table pointing to the starting address of each material ("material address table")
1, 12	2	starting address[1] of the "material address table"
as specified in the words 6 and 7	three times the number specified as contents in word 5	"material conversion table": consisting of three words for each material of which the first two contain alphameric material names of eight characters in length and the last one an integer number giving the numeric name:
as specified in the words 9 and 10	three times the number given in word 8	"type conversion table": its structure is identical with that of the "material conversion table", so that in the above description only the term "material" has to be replaced by the term "data type"

alphameric name of material 1		numeric name of material 1	alphameric name of material 2		numeric name of material 2	. . .

as specified in the words 12 and 13	four times the number given in word 11	"material address table": this table points to the starting address of each material in the library. At this address the beginning of a table is found pointing to the individual data types for that material. Structure: the table consists of four words for each material. The first word gives the numeric material name, the second the number of data types available for that material, and the third and fourth word the starting address[1] for that material:

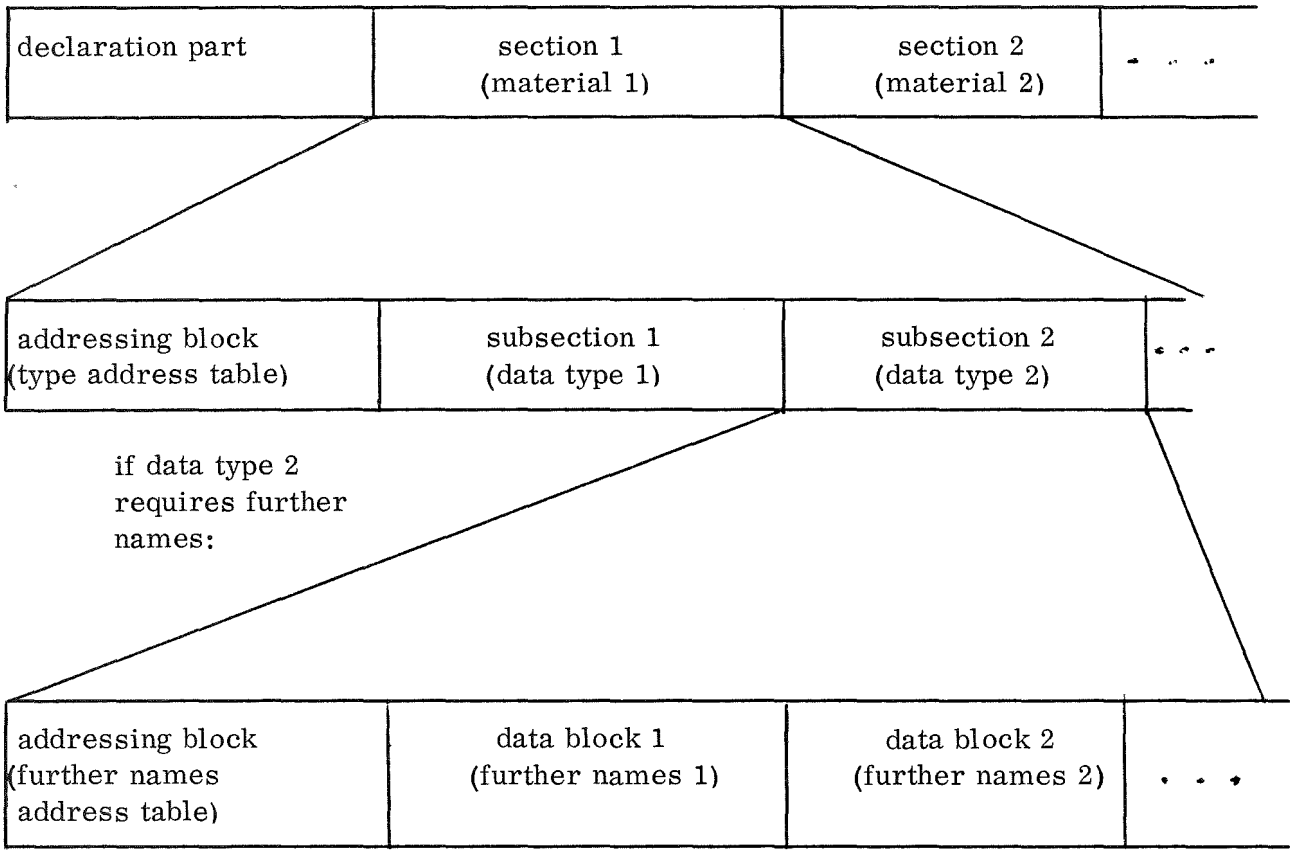
material 1				material 2				
numeric name	number of data types	starting address[1] of material 1 (record number)	(word number)	numeric name	number of data types	starting address[1] of material 2 (record number)	(word number)	. . .

[1] An address in the library consists of two words: the first word gives the record number, the second the word number in this record.

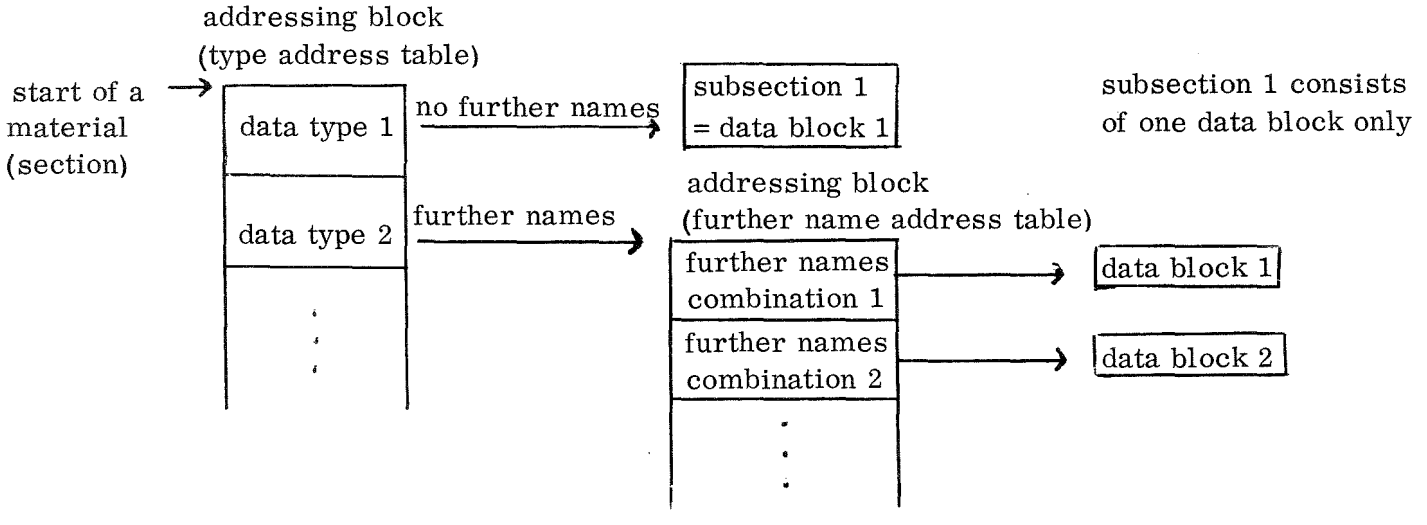
The contents of the declaration part is stored word by word consecutively in the above order. Since the starting address of the above three tables is explicitly specified in the words 5 - 13 of record one, this however is no prerequisite for the programs described in this report. Actually the tables could be stored anywhere within the library.

Data part

The data part includes all lower level pointer tables and the actual data items for the materials listed in the "material address table". The data part may be divided into sections, each section containing the information for a single material. As a rule a section is not physically interrupted by data of another section, that means each section is a closed block in the library.
Each section consists of an addressing block and subsections. The addressing block begins at the first word of the respective section. The corresponding starting address is stored in the material address table. A subsection contains the data for one data type and its starting address is recorded in the addressing block in a manner explained below. If the respective data type requires further names for unique identification an additional address block has to be given in the subsection. A subsection contains one or more data blocks depending upon whether further names do exist or not. The figure below may illustrate the physical organization:

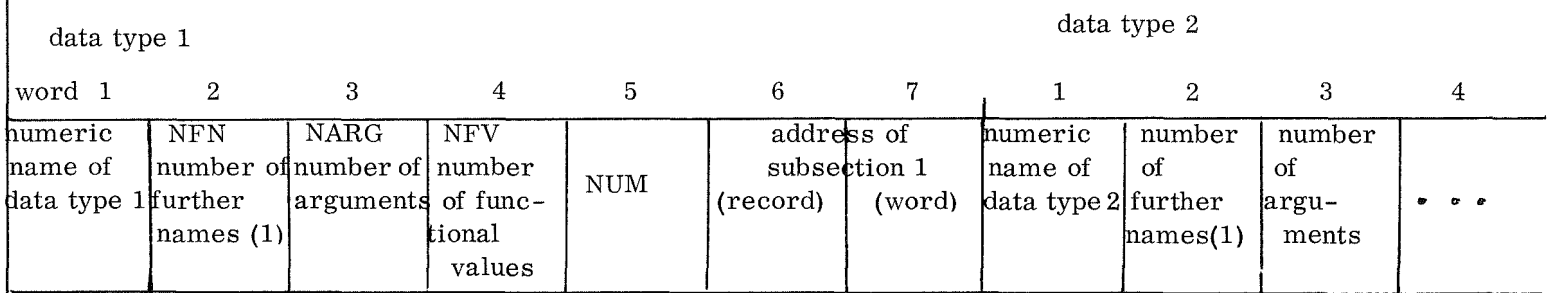


The logical structure of a section is displayed in the following figure:



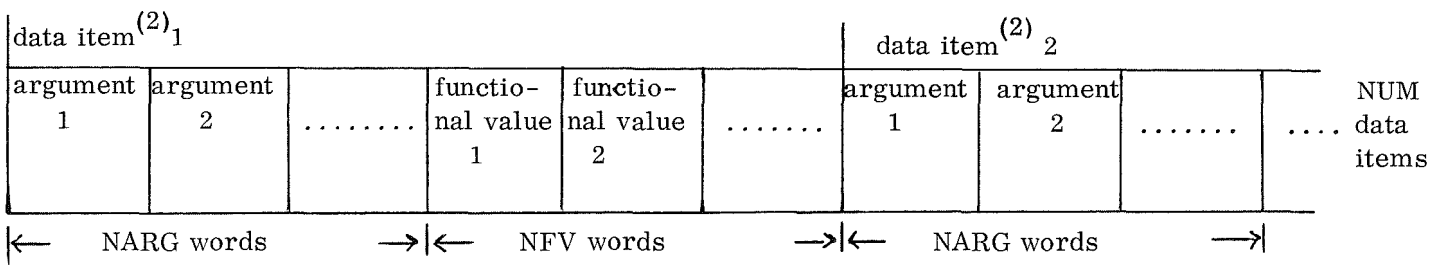
subsection 2 contains one addressing block and one or more data blocks depending on the number of combinations of further names

starting address	length (in words)	contents
as given in the material address table	seven times the number of data types	"type address table": for each data type it points to the starting address of its subsection or the addressing block of this subsection if there is one. It consists of seven words for each data type with the following meaning:

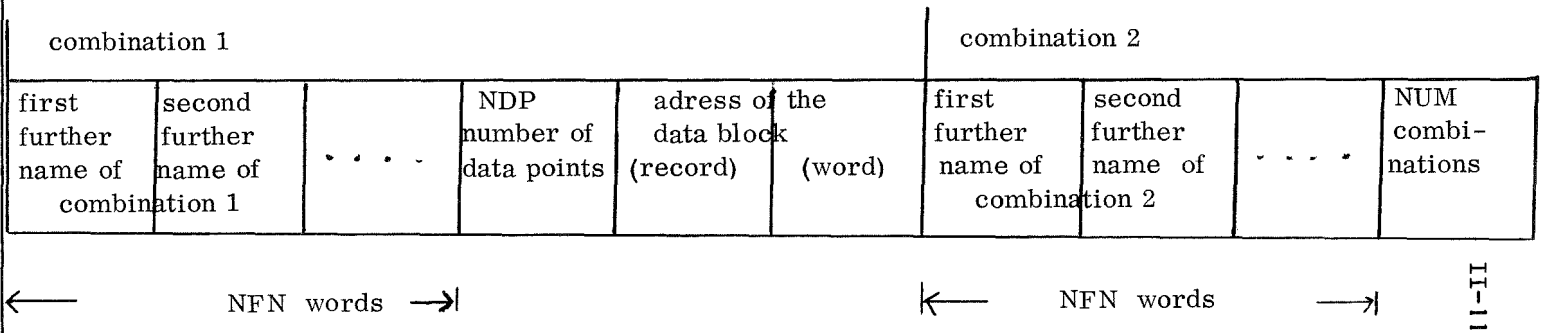


NUM: if no further names exist, NUM gives the number of data items for this data type
if further names exist, NUM gives the number of combinations of further names, e.g. for inelastic excitation the number of level energies for which data are given.

as given in the type address table	(NARG+NFV) * NUM where NARG, NFV and NUM are given in the type address table	subsection 1: assume, that data type 1 does not require further names, then its structure is that of a data block:



as given in the type address table	(3+NFN)*NUM where NFN and NUM are given in the type address table	Subsection 2: assume, that data type 2 does require further names, then the subsection starts with a "further name address table": for each combination of further names it contains the further names, the number of data points available and the starting address of the respective data block:
as given in the further name address table	(NARG+NFV)* NDP where NARG and NFV are given in the type address table and NDP is recorded in the further names address table	data blocks for the different combinations of further names follow. Their structure is similar to that of the data block described above



(1) The number of further names required for a data type are described in 2.9. Note the difference between number of further names and number of the combinations of further names: the number of further names required for inelastic excitation cross sections is one, the level energy, i.e. each combination of further names consists of one further name only. The number of the combinations of further names however, equals the number of level energies for which data are given.

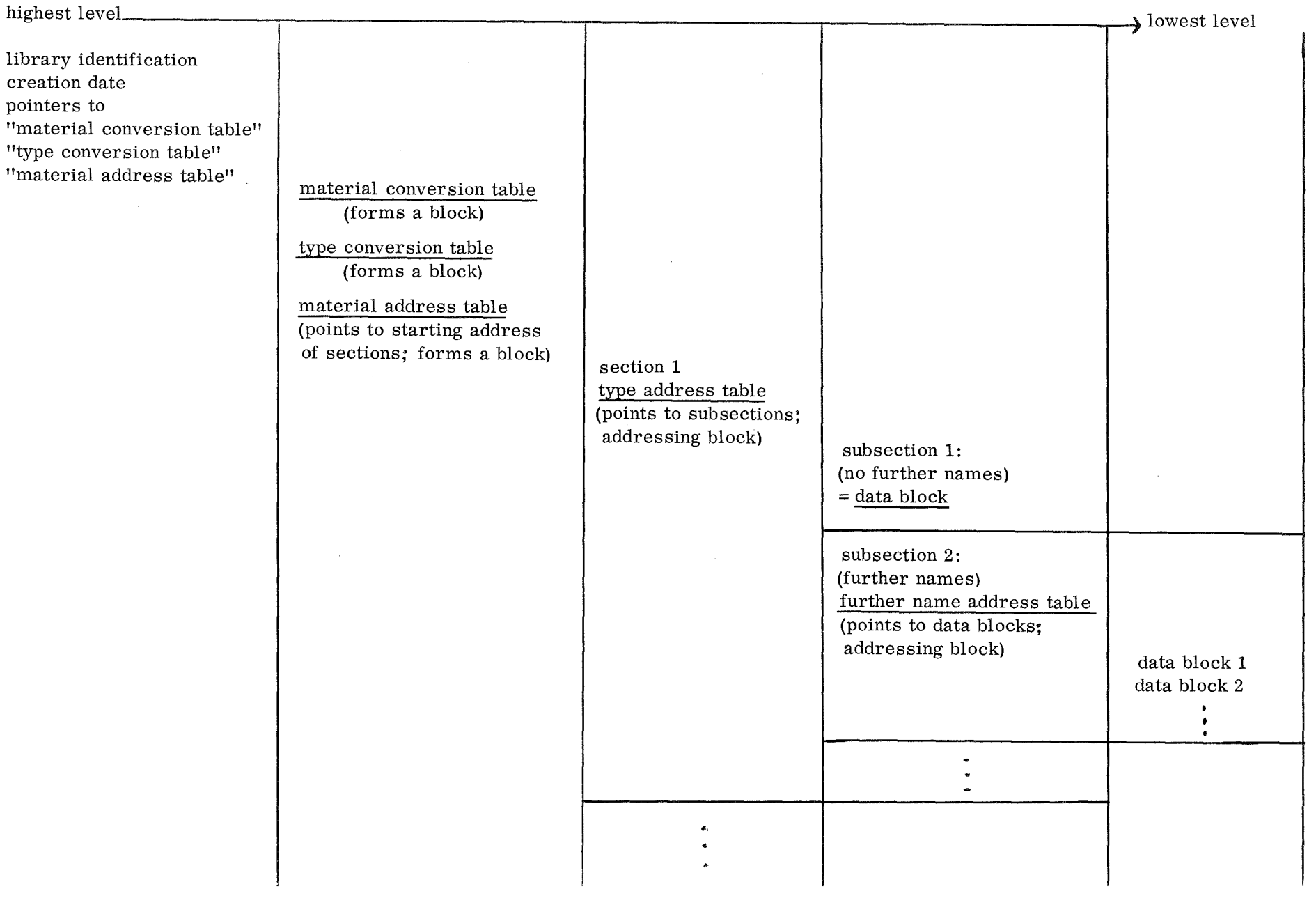
(2) The number of arguments and the number of functional values for each data type are given and interpreted in 2.9.
A data item is a set of arguments and functional values which logically belong together, e.g. for a cross section type the incident neutron energy (argument) and the cross section (functional value) form a data item. For details see [1].

Notes

Although data are stored densely in the library since the updating program described below does align them in this manner, this dense storage is not a prerequisite to use any of the programs described here. However a block may not be interrupted by data not belonging to it, no matter whether it is an addressing block or a data block. Any block may be shifted to any other free position in the library provided the next higher level pointer pointing to it is reset to the new address. The only exception are the words 1 - 13 of record 1, which represent the highest level block and must not be shifted.

Summary

The flow chart below gives an idea of the logical and physical organization of the library. The term "block" is used in the above sense.


highest level
lowest level
library identification
creation date
pointers to
"material conversion table"
"type conversion table"
"material address table"
material conversion table
(forms a block)
type conversion table
(forms a block)
material address table
(points to starting address
of sections; forms a block)
section 1
type address table
(points to subsections;
addressing block)
subsection 1:
(no further names)
= data block
subsection 2:
(further names)
further name address table
(points to data blocks;
addressing block)
data block 1
data block 2

2. The basic management program system (KEMA)

2.1 Purpose of the program system KEMA

The purpose of KEMA is to execute all kinds of management tasks on the KEDAK library. These can be all possible changes of nuclear data which imply a previous transformation from direct access form to a sequential form; a deleting of all sets of data which can be linearly interpolated by their neighbouring sets of data; the generation of the KEDAK library in card image format for dispatching the data of other centers; the retransformation from card image format to direct access form and the printout of KEDAK summary information. KEMA also provides a number of routines for the management of the test data sets in the library. Similarly to the existence of ENDF/A and ENDF/B KEDAK offers the possibility to enter incomplete or not fully evaluated sets of data, e. g. to test new microscopic experimental results. Each of the above tasks will be executed by respectively one subroutine which is called by a control program. Therefore this FORTRAN VI program system is always expansive. The separate subroutines will be loaded in the program region by an overlay structure only if they are going to be used. The control program extracts from the input what kind of task will be done, checks the input of all desired working programs and the presentation of all needed DD-cards and calls the appropriate subroutines.
The entire input for the called subroutines is interpreted and written on unit 8 in unformatted form by a FORTRAN VI subroutine FREEFO. The working programs of KEMA can then read their particular input from unit 8. For the input some explanations are necessary: Each data record starts in column 1 of a data card. If it is not possible to place all the data of one input record on one card, a second, third, etc. card may be used, which must have a blank in column 1. Or: a non-blank column 1 in the input card is an indication for a new input record.

One has to distinguish between an alphameric word of the lenght REAL*4 and of the lenght REAL*8. A REAL*4 word must be included in apostrophies and is stored left justified in the computer and filled up with blanks if not all 4 bytes are occupied. Example: 'ARG' or 'ABCD'. A REAL*8 word may be included in apostrophies comprising at least 5 signs and at most 8 signs, which are stored left justified in the computer if not all 8 bytes are occupied. A special case are REAL*8 words with a number of occupied bytes less than or equal to 5. These words may be also included in ∂-signs. They are also stored left justified in the computer and filled up with blanks.
Examples: 'PU239' ≡ 'PU239bbb' ≡∂PU239∂; 'RESbb' ≡∂RES∂.
Fixed point and floating point numbers are written in the usual manner, e. g: fixed point numbers: 1 10 875 and floating point numbers: 10. 5.E3 0.7E-3 0.01. It is not possible to read double precision values.

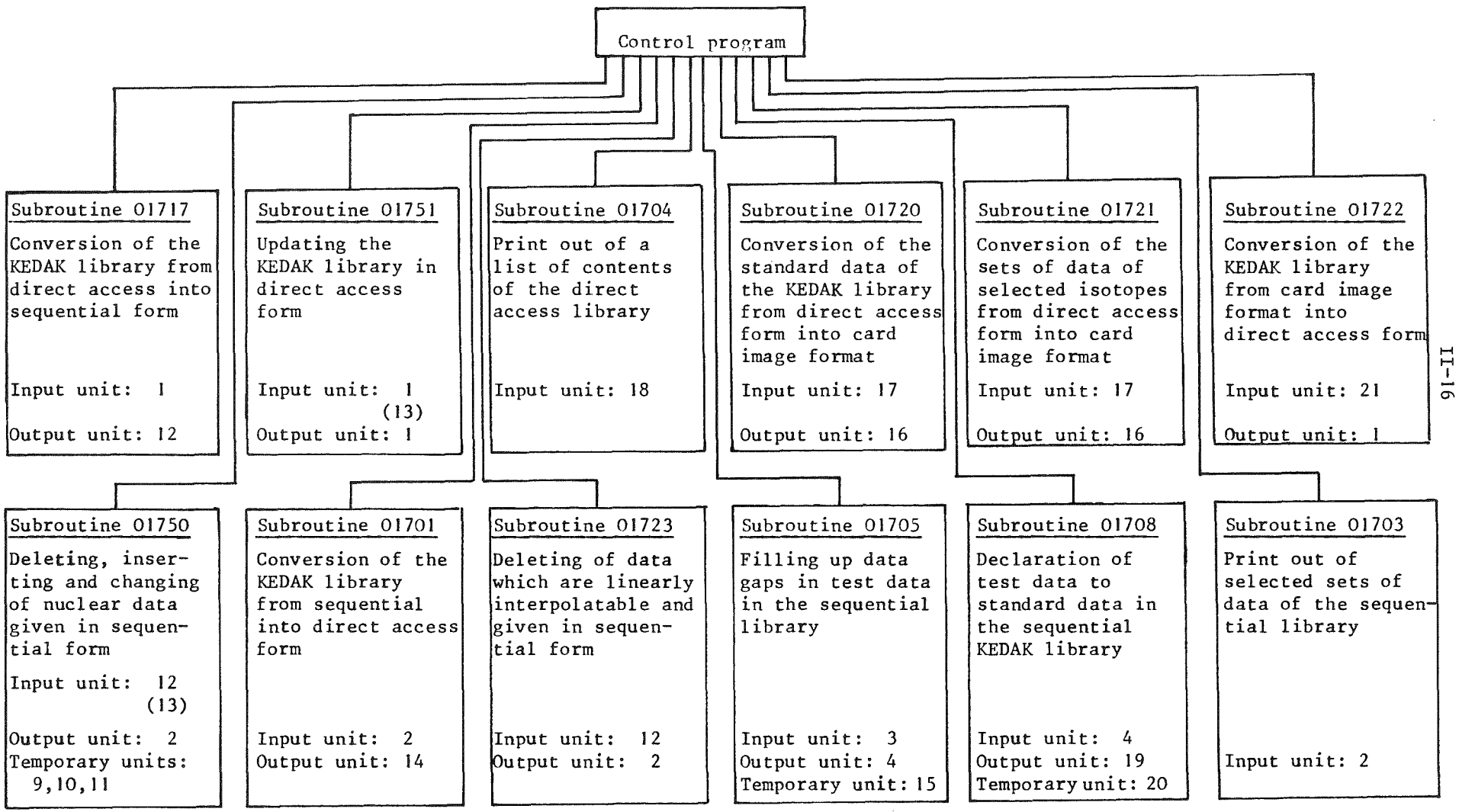
The input data are separated by one or more blanks.

The following subroutines are contained in KEMA:

Identification number		Task of the respective program
01717	-	Program for converting the KEDAK library from direct access into sequential form
01750	-	Program for deleting, inserting and changing nuclear data which are given in sequential form
01701	-	Program for converting the KEDAK library from sequential into direct access form
01751	-	Program for updating the KEDAK library in direct access form
01723	-	Program for deleting of data which can be linearly interpolated
01705	-	Program for filling up data gaps in test data sets by standard data in the sequential KEDAK library
01708	-	Program for declaration of test data to standard data in the sequential KEDAK library
01703	-	Program for printing selected sets of data of the sequential KEDAK library
01704	-	Program for printing a list of contents of the direct access KEDAK library
01720	-	Program for converting standard data of the KEDAK library from direct access form into card image format
01721	-	Program for converting the sets of data of selected isotopes of the KEDAK library from direct access form into card image format
01722	-	Program for conversion of the KEDAK library from card image format into direct access form

For updating the direct access KEDAK library by standard data, only the program succession 01717, 01750, 01701 is needed or in special cases the program 01751.

Diagram of the program system KEMA



2.2 The control program

Input:

1. record (containing the information about the program flow)

   I Number of working subroutines to be called + 1 ($I \leq 20$)

   (NFOLG(J), J = 1, I) Identification numbers of the working subroutines chosen. NFOLG (I) = O

2. record (containing the assignment table of the alphanumerical and the numerical names of the isotopes)

   NZM Number of isotopes in the assignment table

   (MATNA(J), NUNA(J), J = 1, NZM)

   MATNA : alphanumerical name of the isotope (REAL* 8)
   NUNA : numerical name of the isotope

3. record (containing the assignment table of the alphanumerical and the numerical data type names)

   NZT Number of data types in the assignment table

   (TYPN(J), NUTY(J), J = 1, NZT)

   TYPN : alphanumerical data type name (REAL* 8)
   NUTY : numerical data type name

2.3 Updating the KEDAK library

2.3.1 Updating in a general manner

2.3.1.1 Conversion of the KEDAK library from direct access into sequential form

Program : O1717

Input : KEDAK library in direct access form (organization see 1.)on the external storage unit 1

Output : KEDAK library in sequential form on the external storage unit 12

This sequential library has the following unformatted organization:

1. record

1 constant,
date of the last change in the form ddmmyy,
number of isotopes available in the library.

2. record

Names of the isotopes in numerical form
The following records are repeated for each isotope

3. record

Name of the isotope in numerical form,
number of data types available for this isotope

4. record

Data type names in numerical form
The following records are repeated for each data type name

5. record

Name of the isotope in numerical form,
name of the data type in numerical form,
number of further names of the data type,
number of arguments for a single data item,
number of functional values for a single data item
in the case of further names:
number of combinations of the further names
otherwise:
O

The following records are repeated for each combination of further names. If there are no further names at all the 6^{th} record is omitted and the other two records are given only once.

6. record

Further names of the combination.

7. record

   Number of data items.

8. record

   Arguments for a single data item,
   functional values belonging to the arguments for a single data item for all data items in the order of increasing arguments.

2.3.1.2 Updating the sequential KEDAK library

Program : 175O

Input : a) Sequential KEDAK library (organization see 2.3.1.1) on the external storage unit 12

b) Control input in form of card input

c) Data blocks for changing data either in the form of card input or in the form of a data set on the external storage unit 13

The control input has the following structure:

1. record

I AU { In the case the data alteration blocks are given in form of cards: 1
otherwise: O

I BA { In the case the data alteration blocks are given in form of a data set on the external storage unit 13: 1
otherwise: O

I AU and I BA may both be set equal to 1. In this case first the card input and then the external input is processed.

NNKO Number of combinations of material / data type names, for which new combinations of further names shall be inserted. (max. 20)

2. record (only if NNKO > O)

((IKO (I, J), I = 1,2), IZKO (J), J = 1, NNKO)

IKO (1, ...) : name of the isotope in alphanumerical form,
IKO (2, ...) : name of the data type in alphanumerical form,
IZKO : number of combinations of new further names to be inserted.

Then the data alteration blocks follow. According to the kind of data change one has to choose between three types of data alteration blocks: ADD, DROPS and DROPA. The ADD-set has the function to insert single data items for the specified material and data type at the point specified by the respective arguments, the DROPS-set to delete single data items existing for the specified material and data type and identified by their arguments. The DROPA-set causes dropping for all data items for the specified material or only all data items for a specific data type. In arranging the data within the data alteration blocks first priority is assigned to the names of the isotopes. At present the following order of material names is valid for KEDAK :

NI_{bbb}, NI_b58, NI_b6O, NI_b61, NI_b62, NI_b64, $Ø_{bb}16$,
U_b235, AL_b27, $C_{bb}12$, CD_{bbb}, CR_{bbb}, CR_b5O, CR_b52,
CR_b53, CR_b54, FE_{bbb}, FE_b54, FE_b56, FE_b57, FE_b58,
$H_{bbb}2$, $H_{bb}H\,1$, $H_{bb}Ø\,1$, $HE_{bb}3$, $HE_{bb}4$, $MØ_{bbb}$, $MØ_b92$,
$MØ_b94$, $MØ_b95$, $MØ_b96$, $MØ_b97$, $MØ_b98$, $MØ\,1OO$, N_{bbbb},
NA_b23, PU239, U_b238, $H_{bbb}1$,
$CL_{bbb}UNC$, CL_b35, CL_b37, PU24O, PU242, PU241

The actual order of material names can be printed out by the program O17O4 in 2.5.2.
Second priority have the data type names which have to be arranged in alphabetical order. If there are further names for the data type considered the different combinations of further names are given in the order of increasing values. For one particular material, data type and one particular combination of further names (if required) the rewised data have to be given in order of increasing arguments.

Structure of the data alteration blocks

A Insertion of new data (ADD - blocks)

This item covers the three following tasks:

a) The names specified (material - and / or data type - and / or further names) are not found in the KEDAK library - a new set of data characterized by these names has to be created.

b) The names specified are already available in the library - new data items have to be inserted.

c) The specified names and arguments of single data items exist already in the library - the existing functional values have to be replaced by new values.

Structure of the data block:

N	Number of data words in the following input record (N≤ 2OOO). Note that alphameric names consist of eight characters each and have to be counted as two words.
@ ADD_{bb} @	Constant, REAL* 8 word
NNAM	Number of names
(NAM(I), I = 1, NNAM)	Name of the isotope in alphanumerical form (REAL* 8), name of the data type in alphanumerical form (REAL* 8), eventual further names in single precision floating point representation.

NARG	Number of arguments of a single data item
NWERT	Number of functional values of a single data item

(ARG 1 (I), I = 1, NARG) (WERT 1 (I), I = 1, NWERT)	Arguments Funtional values	} first data item
(ARG 2 (I), I = 1, NARG) (WERT 2 (I), I = 1, NWERT)	Arguments Functional values	} second data item

and so on in the order of increasing arguments as many times as data items shall be inserted or changed. In the case the data type for which changes should be performed has no arguments at all (as it is the case e.g. for the type ISOT1, for other examples see 2.9, then NARG = 0 and there can only be one data item with ARG (1) equal to the alphameric text 'ARG' and functional values following.

The data type AASTATUS, too, represents a special case since it is only used to store bibliographic information. If this type shall be inserted, NARG and NWERT have to be set equal to 1 and the comments consequently following have to be included in apostrophies. They have to be given in total by a number of characters divisible by 8, since the first 4 characters are always interpreted as argument and the following 4 characters as functional value. Note, that 72 characters are thought to form one line in actual use.

B Deletion of existing data (DROPA -, DROPS - blocks)

a) The deletion of an entire set or sets of data on KEDAK is effected by the DROPA date block.
Structure of the data block:

N	Number of data words in the input record (N≤ 2000). (REAL*8 data have to be counted as two single words)
DROPA	Constant, (REAL*8)
NNAM	Number of names
(NAM (I), I = 1, NNAM)	Name of the isotope in alphanumerical form (REAL*8), eventually: name of the data type to be deleted in alphanumerical form (REAL*8), eventually: further names in floating point representation.

NNAM, (NAM (I), I = 1, NNAM) may be repeated as often as necessary.

b) The deletion of single data items belonging to the specified names and arguments is caused by the DROPS-block.

Structure of the DROPS-block:

N	Number of data words in the input record ($N \leq 2000$). (REAL * 8 words have to be counted as two single words)
∂ DROPS ∂	Constant, REAL * 8 word
NNAM	Number of names
(NAM(I), I = 1, NNAM)	Name of the isotope in alphanumerical form (REAL * 8), name of the data type in alphanumerical form (REAL * 8), eventually: further names in floating point representation
NARG	Number of arguments for a single data item
(ARG 1(I), I = 1, NARG)	Arguments of the first data item to be deleted
(ARG 2(I), I = 1, NARG)	Arguments of the second data item to be deleted

and so on in the order of increasing arguments as many times as data items shall be deleted.

The last input record of program O175O is given by:

2 ∂ $ENDE_b$ ∂

In the case that IAU = 1 and IBA = 1, i.e. data alteration blocks are presented in form of cards as well as on an external storage unit, first the data alteration blocks on cards closed by the 2 ∂ $ENDE_b$ ∂ record are processed and successively the external input which has also to be completed by the record 2 ∂ $ENDE_b$ ∂ . The hierarchy of the input data, however, i.e. the already specified order of the material names, the alphabetic order of the data type names and the increasing order of arguments has not only to be fulfilled within the data alteration blocks on cards and on an external unit but it has also to be valid for the entire input in the case both input variants are mixed.
The different data alteration blocks ADD, DROPA, DROPS are sorted by the program onto the different storage units 9, 1O and 11 respectively. Therefore DD-cards for these units are needed.

Output:

a) Sequential KEDAK library containing the changed data on the external storage unit 2 (organization see 2.3.1.1)

b) A listing for each isotope and each data type, giving the
number of data items available,
number of data items deleted,
number of data items inserted,
number of data items exchanged.

2.3.1.3 Conversion of the sequential KEDAK library into direct access form

Program : O17O1

Input : a) Sequential KEDAK library on the external storage unit 2 (organization see 2.3.1.1)

b) The card input consists of one record with the following contents:

'KEDA' 'BIBL' 'IØTH' Constants which appear as words 1, 2, 3 in the declaration part of the direct access KEDAK library (see 1)

NMAT — Number of isotopes available in the sequential library

Output : a) KEDAK library in direct access form (see1) on the external storage unit 14

b) Printed test output, e.g.

KMAT — Current number of the isotope which is just going to be converted

ITYP — Current number of the data type of this isotope KMAT which is just going to be converted

INK — Current number of the combination of further names belonging to ITYP and KMAT which is just going to be converted.

2.3.2 Updating in a special manner

Updating the KEDAK library in direct access form

Often it is helpful to have a program which changes data directly in the direct access KEDAK library, for example if only one functional value must be corrected. In this case it is ineffective to use the way over the sequential form of the library. In the following cases the here described program 01751 may replace the program succession 01717, 01750, 01701 in KEMA:

a) in all DROPA cases

b) in all DROPS cases

c) in ADD cases only if data shall be corrected which were always present, or if at most so much data shall be added to a present material, type and eventual further name as were dropped before with DROPS.

Note, that in the case of DROPS a set of data is dropped by shifting the following data pairs downwords the number of NARG+NRV words. Therefore at the end of the data block a gap of NARG+NRV words is formed which can only be closed by adding a new set of data in this data block or by converting the KEDAK library in sequential form and back into direct access form. In the case of DROPA only the address table in the KEDAK library is contracted, the corresponding data block is saved unchanged but it is not possible to receive the data. The gap in the address table and the unreachable data block can only be eleminated by transforming the library into sequential form and back into direct access form. That means: to have a compact library it is convenient to use sometimes the program succession 01717, 01750, 01701.

Program: 01751

Input:

a) KEDAK library in direct access form on the external storage unit 1 (organization see 1).

b) Control input in form of card input.

c) Data blocks for changing data either in form of card input or in form of a data set on the external storage unit 13.

The control input has the following structure:

1. record

IAU
- In the case the data alteration blocks are given in form of cards: 1
- otherwise: 0

IBA
- In the case the data alteration blocks are given in form of a data set on the external storage unit 13: 1
- otherwise: 0

IAU and IBA may both be set equal to 1. In this case first the card input and then the external input is processed.

Then the data alteration blocks follow, which have the same structure as described in program 01750.

Output: a) Changed KEDAK library in direct access form on the external storage unit 1.

b) Print output for each separate data change.

1. line

Material name, type name, eventually further names

2. line

Kind of changing, for example: one record exchanged,

or: all data deleted.

2.3.3 Deletion of linearly interpolatabel data

This program is necessary to economize the space on the disk storage by deleting of sets of data which can be linearly interpolated by their neighbouring sets of data with an error of at most 0,1 %. All data types with one argument and one functional value except the types AASTATUS, SGNL, SGNC, SGIL, SGIC, SGILZ, SGICZ, SGNIL and SGNIC are concerned of this reduction if the functional value is greater than 1.E-10.

Program: 01723

Input: a) Sequential form of the KEDAK library on the external storage unit 12 (organization see 2.3.1.1).

b) Card input in the following form:

NM Number of materials with data which shall be reduced (at most 20)

(NAME(I),I=1,NM) Name of the materials with data which shall be reduced. If the unnecessary data pairs of all materials located on KEDAK shall be dropped, NM must be set equal to 1 and NAME(1) equal to ∂ALL ∂

Output: a) Reduced KEDAK library in sequential form on the external storage unit 2.

b) Paper output for each material and each data type with a changed number of data pairs:

material name, data type name, number of data pairs before reducing, number of data pairs after reducing eventually further names.

2.4 Handling of provisional data in the KEDAK library

2.4.1 Filling up data gaps in test data with standard data in the sequential KEDAK library

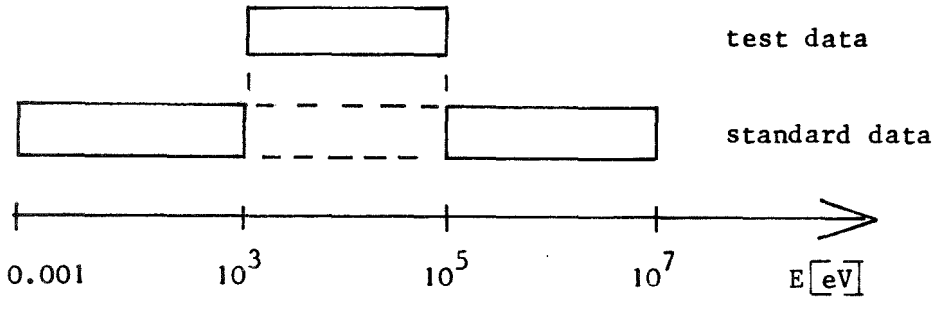
In the following 'test data' or 'standard data' mean in the case of data without further names one pair of arguments and corresponding values, and in the case of data with further names all pairs of arguments and corresponding values belonging to one combination of further names. Standard data are marked in the KEDAK library by 5 signs in the material name, the remaining 3 signs of the REAL*8 word are set to blank, whereas the test data have a material name which is identical with the corresponding standard name in the leading 5 signs and the remaining 3 signs are set different from blank. Formally the standard data and the test data are stored on KEDAK under different material names, her connection however is given by the identical five leading signs of the material name.

A modified form of the NDF-KEDAK reading routine provides the standard data, if a test data material name is specified and no test data are existing for the specified data type. In the case that test data are existing for the specified data type, these test data are provided in the concerning energy region, for all other energy points the standard data are delivered.

1. Example: Arguments of the reading routine:

material name: 'U_b238WC1'

data type name: ωSGIω

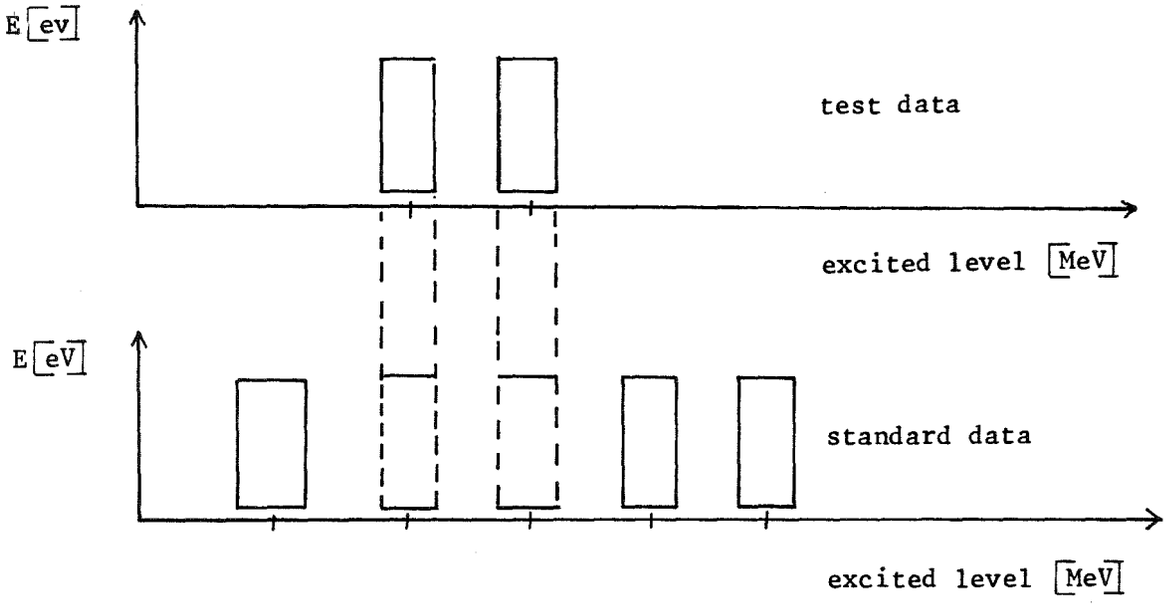


In this case the reading routine provides in the energy region from 0.001 eV inclusive to 1keV exclusive the standard data, from 1keV to 100 keV inclusive the test data and from 100 keV exclusive to 10 MeV inclusive the standard data.

2. Example: Arguments of the reading routine:

material name: 'U$_b$238SGZ'

data type name: ω)SGIZ ω)



In this case the reading routine provides standard data for the first excited level, test data for the second and third level and standard data for all following levels.

These technics show that the test data must cover a closed energy region. Mostly the test data consider in separate energy regions. The following program describes a possibility to fill up the gaps between these test data with standard data so that one energetic region occurs.

Program: 01705

Input: a) Sequential form of the KEDAK library on the external storage unit 3 (organization see 2.3.1.1).

b) Card input in the following form:

1. Card

MAT(1) Material name of the test data

MAT(2) Material name of the standard data

MM Number of data types to be filled up (at most 10 and only one of them may have further names)

For each data type to be filled up follows:

Card 2 to MM+1

TYP Name of the data type to be filled up

N Number of gaps to be filled up (at most 4)

K If the data type considered has further names: number of further names, otherwise number of arguments.

((UE(NK,L),NK=1,K),(OE(NK,L),NK=1,K),L=1,N)

there means:

UE lower gap limit

OE upper gap limit

UE < OE

The input cards 2 up to MM+1 must be arranged so, that the data types have an alphabetic order.

Output: a) Sequential form of the KEDAK library on the external storage unit 4.

Paper output for each data type TYP of the material MAT(1):

1. line

Material name in numerical form,
data type name in numerical form,
number of further names,
number of arguments,
number of functional values,
number of combinations of further names.

The following lines are repeated for each combination of further names.

2. line (only in the case of further names)

Further names of the combination

3. line

Number of data pairs.

4. line (in the case of further names line 4 is only written if the combination considered was inserted)

Arguments,
functional values.

If the number of the inserted arguments and functional values belonging to these arguments is greater than 20000, the working field in the program containing these data is written on the external storage unit 15, and this field is filled again from the beginning. Therefore a DD card for unit 15 is necessary, for example:

```
//G.FT15F001 DD UNIT=SYSDA,SPACE=(1016,80),DCB=(RECFM=VBS,BLKSIZE=1016)
```

if the number of arguments and functional values is greater 20000 and less than or equal to 40000.

2.4.2 Declaration of test data to standard data in the sequential KEDAK library

This program has the task to declare the test data of one material and different data types to standard data by replacing the standard data in those energy regions where test data are existing. The test data theirself are kept unchanged and may be deleted by the program 01751 or by the program succession 01717, 01750, 01701.

Program: 01708

Input: a) Sequential form of the KEDAK library on the external storage unit 4 (organization see 2.3.1.1).

b) Card input in the following form:

MAT(1), MAT(2) } Material names of the standard- and of the test data in the succession of their appearance in the KEDAK library.

IST 1: MAT(1) is the name of the standard material, MAT(2) is the name of the test material.

2: MAT(1) is the name of the test material, MAT(2) is the name of the standard material.

N Number of data types of the test material with data which shall be declared to standard data (at most 20).

(TYP(I),I=1,N) Names of the data types with data which shall be declared to standard data.

(KOALT(I)I=1,N) Number of combinations of further names in the standard material which will be overwritten by combinations of the test data.

Output: a) Sequential form of the KEDAK library on the external storage unit 19.

b) Paper output for each changed data type of the standard material:

1. line

Name of the material in numerical form,
data type name in numerical form,
number of further names,
number of arguments,
number of functional values,
number of combinations of further names.

The following lines are repeated for each combination of further names.

2. line (only in the case of further names)

Further names of the combination.

3. line

Number of data pairs.

4. line (in the case of further names, the 4. line will only be written if the respective combination was taken from the test data set)

Arguments,
functional values.

If the number of all arguments and functional values of all types TYP(I) is greater than 20000, the working field in the program containing these data is written on the external storage unit 20, and this field is filled again from the beginning. Therefore a DD card for unit 20 is necessary, see program 01705 (2.4.1).

2.5 Special print output of the KEDAK library

2.5.1 Print out of selected sets of data of the sequential KEDAK library

Program : O17O3

Input :

a) Sequential KEDAK library on the external storage unit 2 (organization see 2.3.1.1)

b) Card input with the following contents:
N, (MAT (I), TYP (I), I = 1, N)

N : Number of isotope name/data type name combinations to be printed

MAT : Name of the isotope in alphanumerical form (REAL* 8)

TYP : Name of the data type in alphanumerical form (REAL* 8)

Here the order of isotope names as specified in 2.3.1.2 and the alphabetic order of the data type names has to be observed.

Output : For each selected combination of names:

Name of the isotope,
name of the data type
(the following is repeated for each combination of further names, if existing for the respective data type)
further names if existing,
number of data items,
arguments, } for the first data item and so on
functional values } for all data items successively

2.5.2 Print out of a list of contents of the direct access KEDAK library

Program : O17O4

Input : KEDAK library in direct access form (organization see 1) on the external storage unit 18

Output : A list of the contents of the KEDAK library, i.e. a list of the isotopes in the order as stored in the library and for each isotope the available alphanumerical data type names in alphabetical order.

2.6 Transfer of the KEDAK data by conversion of the library from direct access into card image format and vice versa

2.6.1 Conversion of the standard data of the KEDAK library from direct access form into card image format

Program: 01720

Input: KEDAK library in direct access form (organization see 1.) on the external storage unit 17

Output: The sets of data of all the isotopes in the KEDAK library having names of a length less than or equal 5 characters in card image format are written onto the external storage unit 16.

Logical structure of the nuclear data file KEDAK in card image format

Basic ideas

A word means

a) an integer number with a maximum of 7 digits,

b) a floating point number of the form $\pm X \cdot 10^{Y}$, where X is a mantissa with 8 digits with $0.1 \leq X < 1.0$ and Y the exponent of the base 10 with $-50 \leq Y \leq 49$.

A field means a number of one or more words, which are considered as logically correlated.

A data set consists of three fields,

a) the name field with NN words, i.e. material names, data type names, possible further names, e.g. the energy of an excited nuclear level,

b) the argument field with NA words,

c) the value field with NN words containing the functional values belonging to the arguments.

For microscopic neutron cross sections e.g. the name field contains material and data type names, the argument field a neutron incident energy, the value field the particular cross section belonging to this energy.

A subgroup means the number of all data sets with equal material, data and possible further names.

A group means the number of all data sets with equal material and data names.

A file means the number of all groups contained in the nuclear data file.

Formal contents of the data fields

Contents of the name field

Material name

Each material is characterized by a fixed point number of the structure

$$Z_1Z_2Z_3xA_1A_2A_3$$

where

$Z_1Z_2Z_3$ = atomic number,
$A_1A_2A_3$ = atomic weight (mass number) as integer number,
X = one digit compound reference number for characterisation of a chemical compound.

If a material is a natural element, then $A_1A_2A_3$ is set equal to 000. The compound reference number X is 0 for elements and isotopes and $\neq 0$, when compounds of the material concerned with other materials have to be treated separately.

Data type name

Each data type is characterized by a fixed point number of the structure

$$KG_1G_2G_3S$$

where

K = data class,
$G_1G_2G_3$ = data group,
S = coordinate system.

The class reference numbers correspond to those of the ENDF/B format, the group reference numbers, in the case of equal data types, are taken from the ENDF/B format; in the case of different data types they are chosen in accordance with the ENDF/B-rules for the assignment of group reference numbers (see BNL - 50066 (T - 467), ENDF 102, 1967).

K	class
1	general information
2	resonance parameters
3	cross sections and other nuclear data
4	secondary angular distributions
5	secondary energy distributions

S	coordinate system
0	for the classes 1,2,3 and 5
1	laboratory system } in class 4
2	center-of-mass system } in class 4

Further names

If for the full characterization of a data type energy or other specifications are necessary these are contained in the further names as floating point numbers.

Contents of the argument field

The argument field contains the arguments for the description of the values of the respective nuclear data type as floating point numbers.

Contents of the functional value field

The functional value field contains the values belonging to the respective arguments as floating point numbers.

Units of the data

All energies and data with the unit of an energy contained in the nuclear data file are stored in eV, all cross sections in barn, all differential cross sections in barn/sterad or barn/eV.

Structure of the information on tape

Records

The Karlsruhe nuclear data file KEDAK in "card-image" format contains information in records of 80 characters.

Subdivision of the records

The information part of the records, i.e. the columns 1-72 contain the data, the identification part, i.e. the columns 73-80, contains an identification.

Structure of the information part

The information part contains a maximum of 6 words with respectively max. 12 characters. The representation of the words corresponds to the FORTRAN-field descriptors I 12 resp. E 12.6. An exception to these format codes is the comment type AASTATUS which is written in format (18A4).

Structure of the identification part

The identification part contains in the columns

73 - 74 the position at which the material appears in the description of the material contents
or
0 in the description of the material contents

75 - 76 the position at which the data type appears in the material dependent description of the data type contents
or
0 in the description of the data type contents

77 - 80 the record count for the subgroup starting with 0.

Contents of the records

Description of material contents

The description of the material contents contains in the

1. record	tape number, date, number of the materials on the tape
2. and following records	material names

Description of data type contents

For each material the description of the data type contents contains in the

1. record	material name, number of data types
2. and following records	data type names

Records for one group

Name records

For each data type and each material the name records contain

material name,
data type name,
number of further names,
number of arguments,
number of functional values
in the case of further names:
    number of combinations of the further names
otherwise
    0

Records with further names

If there are further names, the combination of the further names for the respective subgroup is contained in one record.

Records with number of data sets

On this record the number of data sets of the respective subgroup is given.

Data records

The data records contain arguments and functional values of the data sets. If several data sets fit into one record, arguments and functional values are repeated as long as they fit completely into one record, otherwise, if one data set needs continuation records, each data set begins with a new record.
Be ND the number of arguments and functional values per data set. Then the following numbers of data sets per record result:

ND = 2	3 data sets per record
ND = 3	2 data sets per record
$4 \leq ND \leq 6$	1 data set per record
$6 < ND \leq 12$	2 records per data set
$12 < ND \leq 18$	3 records per data set

The data sets are ordered according to increasing arguments.

Order of the information on tape

The order of the information on tape is governed by the following scheme:
Description of the material contents

for each material in the order of its appearance in the description of the material contents

description of the data type contents

for each data type of the material
name record
in the case of further names

for each subgroup a record with the further names
record with the number of data sets
data records of the subgroups
otherwise
record with the number of data sets
data records of the group

Subdivision of the file into several tapes

When more than one tape is needed for storing the file, each tape contains complete information for one or more materials with the pertinent description of the material contents.

2.6.2 Conversion of the sets of data of selected isotopes from direct access form into card image format

Program: 01721

Input: a) KEDAK library in direct access form (organization see 1) on the external storage unit 17

b) Card input with the following contents:

(NNM, (TMAT(I),I=1,NNM))

NNM : Number of isotopes the sets of data of which should be converted into card image format

TMAT: Names of these isotopes in alphanumerical form in the order given in 2.3.1.2.

Output: The sets of data of the isotopes specified in the input are written in card image form on the external storage unit 16. The output of program 01721 corresponds to the output of program 01720 described in 2.6.1.

2.6.3 Conversion of the KEDAK library from card image format into direct access form

Program: O1722

Input: a) The KEDAK library in card image format (organization see 2.6.1) on the external storage unit 21. If the card image library is distributed on more than one magnetic tape, for each of these tapes a separate DD-card is necessary on which the unit numbers are continuously incremented by one starting with 21. If for example the nuclear data are distributed on 3 magnetic tapes:

```
//G.FT21FOO1 DD UNIT=TAPE9, VOL=SER=TAPE1,...
//G.FT22FOO1 DD UNIT=AFF=FT21FOO1, VOL=SER=TAPE2,...
//G.FT23FOO1 DD UNIT=AFF=FT21FOO1, VOL=SER=TAPE3,...
```

b) The card input consists of one record with the following contents:

'KEDA' 'BIBL' 'IØTH' Constants which appear as word 1, 2, 3 in the declaration part of the direct access KEDAK library (see 1)

NMAT — Number of isotopes available in the card image library

IBND — Number of magnetic tapes on which the card image library is described

Output: KEDAK library in direct access form as discussed in 1 on the external storage unit 1

2.7 Input example

The direct access KEDAK library shall be modified and the new library shall be converted into card image format

```
//INRO17KE_b JOB_b (0017, 101, P6M1A), KRIEG, CLASS=A, REGION=270 K,
//_bTIME=15
//_bEXEC FHG, LIB=NUSYS, NAME=KEMA
//G.FT08F001   DD   UNIT=SYSDA, SPACE=(TRK,10)
//G.FT01F001   DD   UNIT=2314, VOL=SER=NUSYS0,DSN=KNDF, DISP=SHR
//G.FT12F001   DD   UNIT=SYSDA, SPACE=(TRK,300,RLSE),
//_bDCB=(RECFM=VBS, BLKSIZE=7168)
//G.FT09F001   DD   UNIT=SYSDA, SPACE=(TRK,20)
//G.FT10F001   DD   UNIT=SYSDA, SPACE=(TRK,20)
//G.FT11F001   DD   UNIT=SYSDA, SPACE=(TRK,20)
//G.FT02F001   DD   UNIT=SYSDA, SPACE=(TRK,300,RLSE),
//_bDCB=(RECFM=VBS, BLKSIZE=7168)
//G.FT14F001   DD   UNIT=2314, VOL=SER=NUSYS0, DSN=KEDAK,
//_bDISP=(NEW,KEEP), SPACE=(TRK,300)
//G.FT17F001   DD   UNIT=2314, VOL=REF=*.FT14F001,
//_bDSN=*.FT14F001, DISP=OLD
//G.FT16F001   DD   UNIT=TAPE9, VOL=SER=901701, DSN=KERND,
//_bDISP=(,PASS), LABEL=(,SL),
//_bDCB=(RECFM=FB, LRECL=80, BLKSIZE=7200)
/* SETUP  DEVICE=TAPE9, ID=901701
//G.SYSIN   DD *
```

```
5  01717  01750  01701  01720  0
72  @H   1@
          0010001  @H  H1@  0011001  @H  C1@  0012001  @H   2@  0010002
 @HE  3@  0020003  @HE  4@  0020004  @C  12@  0060012  @N   @  0070000
 @O  16@  0080016  @NA 23@  0110023  @AL 27@  0130027  @CR  @  0240000
 @CR 50@  0240050  @CR 52@  0240052  @CR 53@  0240053  @CR 54@  0240054
 @FE  @  0260000  @FE 54@  0260054  @FE 56@  0260056  @FE 57@  0260057
 @FE 58@  0260058  @NI  @  0280000  @NI 58@  0280058  @NI 60@  0280060
 @NI 61@  0280061  @NI 62@  0280062  @NI 64@  0280064  @MO  @  0420000
 @MO 92@  0420092  @MO 94@  0420094  @MO 95@  0420095  @MO 96@  0420096
 @MO 97@  0420097  @MO 98@  0420098  @MO100@  0420100  @U 235@  0920235
 @U 238@  0920238  @PU239@  0940239  @PU240@  0940240  @PU241@  0940241
 @PU242@  0940242  @CO  @  0480000
 'CL      '  0170000  @CL 35@  0170035  @CL 37@  0170037
                    'PB   EN3'  8200100 'U 238WC1'  0922383
 'LI  6EN3'  0030006  'LI  7EN3'  0030007
 @PU238@  0940238
                  'U 233EN4'  0924233  'U 234EN4'  0924234
 'U 236EN4'  0924236  'PA233EN4'  0914233  'NP237EN4'  0934237
 'AM243EN4'  0954243  'CM244EN4'  0964244  'TA181EN4'  0734181
 'NB 93EN4'  0414093  'NB 93RCN'  0410093  'MN 55EN4'  0254055
 'P  31ENL'  0154031  'GA   ENL'  0314000  'ZR   ENL'  0404000
 'EU   ENL'  0634000  'W    ENL'  0744000  'B  10EN4'  54010
 'P  11EN4'  54011  'CU   EN4'  294000  'CU 63EN4'  294063
 'CU 65EN4'  294065  'NI 59X  '  281059
70  @ISOT1@
          14580  @ISOT2@  14590  @ISOT3@  14600  @PLNLE@  14570  @CHICR@  14560
 @RES  @  21520  @ST   @  21530  @STD  @  21540  @STGE @  21550  @SGT  @  30010
 @SGN  @  30020  @SGX  @  30030  @SGI  @  30040  @SGIZ @  30050  @SG2N @  30160
 @SG3N @  30170  @SGE  @  30190  @SGIA @  30220  @SGI2A@  30230  @SG2NA@  30240
 @SG3NA@  30250  @SGA  @  30270  @SGIP @  30280  @SGNI @  30290  @SGG  @  31020
 @SGP  @  31030  @SGD  @  31040  @SGH3 @  31050  @SGHE3@  31060  @SGALP@  31070
 @SG2HE@  31080  @SGT2 @  32010  @ETA  @  32060  @ALPHA@  32070  @MUEL @  32510
 @NUE  @  34520  @NUEP @  34550  @CHIE @  34610  @CHIED@  34620  @SGNL @  40021
 @SGNC @  40022  @SGIL @  40041  @SGIC @  40042  @SGILZ@  40051  @SGICZ@  40052
 @SGNIL@  40291  @SGNIC@  40292  @LEGNL@  44631  @LEGNC@  44632  @LEGIL@  44641
 @LEGIC@  44642  'LEGILZ'  44651  'LEGICZ'  44652  @LGNIL@  44661  @LGNIC@  44662
 @CHIE7@  54610  'CHIEDZ'  54620  @CHIT @  50040  @CHI2N@  50160
 'AASTATUS'  14510  'RANGRES'  14511  'SGIZC '  30051  @CHI3N@  50170
 @SEDE @  54523  @SEDEP@  54613  @SEDED@  54623  @SED2N@  50163
 @SED3N@  50173  @SEDIC@  50053  'CHIIZC  '  50910
1  0  1
@PU239@ @SGIZ@  2
81  @ADD@  2  @NI  @  'AASTATUS'  1  1
 'DATA RE-EVALUATION IN COMPARISON WITH KFK 120 (1966)                    '
 '1970 :   SGG    1 MEV - 15 MEV,                                         '
 '         SGALP, SGP, SG2N   THRESHOLD - 15 MEV,                         '
 '         SGT, SGN, SGI, MUEL   10 MEV - 15 MEV.                         '
13  @ADD@  2  @NI  @  @ISOT1@  0  3  'ARG '  58.69  28.  0.
13  @ADD@  2  @NI  @  @SGG  @  1  1  4.266E6  0.0016
 4.366E6  0.0015
11  @DROPS@  2  @FE  @  @SGT  @  1  1.35E6  2.72E6  3.807E6
18  @ADD  @  3  @PU239@ @SGIZ @  57000.  1  1  2.9E5
 0.145  4.E5  0.175  5.E5  0.191  5.5E5  0.197
16  @ADD  @  3  @PU239@  @SGIZ @  164000.  1  1  1.7E5  0.001
 1.8E5  0.002  2.E5  0.004
5  @DROPA@  1  'CL   UNC'
2  @ENDE@
'KEDA'  'BIBL'  'IOTH'          72
```

2.8 Literature Reference

/1/ D. Woll, KFK 880 (EANDC(E)-112"U") Dec. 1968

2.9 Data types forseen on KEDAK

Name of data type K G S	Name as in ENDF/B?(1)	Name of data type on internal KEDAK	Further names	Arguments	Functional values
1 451 o	y	AASTATUS	-	1	1 (4) bibliographic information giving data types and energy regions of recent evaluations.
1 451 1	n	RANGRES	-	-	1. E_L - lower energy boundary of the region in which resolved resonance parameters 2. E_U - upper are valid under data type " RES " 3. number of resolved resonances given by " RES " 4. flag which indicates whether resolved resonance parameters should preferable be taken for group constant calculations or pointwise given cross section values. It may have the following values. 2. - cross section values } should be 1. - resolved resonance parameters } taken o. - no preference can be recommended
1 458 o	n	ISØT1	-	-	1. Atomic (isotopic) weight (A) 2. Atomic number (Z) 3. Nuclear spin of ground state (I)
1 459 o	n	ISØT 2	-	-	1. $\lambda\!\!\!^{-} = \sqrt{E} = \hbar / \sqrt{2m_n} \cdot \frac{A+m_n}{A}$ - reduced neutron wave length $\left[eV^{1/2} b^{1/2} \right]$ 2. R = nuclear radius $\left[b^{1/2} \right]$ 3. E_B = binding energy of the last neutron in compound nucleus
1 46o o	n	ISØT 3	-	Isotopic weight	Isotopic abundance (%)
1 457 o	n	PLNUE	-	-	1. ν_o 2. ν_1 3. ν_2 4. ν_3 where $\nu_o+\nu_1 E+\nu_2 E^2+\nu_3 E^3$ average total number of fission neutrons

Name of data type K G S	Name as in ENDF/B?(1)	Name of data type on internal KEDAK	Further names	Arguments	Functional values
1 456 o	n	CHICR	-	1.Neutron incident energy	1. c 2. a 3. b Parameters of the Watt-Cranberg fission spectrum $\chi(E) = c.\exp(-aE)\sinh(\sqrt{bE})$ $c = 2a\sqrt{\frac{a}{\pi b}} \cdot \exp(-b/4a)$ The mean energy of fission neutrons is given by $\bar{E} = \frac{1}{a}(\frac{3}{2}+\frac{1}{4}\frac{b}{a})$ eV
2 152 o	n	RES	-	1. Resonance energy 2. Neutron orbital angular momentum (ℓ) 3. Compound nucleus spin (J)	1. $g_J=(2J+1)/(2(2I+1))$*abundance 2. total half width Γ 3. neutron half width Γ_n 4. capture width Γ_γ 5. fission width Γ_f 6. (n,p)-width Γ_p 7. (n,α)-width Γ_α 8. (n,n')-width $\Gamma_{n'}$
2 15 30	n	ST	-	1. ℓ 2. J	1. average capture width $\bar{\Gamma}_\gamma$ 2. average level spacing $\bar{D}$ 3. average reduced neutron width $\bar{\Gamma}_n^\ell$ 4. strenght function $S_\ell = \frac{<\Gamma_n^\ell>_J}{(\nu_n)_{\ell J}<D_J>}$ 5. number of exit channels in fission ν_f 6. number of exit channels in neutron elastic scattering $(\nu_n)_{\ell J}$
2 154 o	n	STD	-	-	1. average observed level spacing 2. a level density parameter 3. 2 σ^2 spin cut-off parameter

Name of data type K G S	Name as in ENDF/B?(1)	Name of data type on internal KEDAK	Further names	Arguments	Functional values
2 155 o	n	STGF	-	1. neutron incident energy 2. l 3. j	1. number of exit channels in fission ν_f 2. average fission width $\overline{\Gamma_f}$ for the number of exit channels ν_f 3. average capture width $\overline{\Gamma_\gamma}$ 4. average neutron width $\overline{\Gamma_n}$ 5. S_f 6. S_γ 7. R_f 8. R_γ } statistical fluctuation factors(3)
3 001 o	y	SGT	-	neutron incident energy	total cross section
3 002 o	y	SGN	-	"	elastic scattering cross section
3 003 o	y	SGX	-	"	non-elastic cross section
3 004 o	y	SGI	-	"	total inelastic cross section
3 005 o	n	SGIZ	E_i	"	inelastic cross section for excitation of rest nucleus level E_i
3 005 1	n	SGIZC	-	"	inelastic scattering cross section to the continuum
3 016 o	y	SG2N	-	"	cross section for the (n,2n)-process
3 017 o	y	SG3N	-	"	cross section for the (n,3n)-process
3 019 o	y	SGF	-	"	fission cross section
3 022 o	y	SGIA	-	"	cross section for the (n,n'α)-process
3 023 o	y	SGI3A	-	"	" " " " (n,n'3α)- "
3 024 o	y	SG2NA	-	"	" " " " (n,2nα)- "
3 025 o	y	SG3NA	-	"	" " " " (n,3nα)- "

Name of data type K G S	Name as in ENDF/B?(1)	Name of data type on internal KEDAK	Further names	Arguments	Functional values
3 027 o	y	SGA	-	neutron incident energy	absorption cross section
3 028 o	y	SGIP	-	"	cross section for the (n,n'p)-process
3 029 o	y	SG12A	-	"	" " " " (n,n'2α)- "
3 102 o	y	SGG	-	"	" " " " (n,γ) - "
3 103 o	y	SGP	-	"	" " " " (n,p) - "
3 104 o	y	SGD	-	"	" " " " (n,d) - "
3 105 o	y	SGH3	-	"	" " " " (n,H^3) - "
3 106 o	y	SGHE3	-	"	" " " " (n,He^3)- "
3 107 o	y	SGALP	-	"	" " " " (n,α) - "
3 108 o	y	SG2HE	-	"	" " " " (n,2α) - "
3 201 o	n	SGTR	-	"	transport cross section
3 206 o	n	ETA	-	"	average number of fission neutrons per neutron absorption
3 207 o	n	ALPHA	-	"	ratio of capture to fission cross section
3 251 o	y	MUEL	-	"	average cosine of the elastic scattering angle in the laboratory system $\cos\theta_L = \overline{\mu_L}$
3 452 o	y	NUE	-	"	average number of fission neutrons
3 455 o	n	NUEP	-	"	average number of prompt fission neutrons
3 461 o	n	CHIF	-	neutron outgoing energy	energy spectrum of prompt fission neutrons (thermal fission)
3 462 o	n	CHIFD	-	"	energy spectrum of delayed fission neutrons (thermal fission)

Name of data type K G S	Name as in ENDF/B? (1)	Name of data type on internal KEDAK	Further names	Arguments	Functional values
4 oo2 1	n	SGNL	E_o (2)	cosine of scattering angle	differential elastic scattering cross section at the neutron incident energy E_o in the laboratory system
4 oo2 2	n	SGNC	E_o (2)	"	differential elastic scattering cross section at the neutron incident energy E_o in the center-of-mass system
4 oo4 1	n	SGIL	E_o	"	differential inelastic scattering cross section at the neutron incident energy E_o in the laboratory system
4 oo4 2	n	SGIC	E_o	"	differential inelastic scattering cross section at the neutron incident energy E_o in the center-of-mass system
4 oo5 1	n	SGILZ	1.E_i 2.E_o	"	differential inelastic scattering cross section for excitation of the rest nucleus level E_i at the neutron incident energy E_o in the laboratory system
4 oo5 2	n	SGICZ	1.E_i 2.E_o	"	differential inelasic cross section for excitation of the rest nucleus level E_i at the neutron incident energy E_o in the center-of-mass system
4 o29 1	n	SGNIL	1.E_2 2.E_o	"	differential cross section for elastic and inelastic scattering at the neutron incident energy E_o to neutron outgoing energies between E_o and E_2 in the laboratory system
4 o29 2	n	SGNIC	1.E_2 2.E_o	"	differential cross section for elastic and inelastic scattering at the neutron incident energy E_o to neutron outgoing energies between E_o and E_2 in the center-of-mass system
4 463 1	n	LEGNL	1.E_o 2.order L_m	L	coefficient f_L in the Legendre-polynomial expansion of the differential elastic scattering cross section

Name of data type K G S	Name as in ENDF/? (1)	Name of data type on internal KEDAK	Further names	Arguments	Functional values
					$\sigma_n(\theta)=\frac{\sigma_n}{4\pi}\sum_{L=o}^{L_m}(2L+1)\,f_L(E)\,P_L(\cos\theta)$
					in the laboratory system
4 463 2	n	LEGNC	1. E_o 2. order L_m	L	coefficent f_L in the Legendre-polynomial expansion of the differential elastic scattering cross section
					$\sigma_n(\theta)=\frac{\sigma_n}{4\pi}\sum_{L=o}^{L_m}(2L+1)\,f_L(E)\,P_L(\cos\theta)$
					in the center-of-mass system
4 464 1	n	LEGIL	1. E_o 2. order L_m	L	coefficient f'_L in the Legendre-polynomial expansion of the differential inelastic scattering cross section
					$\sigma_{n'}(\theta)=\frac{\sigma_{n'}}{4\pi}\sum_{L=o}^{L_m}(2L+1)\,f'_L(E)\,P_L(\cos\theta)$
					in the laboratory system
4 464 2	n	LEGIC	1. E_o 2. order L_m	L	coefficient f'_L in the Legendre-polynomial expansion of the differential inelastic scattering cross section
					$\sigma_{n'}(\theta)=\frac{\sigma_{n'}}{4\pi}\sum_{L=o}^{L_m}(2L+1)\,f'_L(E)\,P_L(\cos\theta)$
					in the center-of-mass system
4 465 1	n	LEGILZ	1. E_i 2. E_o 3. order L_m	L	coefficient f^i_L in the Legendre-polynomial expansion of the differential inelastic cross section for excitation of the rest nucleus level E_i

Name of data type K G S	Name as in ENDF/?(1)	Name of data type of internal KEDAK	Further names	Arguments	Functional values
					$\sigma_{n'}^{E_i}(\theta) = \frac{\sigma_{n'}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\, f_L^i(E)\, P_L(\cos\theta)$ in the laboratory system
4 465 2	n	LEGICZ	1. E_i 2. E_o 3. order L_m	L	coefficient f_L^i in the Legendre-polynomial expansion of the differential inelastic cross section for excitation of the rest nucleus level E_i
					$\sigma_{n'}^{E_i}(\theta) = \frac{\sigma_{n'}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\, f_L^i(E)\, P_L(\cos\theta)$ in the center-of-mass system
4 466 1	n	LGNIL	1. E_2 2. E_o 3. order L_m	L	coefficient f_L^{o2} in the Legendre-polynomial expansion of the differential cross section for elastic and inelastic scattering at the neutron incident energy E_o to neutron outgoing energies between E_o and E_2
					$\sigma_{n+n'}^{o2}(\theta) = \frac{\sigma_{n+n'}^{o2}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\, f_L^{o2}(E)\, P_L(\cos\theta)$ in the laboratory system
4 466 2	n	LGNIC	1. E_2 2. E_o 3. order L_m	L	coefficient f_L^{o2} in the Legendre-polynomial expansion of the differential cross section for elastic and inelastic scattering at the neutron incident energy E_o and E_2
					$\sigma_{n+n'}^{o2}(\theta) = \frac{\sigma_{n+n'}^{o2}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\, f_L^{o2}(E)\, P_L(\cos\theta)$ in the center-of-mass system

Name of data type K G S	Name as in ENDF/? (1)	Name of data type of internal KEDAK	Further names	Arguments	Functional values
5 461 o	n	CHIFZ	E_o	neutron outgoing energy	energy spectrum of prompt fission neutrons at the neutron incident energy E_o
5 462 o	n	CHIFDZ	E_o	"	energy spectrum of delayed fission neutrons at the neutron incident energy E_o
5 091 o	y	CHIIZC	E_o	"	energy spectrum of inelastically scattered neutrons at the neutron incident energy E_o
5 016 o	y	CHI2N	E_o	"	1.)2.) energy spectrum of the two neutrons emitted in the (n,2n) process at the neutron incident energy E_o
5 017 o	y	CHI3N	E_o	"	1.)2.)3.) energy spectrum of the three neutrons emitted in the (n,3n) process at the neutron incident energy E_o

Name of data type K G S	Name as in ENDF/?(1)	Name of data type of internal KEDAK	Further names	Arguments	Functional values
					parametric representation of energy spectra at incident neutron energy E_o
5 oo5 3	n	SEDIC	E_o	K-identification number for the model used for description:	of neutrons inelastically scattered to a continuum of levels
5 o16 3	y	SED2N	"		of the two neutrons emitted by the (n,2n) process
5 o17 3	y	SED3N	"		of the three neutrons emitted by the (n,3n) process
5 452 3	n	SEDF	"		of fission neutrons
5 461 3	n	SEDFP	"		of prompt fission neutrons
5 462 3	n	SEDFD	"		of delayed fission neutrons

K=1 Evaporation spectrum

$$\chi(E') = \frac{E' * \exp(E'/\Theta)}{\Theta^2 * \left[1 - \exp\left(-\frac{E_o - U}{\Theta}\right) * \left(1 + \frac{E_o - U}{\Theta}\right)\right]}$$

K=2 Maxwellian spectrum

$$\chi(E') = \frac{\sqrt{E'} * \exp(-E'/\Theta)}{\Theta^{3/2} * \left[\frac{\pi}{2} * \mathrm{erf}\left(\sqrt{\frac{E_o - U}{\Theta}}\right) - \sqrt{\frac{E_o - U}{\Theta}} * \exp\left(-\frac{E_o - U}{\Theta}\right)\right]}$$

K=3 Watt-Cranberg spectrum
See formula for CHICR

K=4 Excitation of discrete levels

$$\chi(E) = \delta\left[E' - \frac{A^2+1}{(A+1)^2} E_o + \frac{A}{A+1} * EC\right]$$

3 functional values :

1. p - fraction of the spectrum of type K to the total energy distribution

2. θ (nuclear temperature) - for K = 1,2
   a (spectrum parameter) - for K = 3
   EC (level excitation energy) - for K = 4

3. U - upper limit for the final neutron energy $0 \leq E' \leq E_o - U$ - for K = 1,2
   or b (spectrum parameter) - for K = 3
   or A (atomic weight) - for K = 4

(1) K always corresponds to the ENDF/B format. If also G corresponds to the ENDF/B format, then the second column contains "yes", otherwise "no".

(2) E_o for this and all pertinent further data types in the laboratory system. This is also true for E_2.

(3) a) Definition

For the calculation of average cross sections and related quantities in the energy region of unresolved resonances one needs width fluctuation factors (Dresner factors). The following four Dresner factors are stored on KEDAK

$$S_f = \frac{\langle\Gamma_\gamma\rangle}{\langle\Gamma_n\rangle\langle\Gamma_f\rangle} \left\langle\frac{\Gamma_n\Gamma_f}{\Gamma}\right\rangle , \tag{1}$$

$$S_\gamma = \frac{\langle\Gamma_\gamma\rangle}{\langle\Gamma_n\rangle} \left\langle\frac{\Gamma_n}{\Gamma}\right\rangle , \tag{2}$$

$$R_f = \frac{\langle\Gamma_\gamma\rangle}{\langle\Gamma_n\rangle^2\langle\Gamma_f\rangle} \left\langle\frac{\Gamma_n^2\Gamma_f}{\Gamma}\right\rangle , \tag{3}$$

$$R_\gamma = \frac{\langle\Gamma_\gamma\rangle}{\langle\Gamma_n\rangle^2} \left\langle\frac{\Gamma_n^2}{\Gamma}\right\rangle \tag{4}$$

They should be understood as defined for a given level sequence (level spin J, parity $\pi=(-1)^\ell$) but for simplicity we omit the indices ℓ, J. The average brackets denote averages over all resonances of the (ℓ, J) level sequence. This is equivalent to averaging over the partial-width distributions. Now the statistical theory of resonance reactions tells us that the partial widths are distributed according to χ^2 distributions. Thus the probability that a randomly selected resonance has a partial width for the (n,c) reaction between Γ_c and $\Gamma_c+d\Gamma_c$ is given by

$$p_c d\Gamma_c = \Gamma(\nu_c/2)^{-1}\, e^{-x_c}\, x_c^{\nu_c/2-1}\, dx_c \tag{5}$$

with
$$0 < x_c \equiv \frac{\nu_c}{2}\,\frac{\Gamma_c}{\langle\Gamma_c\rangle} < \infty \tag{6}$$

($c=n,f,\gamma,\ldots$ for elastic scattering, fission, capture, ...).
Here $\Gamma(\nu_c/2)$ is the gamma function and ν_c the number of contributing R-matrix reaction channels ($\nu_c=1$: Porter-Thomas distribution, $\nu_c=2$: exponential distribution etc.). For the radiation width Γ_γ one takes $\nu_\gamma=\infty$, i.e. a δ-distribution, $\Gamma_\gamma = \langle\Gamma_\gamma\rangle$.

b) Calculation

Eqs. (1)-(4) show that one must calculate multi-dimensional integrals of the type

$$\left\langle \frac{\Gamma_c^{\,m}\,\Gamma_{c'}^{\,m'}}{\Gamma} \right\rangle = \int_0^\infty d\Gamma_1 p_1 \int_0^\infty d\Gamma_2 p_2 \ldots \int_0^\infty d\Gamma_{\hat{c}} p_{\hat{c}}\, \frac{\Gamma_c^{\,m}\,\Gamma_{c'}^{\,m'}}{\Gamma} \tag{7}$$

with
$$\Gamma = \sum_{c=1}^{\hat{c}} \Gamma_c \tag{8}$$

Inserting (5), (6) and defining

$$a_c \equiv \frac{2}{\nu_c}\,\frac{\langle\Gamma_c\rangle}{\Gamma_\gamma} \tag{9}$$

(i.e. $a_c x_c = \Gamma_c/\Gamma_\gamma$, $a_\gamma x_\gamma = 1$) one obtains

$$\frac{\Gamma_c^{\,m}\,\Gamma_{c'}^{\,m'}}{\Gamma} = \Gamma_\gamma^{\,m+m'-1} \int_0^\infty \frac{dx_1 x_1^{\nu_1/2-1} e^{-x_1}}{\Gamma(\nu_1/2)} \int_0^\infty \frac{dx_2 x_2^{\nu_2/2-1} e^{-x_2}}{\Gamma(\nu_2/2)} \cdots$$

$$\cdots \int_0^\infty \frac{dx_{\hat{c}} x_{\hat{c}}^{\nu_{\hat{c}}/2-1} e^{-x_{\hat{c}}}}{\Gamma(\nu_{\hat{c}}/2)} \frac{(a_c x_c)^m (a_{c'} x_{c'})^{m'}}{\sum_{c''} a_{c''} x_{c''}} \tag{10}$$

Following Dresner (Ref. 1) one can reduce this multi-dimensional integral to a one-dimensional integral by using the identity.

$$\frac{1}{\sum_c a_c x_c} = \frac{1}{1+\sum_{c\neq\gamma} a_c x_c} = \int_0^\infty ds \exp\left[-(1+\sum_{c\neq\gamma} a_c x_c)s\right] \tag{11}$$

Interchanging the order of integrations one finds

$$\frac{\langle\Gamma_\gamma\rangle}{\langle\Gamma_c\rangle^m \langle\Gamma_{c'}\rangle^{m'}} \left\langle \frac{\Gamma_c^{\,m}\Gamma_{c'}^{\,m'}}{\Gamma} \right\rangle =$$

$$= \frac{\Gamma(\frac{\nu_c}{2}+m)}{(\frac{\nu_c}{2})^m\,\Gamma(\frac{\nu_c}{2})} \frac{\Gamma(\frac{\nu_{c'}}{2}+m')}{(\frac{\nu_{c'}}{2})^{m'}\,\Gamma(\frac{\nu_{c'}}{2})} \int_0^\infty ds\, e^{-s}(1+a_c s)^{-m}(1+a_{c'} s)^{-m'} \prod_{c''\neq\gamma} (1+a_{c''} s)^{-\nu_{c''}/2} \tag{12}$$

$$= \quad " \quad " \int_0^1 du\, (1-a_c \ln u)^{-m}(1-a_{c'} \ln u)^{-m'}\, \Pi(u) \tag{13}$$

where

$$\Pi(u) \equiv \prod_{c \neq \gamma} (1 - a_c \ln u)^{-\nu_c/2}$$

depends on u and on the a_c (for $c \neq \gamma$). The form (13), obtained from (12) by substitution of $s = -\ln u$, has finite integration limits and is thus more convenient for numeric integration.

Ref. 1 L.Dresner, Report TID-7547 (1957), p. 71
cf. also J. E. Lynn, Neutron Resonance Reactions, Oxford 1968, p. 230

(4) The data items of AASTATUS are only formally divided into argument and functional value. They contain the indicated text in successive order.

2.10 Overlay structure

```
OVERLAY KNDF
INSERT PRUFF,ALPHA,ALPHAT,OCTEST,OODRU,FREEFO
OVERLAY KNDF
INSERT P01717,ORDTYP
OVERLAY KNDF
INSERT P01750,KOMT,KEDAK,PRINT
OVERLAY KNDF
INSERT P01703
OVERLAY KNDF
INSERT P01701
OVERLAY KNDF
INSERT P01720
OVERLAY KNDF
INSERT P01704
OVERLAY KNDF
INSERT P01705
OVERLAY KNDF
INSERT P01708
OVERLAY KNDF
INSERT P01721
OVERLAY KNDF
INSERT P01722
OVERLAY KNDF
INSERT P01751
OVERLAY KNDF
INSERT P01723,FLIM
ENTRY MAIN
```

2.11 List of KEMA

```
      REAL*8 MATNA(200),TYPN(100)                                       10
      DIMENSION NFOLG(20),A(2001),NUNA(200),NUTY(100)                   20
     1,MAT(400),TYP(200)                                                30
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUT,NF                       40
      EQUIVALENCE (MAT(1),MATNA(1)),(TYP(1),TYPN(1))                    50
      NINP=5                                                            60
      NOUT=6                                                            70
      NF=8                                                              80
      CALL FREEFO (NINP,NF,NOUT,A,A,A)                                  90
      CALL PRJEF (NFOLG,MATNA,NUNA,TYPN,NUTY,NF,NOUT)                  100
      READ (NF) I,(NFOLG(J),J=1,I)                                     110
      READ (NF) NZM,(MATNA(J),NUNA(J),J=1,NZM)                         120
      READ (NF) NZT,(TYPN(J),NUTY(J),J=1,NZT)                          130
      CALL ESPIE                                                       140
      DO 1 J=1,I                                                       150
      IF(NFOLG(J).EQ.01717)  GO TO 2                                   160
      IF(NFOLG(J).EQ.01750)  GO TO 3                                   170
      IF(NFOLG(J).EQ.01703)  GO TO 4                                   180
      IF(NFOLG(J).EQ.01701)  GO TO 5                                   190
      IF(NFOLG(J).EQ.01720)  GO TO 9                                   200
      IF(NFOLG(J).EQ.01704)  GO TO 10                                  210
      IF(NFOLG(J).EQ.01705)  GO TO 11                                  220
      IF(NFOLG(J).EQ.01708)  GO TO 12                                  230
      IF(NFOLG(J).EQ.01721)  GO TO 13                                  240
      IF(NFOLG(J).EQ.01722)  GO TO 14                                  250
      IF(NFOLG(J).EQ.01751)  GO TO 15                                  260
      IF(NFOLG(J).EQ.01723)  GO TO 16                                  270
      IF(NFOLG(J).NE.0)  GO TO 6                                       280
      GO TO 7                                                          290
    2 CALL P01717                                                      300
      GO TO 1                                                          310
    3 CALL P01750                                                      320
      GO TO 1                                                          330
    4 CALL P01703                                                      340
      GO TO 1                                                          350
    5 CALL P01701 (MAT,TYP)                                            360
      GO TO 1                                                          370
    9 CALL P01720 (MAT,TYP)                                            380
      GO TO 1                                                          390
   10 CALL P01704                                                      400
      GO TO 1                                                          410
   11 CALL P01705                                                      420
      GO TO 1                                                          430
   12 CALL P01708                                                      440
      GO TO 1                                                          450
   13 CALL P01721(MATNA)                                               460
      GO TO 1                                                          470
   14 CALL P01722                                                      480
      GO TO 1                                                          490
   15 CALL P01751                                                      500
      GO TO 1                                                          510
   16 CALL P01723                                                      520
    1 CONTINUE                                                         530
    6 WRITE (NOUT,8) NFOLG(J)                                          540
    8 FORMAT(' DAS PROGRAMM',I10,' IST NICHT VORGESEHEN')              550
    7 STOP                                                             560
      END                                                              570
```

```
      SUBROUTINE ESPIE                                                  10
C     ESPIE IS A SPECIAL ERROR-DETECTING SUBROUTINE ,WHICH IN CASE      20
C     OF AN ABNORMAL END  DETERMINS THE PSW  AND PRINTS THIS PSW +      30
C     A TRACE-BACK + THE REGISTER CONTENTS + THE SYSTEM COMPLETION      40
C     CODE..     FOR  ESPIE IS INSTALATION DEPENDENT ITS CODE IS NOT    50
C     DISTRIBUTED HERE                                                  60
      RETURN                                                            70
      END                                                               80
```

```
      SUBROUTINE ZEIT(NDTUM)                                            10
      LOGICAL*1 FF,FD                                                   20
      INTEGER*2 V(10)/'0 ','1 ','2 ','3 ','4 ','5 ','6 ','7 ','8 ','9 '/  30
     1,VV/'  '/                                                         40
      REAL*8 DAT,TIME                                                   50
      DIMENSION FD(8)                                                   60
      EQUIVALENCE (DAT,FD(1)),(VV,FF)                                   70
      CALL DATUM(DAT,TIME)                                              80
      NDTUM=0                                                           90
      DO 1002 J=1,8                                                    100
      IF(J.EQ.3.OR.J.EQ.6)  GO TO 1002                                 110
      FF=FD(J)                                                         120
      DO 1000 I=1,10                                                   130
      IF(VV.EQ.V(I))  GO TO 1001                                       140
 1000 CONTINUE                                                         150
 1001 NDTUM=NDTUM*10+I-1                                               160
 1002 CONTINUE                                                         170
      RETURN                                                           180
      END                                                              190
```

```
C                                                                       10
C     ROUTINE FOR PRODUCING AN UNFORMATTED INPUT-FILE                   20
C                                                                       30
C                                                                       40
      SUBROUTINE FREEFO (INP,NFI,NFO,LF,F,NF)                           50
      DIMENSION LF(1),F(1),NF(1),JZ(2)                                  60
      REAL*8 N8,NV8/5HNUFIN/,VC                                         70
      LOGICAL*1 JF(8),JX(2)                                             80
      INTEGER*2 NFE(80),LV(18),JY(4),LL,JKFF,STERN/2H* /                90
      EQUIVALENCE (JZ(1),JF(1),JY(1),N8),(LL,JX(1))                    100
      DATA LV(1)/1H /,LV(2)/1H0/,LV(3)/1H1/,LV(4)/1H2/,LV(5)/1H3/,     110
     1LV(6)/1H4/,LV(7)/1H5/,LV(8)/1H6/,LV(9)/1H7/,LV(10)/1H8/,         120
     2LV(11)/1H9/,LV(12)/1H+/,LV(13)/1H+/,LV(14)/1H-/,LV(15)/1H./,     130
     3LV(16)/1HE/,LV(17)/1H)/,LV(18)/1H'/,LE/4HHEXA/,LFO/4HFORM/       140
```

```
     4,LSPE/4HSPEC/,LNO/4HNORM/                                          150
C                                                                        160
C                                                                        170
C                                                                        180
      IY=80                                                              190
      GOTO 9111                                                          200
C                                                                        210
C                                                                        220
      ENTRY FREE72 (INP,NFI,NFO,LE,F,NF)                                 230
      IY=72                                                              240
C                                                                        250
C                                                                        260
 9111 V=1.                                                               270
      MV=1                                                               280
      LPP=0                                                              290
      NF(1)=0                                                            300
      LSU=0                                                              310
      LS=0                                                               320
      LP=0                                                               330
      NS=0                                                               340
      LO=0                                                               350
      N=0                                                                360
      LL=LV(1)/256                                                       370
      KSPNO=0                                                            380
      KOUT=0                                                             390
C                                                                        400
C                                                                        410
C                                                                        420
   33 IF(NF(1).EQ.LE) GOTO 2                                             430
      IF(NF(1).EQ.LFO) GOTO 2                                            440
      GOTO 201                                                           450
  200 KOUT=1                                                             460
      GOTO 12                                                            470
  201 JZ(1)=NF(1)                                                        480
      JZ(2)=NF(2)                                                        490
      IF(N8.EQ.NV8) GOTO 200                                             500
      READ (INP,1,END=200,ERR=3) (NFE(I),I=1,80)                         510
    1 FORMAT(80A1)                                                       520
      GO TO 4                                                            530
    2 IF(NFI)203,203,202                                                 540
  202 ENDFILE NFI                                                        550
      REWIND NFI                                                         560
  203 RETURN                                                             570
    3 WRITE (NFO,5)                                                      580
    5 FORMAT(1HO/48H ERROR-CONDITION IN DATA TRANSFER OR INPUT-ERROR)    590
      STOP                                                               600
    4 IF (IY.EQ.80) GOTO 6667                                            610
      JKFE=NFE(73)                                                       620
      NFE(73)=STERN                                                      630
 6667 WRITE (NFO,6) (NFE(I),I=1,80)                                      640
    6 FORMAT(1X,80A1)                                                    650
      IF (IY.EQ.80) GOTO 6663                                            660
      NFE(73)=JKFE                                                       670
C                                                                        680
C                                                                        690
```

```
C                                                                        700
 6668 IF(NF(1).EQ.LNO) GOTO 500                                          710
      IF(NF(1).EQ.LSPE) GOTO 501                                         720
      GOTO 502                                                           730
  500 KSPNO=0                                                            740
      GOTO 11                                                            750
  501 KSPNO=1                                                            760
      GOTO 11                                                            770
  502 IF(NFE(1).EQ.LV(1)) GOTO 10                                        780
      IF(N)11,11,12                                                      790
   12 IF(NFI)13,13,144                                                   800
  144 IF(KSPNO)145,145,14                                                810
   14 WRITE (NFI) N,(NF(I),I=1,N)                                        820
  111 IF(KOUT)11,11,2                                                    830
  145 WRITE (NFI) (NF(I),I=1,N)                                          840
      GOTO 111                                                           850
   13 NS=NS+1                                                            860
      LF(NS)=N                                                           870
      N1=NS+1                                                            880
      N2=NS+N                                                            890
      N=0                                                                900
      DO 15  I=N1,N2                                                     910
      N=N+1                                                              920
   15 LF(I)=NF(N)                                                        930
      NS=N2                                                              940
      GOTO 111                                                           950
   11 N=0                                                                960
      J=0                                                                970
      GO TO 16                                                           980
   10 J=1                                                                990
   16 J=J+1                                                             1000
C                                                                       1010
C                                                                       1020
C                                                                       1030
   97 DO 20  K=1,18                                                     1040
      IF(NFE(J).EQ.LV(K)) GO TO 21                                      1050
   20 CONTINUE                                                          1060
      GO TO 3                                                           1070
C                                                                       1080
C                                                                       1090
C                                                                       1100
   21 IF(K-1)30,30,22                                                   1110
   30 IF(LS)31,31,32                                                    1120
   31 IF(J-IY)16,33,33                                                  1130
C                                                                       1140
C                                                                       1150
C                                                                       1160
   32 IF(LPP)40,40,41                                                   1170
   40 N=N+1                                                             1180
      NF(N)=LSU*MV                                                      1190
   47 LSU=0                                                             1200
      LS=0                                                              1210
      LO=0                                                              1220
      MV=1                                                              1230
      V=1.                                                              1240
```

```
      GOTO 31
C
C
C
   41 M=LP-LS
      IF(LS-9)42,43,43
   43 LSU=LSUR
   42 IF(M)44,45,46
   44 IF(78+M)3,3,45
   46 IF(75-M)3,3,45
   45 N=N+1
      VC=V
      F(N)=DFLOAT(LSU)*VC*10.**M
      LP=0
      LPP=0
      GO TO 47
C
C
C
   22 IF(K-11)50,50,23
   50 LS=LS+1
      LSU=10*LSU+K-2
      IF(LS-9)511,52,511
   52 LSUR=LSU
  511 IF(LPP)51,51,883
  883 LC=-1
      J=J+1
      IF(J-IY)884,884,32
   51 IF(J-IY)16,32,32
C
C
C
   23 IF(K-14)60,60,24
   60 IF(LO)61,61,3
   61 LO=1
      IF(K-14)62,63,63
   63 V=-1.
      MV=-1
   62 IF(J-IY)64,3,3
   64 J=J+1
      DO 65  K=2,11
      IF(NFE(J).EQ.LV(K)) GO TO 50
   65 CONTINUE
      IF(NFE(J).EQ.LV(15)) GO TO 70
      GO TO 3
C
C
C
   24 IF(K-15)70,70,25
   70 IF(LP)71,71,3
   71 LP=LS
      LPP=1
      IF(J-IY)72,73,73
   73 IF(LS)3,3,41
   72 J=J+1
      DO 74  K=2,11
      IF(NFE(J).EQ.LV(K)) GO TO 50
   74 CONTINUE
      IF(NFE(J).EQ.LV(1)) GO TO 73
      IF(NFE(J).EQ.LV(16)) GO TO 81
      LC=0
  884 LA=0
      LV1=1
      LP1=0
      IF(J-IY)882,882,3
C
C
C
   25 IF(K-16)80,80,26
   80 IF(LPP)3,3,81
   81 LA=0
      LC=1
      LV1=1
      LP1=0
      IF(J-IY)82,3,3
   82 J=J+1
      IF(NFE(J).EQ.LV(1)) GO TO 83
  882 IF(NFE(J).EQ.LV(12)) GO TO 83
      IF(NFE(J).EQ.LV(13)) GO TO 83
      IF(NFE(J).EQ.LV(14)) GO TO 84
      IF(LC)97,3,85
   84 LV1=-1
   83 IF(J-IY)86,3,3
   86 J=J+1
   85 DO 87 K=2,11
      IF(NFE(J).EQ.LV(K)) GO TO 88
   87 CONTINUE
      IF(NFE(J).EQ.LV(1)) GO TO 89
      GO TO 3
   89 IF(LA)3,3,90
   88 LA=1
      LP1=10*LP1+K-2
      IF(J-IY)86,90,90
   90 LP=LP+LP1*LV1
      GO TO 41
C
C
C
   26 IF(K-17)300,300,301
  300 M=5
      K7=17
      GO TO 117
  301 M=4
      K7=18
  117 LC=0
  116 LA=0
      DO 100  L=1,4
  100 JY(L)=LV(1)
  110 J=J+1
      IF(J-IY)101,102,102
```

```
  102 IF(NFE(J).EQ.LV(K7)) GOTO 120                                     2350
      LC=0                                                              2360
      GOTO 121                                                          2370
  120 J=J-1                                                             2380
  121 IF(LC)33,3,112                                                    2390
  101 IF(NFE(J).EQ.LV(K7)) GO TO 106                                    2400
      GO TO 107                                                         2410
  106 IF(LC)105,3,102                                                   2420
  107 LA=LA+1                                                           2430
      LC=1                                                              2440
      LL=NFE(J)                                                         2450
      JF(LA)=JX(1)                                                      2460
      IF(LA-M)110,112,112                                               2470
  112 N=N+1                                                             2480
      NF (N)=JZ(1)                                                      2490
      IF(K-17)433,433,434                                               2500
  433 N=N+1                                                             2510
      NF (N)=JZ(2)                                                      2520
  434 LC=-1                                                             2530
      IF(NFE(J+1).EQ.LV(K7)) GOTO 110                                   2540
      GOTO 116                                                          2550
  105 IF(NFE(J+1).EQ.LV(1)) GOTO 16                                     2560
      GO TO 3                                                           2570
      END                                                               2580
```

```
C     PRUEFUNG DER GESAMTEN EINGABE FUER DAS PROGRAMMSYSTEM KEMA          10
C                                                                         20
      SUBROUTINE PRUEF (NFOLG,MATNA,NUNA,TYPN,NUTY,NF,NOUT)               30
      REAL* 8 DD17(2)/'FT01F001','FT12F001'/,                             40
     1        DD50(6)/'FT09F001','FT10F001','FT11F001','FT02F001',        50
     2               'FT12F001','FT13F001'/,                              60
     3        DD03(1)/'FT02F001'/,                                        70
     4        DD01(2)/'FT02F001','FT14F001'/,                             80
     5        DD20(2)/'FT17F001','FT16F001'/,                             90
     6        DD04(1)/'FT18F001'/,                                       100
     7        DD05(3)/'FT03F001','FT04F001','FT15F001'/,                 110
     8        DD08(3)/'FT04F001','FT19F001','FT20F001'/,                 120
     9        DD22(2)/'FT01F001','FT21F001'/,                            130
     A        DD51(2)/'FT01F001','FT13F001'/,                            140
     B        DD23(2)/'FT02F001','FT12F001'/                             150
      REAL*8 MAT(47) /'NI    ','NI 58','NI 60','NI 61','NI 62','NI 64',  160
     1'O  16','U 235','AL 27','C  12','CD    ','CR    ','CR 50','CR 52',  170
     2'CR 53','CR 54','FE    ','FE 54','FE 56','FE 57','FE 58','H   2',  180
     3'H  H1','H  01','HE  3','HE  4','MO    ','MO 92','MO 94','MO 95',  190
     4'MO 96','MO 97','MO 98','MO100','N     ','NA 23','PU239','U 238',  200
     5'H   1','CL      ','CL 35','CL 37','U 238IN1','U 238IN2',          210
     6'PU240','PU242','PU241'/,MS                                       220
     6(200),MTS(100),MAD(200),MTD(100),MAA(200),MTA(100)                230
      REAL*8 MATNA(200),TYPN(100),IKO(20),  IAD/'ADD  '/,IDS/'DROPS'/,   240
     1RA(2),ITO(20),ALL/'ALL  '/                                        250
      DIMENSION NFOLG(20),NUNA(200),NUTY(100),IZKO(20),FELD(2000),IFEL)(  260
     12000),EN(10),ARGA(10),RI(4),TEXT(3),UE(8,4,10),OE(8,4,10)         270
      2,KOALT(20)                                                       280
      3,ARGAD(10),ARGAS(10),EA(10),ES(10)                               290
      4,SA(2)                                                           300
       DATA NM/47/,TEXT/'KEDA','BIBL','IOTH'/                           310
      1,SA/'AAST','ATUS'/                                               320
       EQUIVALENCE (FELD(1),IKO(1)),  (FELD(81) ,IZKO(1)),(FELD(1),IFEL)(  330
      11)),(RA(1),RI(1)),(FELD(1),UE(1,1,1)),(FELD(500),OE(1,1,1))      340
      1,(FELD(41),ITO(1)),(FELD(1),KOALT(1))                            350
       WRITE(NOUT,83)                                                   360
   83 FORMAT(1H1/' EINGABEPRUEFUNG')                                    370
C                                                                       380
C     LESEN DER EINGABE DES STEUERPROGRAMMS                             390
C                                                                       400
      READ(NF) I,(NFOLG(J),J=1,I)                                       410
      IF(I.LE.20) GO TO 1                                               420
      WRITE (NOUT,2) I                                                  430
    2 FORMAT(' ES IST NUR DER AUFRUF VON 20 ARBEITSPROGRAMMEN ERLAUBT HI  440
     1ER WURDEN',I5,' VERSUCHT')                                        450
      STOP5                                                             460
    1 READ (NF) NZM,(MATNA(J),NUNA(J),J=1,NZM)                          470
      IF(NZM.LE.200) GO TO 3                                            480
      WRITE (NOUT,4) NZM                                                490
    4 FORMAT(' DIE ANZAHL DER MATERIALNAMEN IN DER ZUORDNUNGSTABELLE IST  500
     1 AUF 200 BEGRENZT , HIER WURDE EIN VERSUCH MIT',I5,' MATERIALIEN G  510
     2EMACHT')                                                          520
      STOP5                                                             530
    3 READ (NF) NZT,(TYPN(J),NUTY(J),J=1,NZT)                           540
      IF(NZT.LE.100) GO TO 5                                            550
      WRITE (NOUT,6) NZT                                                560
    6 FORMAT(' DIE ANZAHL DER TYPNAMEN IN DER ZUORDNUNGSTABELLE IST AUF   570
     1100 BEGRENZT , HIER WURDE EIN VERSUCH MIT',I5,' TYPEN GEMACHT')   580
      STOP5                                                             590
    5 WRITE (NOUT,63)                                                   600
   63 FORMAT(' DIE EINGABE FUER DAS STEUERPROGRAMM WURDE GEPRUEFT')      610
      I=I-1                                                             620
      DO 7 J=1,I                                                        630
      IF(NFOLG(J).EQ.01717) GO TO 8                                     640
      IF(NFOLG(J).EQ.01750) GO TO 9                                     650
      IF(NFOLG(J).EQ.01703) GO TO 10                                    660
      IF(NFOLG(J).EQ.01701) GO TO 11                                    670
      IF(NFOLG(J).EQ.01720) GO TO 12                                    680
      IF(NFOLG(J).EQ.01704) GO TO 13                                    690
      IF(NFOLG(J).EQ.01705) GO TO 14                                    700
      IF(NFOLG(J).EQ.01708) GO TO 15                                    710
      IF(NFOLG(J).EQ.01721)  GO TO 130                                  720
      IF(NFOLG(J).EQ.01722)  GO TO 132                                  730
      IF(NFOLG(J).EQ.01751)  GO TO 141                                  740
      IF(NFOLG(J).EQ.01723)  GO TO 200                                  750
      WRITE (NOUT,84) NFOLG(J)                                          760
   84 FORMAT(' DIE FOLGENUMMER',I8,' IST IM PROGRAMMSYSTEM KEMA NICHT VO  770
     1RGESEHEN')                                                        780
      STOP5                                                             790
C                                                                       800
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01717                      810
C                                                                       820
```

```
    8 N=2                                                                  830
      ICON=1                                                               840
      CALL DDTEST (N,DD17,ICON,NST)                                        850
      WRITE (NOUT,62)                                                      860
   62 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01717 WURDE GEPRUEFT')        870
      GO TO 7                                                              880
C                                                                          890
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01750                         900
C                                                                          910
    9 READ (NE) IAU,IBA,NNKO                                               920
      LN=5                                                                 930
      I17=1                                                                940
      IF((IAU.EQ.0).OR.(IAU.EQ.1)) GO TO 16                                950
      WRITE (NOUT,17)                                                      960
   17 FORMAT(' PROGRAMM 01750 : IAU IST NICHT 0 ODER 1 GESETZT')           970
      STOP5                                                                980
   16 IF((IBA.EQ.0).OR.(IBA.EQ.1)) GO TO 18                                990
      WRITE (NOUT,19)                                                     1000
   19 FORMAT(' PROGRAMM 01750 : IBA IST NICHT 0 ODER 1 GESETZT')          1010
      STOP5                                                               1020
   18 IF(NNKO.LE.20) GO TO 20                                             1030
      WRITE (NOUT,21) NNKO                                                1040
   21 FORMAT(' PROGRAMM 01750 : NNKO=',I5,' MAXIMAL ZULAESSIG IST 20')    1050
      STOP5                                                               1060
   20 IF(NNKO.EQ.0) GO TO 22                                              1070
      READ (NE) (IKO(L),ITO(L),IZKO(L),L=1,NNKO)                          1080
      CALL ALPHA (NNKO,IKO,NM,MAT,NOUT)                                   1090
   22 IF(IAU.EQ.0) NE=13                                                  1100
      LMTA=0                                                              1110
      LMTD=0                                                              1120
      LMTS=0                                                              1130
      KS=0                                                                1140
      KLI=0                                                               1150
   47 READ (NE) N,(FELD(L),L=1,N)                                         1160
      IF(N.EQ.2) GO TO 54                                                 1170
      IF(N.LE.2000) GO TO 24                                              1180
      GO TO (150,151),I17                                                 1190
  150 WRITE (NOUT,25) N,(FELD(L),L=1,7)                                   1200
   25 FORMAT(' PROGRAMM 01750 : N GROESSER 2000 IN DEM SATZ',I6,A5,A1,    1210
     1I3,A5,A1,A5,A1)                                                     1220
      STOP5                                                               1230
  151 WRITE(NOUT,152) N,(FELD(L),L=1,7)                                   1240
  152 FORMAT(' PROGRAMM 01751 : N GROESSER 2000 IN DEM SATZ',I6,A5,A1,    1250
     1I3,A5,A1,A5,A1)                                                     1260
      STOP5                                                               1270
   24 NN=IFELD(3)                                                         1280
      DO 46 L=1,4                                                         1290
   46 RI(L)=FELD(L+3)                                                     1300
      IF(RI(3).EQ.SA(1).AND.RI(4).EQ.SA(2))  GO TO 47                     1310
      IF(NN.LE.2) GO TO 26                                                1320
      IF(KS.EQ.0) GO TO 50                                                1330
      IF((IKO(1)  .EQ.IAD).AND.(LMTA.GT.0)) GO TO 51                      1340
      IF((IKO(1)  .EQ.IDS).AND.(LMTS.GT.0)) GO TO 52                      1350
      IF(IKO(1).EQ.IDR.AND.LMTD.GT.0)  GO TO 244                          1360
      GO TO 50                                                            1370
  244 IF(RA(1).NE.MAA(LMTD)) GO TO 50                                     1380
      IF(RA(2).NE.MTA(LMTD)) GO TO 50                                     1390
      DO 243 L=3,NN                                                       1400
  243 EN(L-2)=EDA(L-2)                                                    1410
      GO TO 53                                                            1420
   51 IF(RA(1).NE.MAD(LMTA)) GO TO 237                                    1430
      IF(RA(2).NE.MTD(LMTA)) GO TO 237                                    1440
      DO 136 L=3,NN                                                       1450
  136 EN(L-2)=EA(L-2)                                                     1460
      GO TO 53                                                            1470
   52 IF(RA(1).NE.MS(LMTS)) GO TO 238                                     1480
      IF(RA(2).NE.MTS(LMTS)) GO TO 238                                    1490
      DO 137 L=3,NN                                                       1500
  137 EN(L-2)=ES(L-2)                                                     1510
   53 DO 48 L=3,NN                                                        1520
      IF(FELD(L+5).GT.EN(L-2)) GO TO 50                                   1530
      IF(FELD(L+5).EQ.EN(L-2)) GO TO 48                                   1540
      GO TO (153,154),I17                                                 1550
  153 WRITE (NOUT,49) N,(FELD(K),K=1,7)                                   1560
   49 FORMAT(' PROGRAMM 01750 : FUER DEN SATZ',I6,A5,A1,I3,A5,A1,A5,A1,   1570
     1' SIND DIE WEITEREN NAMEN NICHT IN AUFSTEIGENDER REIHENFOLGE ANGEO 1580
     2RDNET')                                                             1590
      STOP5                                                               1600
  154 WRITE(NOUT,155)N,(FELD(K),K=1,7)                                    1610
  155 FORMAT(' PROGRAMM 01751 : FUER DEN SATZ',I6,A5,A1,I3,A5,A1,A5,A1,   1620
     1' SIND DIE WEITEREN NAMEN NICHT IN AUFSTEIGENDER REIHENFOLGE ANGEO 1630
     2RDNET')                                                             1640
      STOP5                                                               1650
   48 CONTINUE                                                            1660
   50 IF(IKO(1).EQ.IAD)  GO TO 237                                        1670
      IF(IKO(1).EQ.IDS)  GO TO 238                                        1680
  242 DO 239 L=3,NN                                                       1690
  239 EDA(L-2)=FELD(L+5)                                                  1700
      GO TO 26                                                            1710
  237 DO 240 L=3,NN                                                       1720
  240 EA(L-2)=FELD(L+5)                                                   1730
      GO TO 26                                                            1740
  238 DO 241 L=3,NN                                                       1750
  241 ES(L-2)=FELD(L+5)                                                   1760
   26 NWERT=0                                                             1770
      IF(IKO(1)  .EQ.IAD) GO TO 28                                        1780
      IF(IKO(1)  .EQ.IDS) GO TO 37                                        1790
      GO TO 38                                                            1800
   28 NWERT=IFELD(NN+7)                                                   1810
      IF(NWERT.GE.1.AND.NWERT.LE.20)  GO TO 37                            1820
      WRITE (NOUT,126) N,(FELD(L),L=1,7)                                  1830
  126 FORMAT(' DIE ANZAHL DER WERTE LIEGT NICHT ZWISCHEN 1 UND 20 IN DEM  1840
     1 SATZ',I6,A5,A1,I3,A5,A1,A5,A1)                                     1850
      STOP5                                                               1860
   37 NARG=IFELD(NN+6)                                                    1870
      IF(NARG.GE.0.AND.NARG.LE.10)  GO TO 127                             1880
      WRITE (NOUT,128) N,(FELD(L),L=1,7)                                  1890
  128 FORMAT(' DIE ANZAHL DER ARGUMENTE LIEGT NICHT ZWISCHEN 0 UND 10 IN  1900
     1 DEM SATZ',I6,A5,A1,I3,A5,A1,A5,A1)                                 1910
      STOP5                                                               1920
  127 IF(NARG.EQ.0)  NARG=1                                               1930
      IF(IKO(1).EQ.IDS)  NN=NN-1                                          1940
```

```
      NW=(N-NN-7)/(NARG+NWERT)                                          1950
      IF(NW*(NARG+NWERT)+NN+7-N.EQ.0) GO TO 29                          1960
      GO TO (156,157),I17                                               1970
  156 WRITE (NOUT,30) N,(FELD(L),L=1,7)                                 1980
   30 FORMAT(' PROGRAMM 01750 : IN DEM SATZ',I6,A5,A1,I3,A5,A1,A5,A1,   1990
     1' IST EIN ARGUMENTE - WERTE - PAAR NICHT VOLLSTAENDIG')           2000
      STOP5                                                             2010
  157 WRITE(NOUT,158)N,(FELD(L),L=1,7)                                  2020
  158 FORMAT(' PROGRAMM 01751 : IN DEM SATZ',I6,A5,A1,I3,A5,A1,A5,A1,   2030
     1' IST EIN ARGUMENTE - WERTE - PAAR NICHT VOLLSTAENDIG')           2040
      STOP5                                                             2050
   29 DO 32 L=1,NARG                                                    2060
   32 ARGA(L)=FELD(NN+L+7)                                              2070
      IF(IKO(1).EQ.IAD.AND.LMTA.GT.0)  GO TO 105                        2080
      IF(IKO(1).EQ.IDS.AND.LMTS.GT.0)  GO TO 111                        2090
      GO TO 36                                                          2100
  111 IF(RA(1).NE.MS(LMTS))  GO TO 36                                   2110
      IF(RA(2).NE.MTS(LMTS))  GO TO 36                                  2120
      NX=NN+1                                                           2130
      IF(NX.LE.2)  GO TO 112                                            2140
      DO 113 L=3,NX                                                     2150
      IF(EN(L-2).NE.ES(L-2))  GO TO 36                                  2160
  113 CONTINUE                                                          2170
      GO TO 112                                                         2180
  112 DO 106 L=1,NARG                                                   2190
      IF(ARGAD(L).LT.ARGA(L))  GO TO 36                                 2200
      IF(ARGAD(L).EQ.ARGA(L))  GO TO 106                                2210
  139 LJ=1                                                              2220
      GO TO 107                                                         2230
  106 CONTINUE                                                          2240
      GO TO 139                                                         2250
  105 IF(RA(1).NE.MAD(LMTA))  GO TO 36                                  2260
      IF(RA(2).NE.MTD(LMTA))  GO TO 36                                  2270
      IF(NN.LE.2)  GO TO 116                                            2280
      DO 117 L=3,NN                                                     2290
      IF(EN(L-2).NE.EA(L-2))  GO TO 36                                  2300
  117 CONTINUE                                                          2310
      GO TO 116                                                         2320
  236 IF(NN.LE.2)  GO TO 36                                             2330
  116 DO 108 L=1,NARG                                                   2340
      IF(ARGAS(L).LT.ARGA(L))  GO TO 36                                 2350
      IF(ARGAS(L).EQ.ARGA(L))  GO TO 108                                2360
  140 LJ=2                                                              2370
      GO TO 107                                                         2380
  108 CONTINUE                                                          2390
      GO TO 140                                                         2400
   36 IF(NW.EQ.1) GO TO 31                                              2410
      NN=NN+NARG+NWERT                                                  2420
      DO 33 L=1,NARG                                                    2430
      IF(ARGA(L).LT.FELD(NN+L+7)) GO TO 90                              2440
      IF(ARGA(L).EQ.FELD(NN+L+7)) GO TO 33                              2450
  138 LJ=3                                                              2460
  107 GO TO (159,160),I17                                               2470
  159 WRITE (NOUT,34) N,(FELD(M),M=1,7)                                 2480
   34 FORMAT(' PROGRAMM 01750 : IN DEM SATZ',I6,A5,A1,I3,A5,A1,A5,A1,   2490
     1' SIND DIE ARGUMENTE')                                            2500
      GO TO (120,121,122),LJ                                            2510
  160 WRITE(NOUT,161)N,(FELD(M),M=1,7)                                  2520
  161 FORMAT(' PROGRAMM 01751 : IN DEM SATZ',I6,A5,A1,I3,A5,A1,A5,A1,   2530
     1' SIND DIE ARGUMENTE')                                            2540
      GO TO (120,121,122),LJ                                            2550
  120 WRITE (NOUT,35) (ARGAD(M),M=1,NARG)                               2560
      WRITE (NOUT,35) (ARGA (M),M=1,NARG)                               2570
      GO TO 123                                                         2580
  121 WRITE (NOUT,35) (ARGAS(M),M=1,NARG)                               2590
      WRITE (NOUT,35) (ARGA (M),M=1,NARG)                               2600
      GO TO 123                                                         2610
  122 WRITE (NOUT,35) (ARGA(M),M=1,NARG)                                2620
   35 FORMAT(8E16.8)                                                    2630
      WRITE (NOUT,35) (FELD(NN+M+7),M=1,NARG)                           2640
  123 WRITE (NOUT,39)                                                   2650
   39 FORMAT(' NICHT IN AUFSTEIGENDER REIHENFOLGE ANGEORDNET')          2660
      KLI=1                                                             2670
      GO TO 90                                                          2680
   33 CONTINUE                                                          2690
      GO TO 138                                                         2700
   90 DO 40 L=1,NARG                                                    2710
   40 ARGA(L)=FELD(NN+L+7)                                              2720
      IF(N.GT.NN+NARG+7+NWERT) GO TO 36                                 2730
   31 IF(IKO(1)  .EQ.IAD) GO TO 41                                      2740
      DO 109 L=1,NARG                                                   2750
  109 ARGAD(L)=ARGA(L)                                                  2760
C                                                                       2770
C     AUFSTELLEN DER NAMENLISTE FUER DROPS                              2780
      IF(LMTS.EQ.0) GO TO 42                                            2790
      IF(MS(LMTS).NE.RA(1)) GO TO 42                                    2800
      IF(MTS(LMTS).EQ.RA(2)) GO TO 43                                   2810
   42 LMTS=LMTS+1                                                       2820
      MS(LMTS)=RA(1)                                                    2830
      MTS(LMTS)=RA(2)                                                   2840
      GO TO 43                                                          2850
C                                                                       2860
C     AUFSTELLEN DER NAMENLISTE FUER ADD                                2870
   41 DO 110 L=1,NARG                                                   2880
  110 ARGAS(L)=ARGA(L)                                                  2890
      IF(LMTA.EQ.0)  GO TO 44                                           2900
      IF(MAD(LMTA).NE.RA(1)) GO TO 44                                   2910
      IF(MTD(LMTA).EQ.RA(2)) GO TO 43                                   2920
   44 LMTA=LMTA+1                                                       2930
      MAD(LMTA)=RA(1)                                                   2940
      MTD(LMTA)=RA(2)                                                   2950
      GO TO 43                                                          2960
C                                                                       2970
C     AUFSTELLEN DER NAMENLISTE FUER DROPA                              2980
   38 IF(LMTD.EQ.0) GO TO 45                                            2990
      IF(MAA(LMTD).NE.RA(1)) GO TO 45                                   3000
      IF(MTA(LMTD).EQ.RA(2)) GO TO 43                                   3010
   45 LMTD=LMTD+1                                                       3020
      MAA(LMTD)=RA(1)                                                   3030
      MTA(LMTD)=RA(2)                                                   3040
C                                                                       3050
   43 KS=1                                                              3060
```

```
      GO TO 47                                                          3070
C                                                                       3080
   54 IF(NF.EQ.8)  GO TO 124                                            3090
      REWIND NF                                                         3100
      NF=8                                                              3110
      GO TO 125                                                         3120
  124 IF(I3A.EQ.3)  GO TO 125                                           3130
      NF=13                                                             3140
      GO TO 47                                                          3150
C                                                                       3160
  125 IF(LMTS.EQ.0) GO TO 56                                            3170
      CALL ALPHA(LMTS,MS,NM,MAT,NOUT)                                   3180
      N=2                                                               3190
      K=1                                                               3200
   93 DO 91 L=N,LMTS                                                    3210
      IF(MS(L).NE.MS(L-1))  GO TO 92                                    3220
   91 CONTINUE                                                          3230
   92 CALL ALPHAT(L-N+1,MTS(K),NOUT)                                    3240
      N=L+1                                                             3250
      K=L                                                               3260
      IF(N.LT.LMTS)  GO TO 93                                           3270
   55 IF(LMTA.EQ.0) GO TO 56                                            3280
      CALL ALPHA(LMTA,MAD,NM,MAT,NOUT)                                  3290
      N=2                                                               3300
      K=1                                                               3310
   94 DO 95 L=N,LMTA                                                    3320
      IF(MAD(L).NE.MAD(L-1))  GO TO 96                                  3330
   95 CONTINUE                                                          3340
   96 CALL ALPHAT(L-N+1,MTD(K),NOUT)                                    3350
      N=L+1                                                             3360
      K=L                                                               3370
      IF(N.LT.LMTA)  GO TO 94                                           3380
   56 IF(LMTD.EQ.0) GO TO 23                                            3390
      CALL ALPHA (LMTD,MAA,NM,MAT,NOUT)                                 3400
      N=2                                                               3410
      K=1                                                               3420
   97 DO 98 L=N,LMTD                                                    3430
      IF(MAA(L).NE.MAA(L-1))  GO TO 99                                  3440
   98 CONTINUE                                                          3450
   99 CALL ALPHAT(L-N+1,MTA(K),NOUT)                                    3460
      N=L+1                                                             3470
      K=L                                                               3480
      IF(N.LT.LMTD)  GO TO 97                                           3490
   23 ICON=1                                                            3500
      IF(II7.EQ.1)  GO TO 166                                           3510
      IF(I9A.EQ.1)  LN=2                                                3520
      CALL DDTEST(LN,DD51,ICON,NST)                                     3530
      GO TO 167                                                         3540
  166 IF(I9A.EQ.1)  LN=6                                                3550
      CALL DDTEST(LN,DD50,ICON,NST)                                     3560
  167 GO TO (162,163),II7                                               3570
  162 WRITE (NOUT,61)                                                   3580
   61 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01750 WURDE GEPRUEFT')     3590
      GO TO 164                                                         3600
  163 WRITE(NOUT,165)                                                   3610
  165 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01751 WURDE GEPRUEFT')     3620
  164 IF(KLI.EQ.1)  STOP5                                               3630
      GO TO 7                                                           3640
C                                                                       3650
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01703                      3660
C                                                                       3670
   10 READ (NF) N,(MATNA(L),TYPN(L),L=1,N)                              3680
      IF(N.LE.100) GO TO 67                                             3690
      WRITE (NOUT,68) N                                                 3700
   68 FORMAT(' PROGRAMM 01703 : N=',I5,' DIE ANZAHL DER NAMENSKOMBINATIO 3710
     1NEN DARF NICHT GROESSER 100 SEIN')                                3720
      STOP5                                                             3730
   67 CALL ALPHA (N,MATNA,NM,MAT,NOUT)                                  3740
      ICON=2                                                            3750
      K=1                                                               3760
  100 DO 101 L=ICON,N                                                   3770
      IF(MATNA(L).NE.MATNA(L-1))  GO TO 102                             3780
  101 CONTINUE                                                          3790
  102 CALL ALPHAT(L-ICON+1,TYPN(K),NOUT)                                3800
      ICON=L+1                                                          3810
      K=L                                                               3820
      IF(ICON.LT.N)  GO TO 100                                          3830
      N=1                                                               3840
      ICON=1                                                            3850
      CALL DDTEST(N,DD03,ICON,NST)                                      3860
      WRITE (NOUT,60)                                                   3870
   60 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01703 WURDE GEPRUEFT')     3880
      GO TO 7                                                           3890
C                                                                       3900
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01701                      3910
C                                                                       3920
   11 READ (NF) (FELD(L),L=1,4)                                         3930
      IF(TEXT(1).EQ.FELD(1).AND.TEXT(2).EQ.FELD(2).AND.TEXT(3).EQ.FELD(3 3940
     1)) GO TO 57                                                       3950
      WRITE (NOUT,58) (FELD(L),L=1,4)                                   3960
   58 FORMAT(' PROGRAMM 01701 : FEHLER IN DER EINGABEKARTE',3A5,I10)     3970
      STOP5                                                             3980
   57 N=2                                                               3990
      ICON=1                                                            4000
      CALL DDTEST(N,DD01,ICON,NST)                                      4010
      WRITE (NOUT,59)                                                   4020
   59 FORMAT (' DIE EINGABE FUER DAS PROGRAMM 01701 WURDE GEPRUEFT')    4030
      GO TO 7                                                           4040
C                                                                       4050
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01720                      4060
C                                                                       4070
   12 N=2                                                               4080
      ICON=1                                                            4090
      CALL DDTEST (N,DD20,ICON,NST)                                     4100
      WRITE (NOUT,64)                                                   4110
   64 FORMAT (' DIE EINGABE FUER DAS PROGRAMM 01720 WURDE GEPRUEFT')    4120
      GO TO 7                                                           4130
C                                                                       4140
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01704                      4150
C                                                                       4160
   13 N=1                                                               4170
      ICON=1                                                            4180
```

```
      CALL DDTEST (N,DD04,ICON,NST)                                     4190
      WRITE (NOUT,65)                                                   4200
   65 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01704 WURDE GEPRUEFT')     4210
      GO TO 7                                                           4220
C                                                                       4230
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01705                      4240
C                                                                       4250
   14 READ (NF) MATNA(1),MATNA(2),NN                                    4260
      IF(NN.LE.10) GO TO 69                                             4270
      WRITE (NOUT,70) NN                                                4280
   70 FORMAT('PROGRAMM 01705 : MM =',I5,' DIE ANZAHL DER AUFZUFUELLENDE 4290
     1N TYPEN DARF NICHT GROESSER 10 SEIN')                             4300
      STOP5                                                             4310
   69 DO 66 L=1,NN                                                      4320
      READ (NF) TYPN(L),N,K,((UE(NK,NST,L),NK=1,K),(OE(NK,NST,L),NK=1,K) 4330
     1,NST=1,N)                                                         4340
      IF(K.LE.8)  GO TO 103                                             4350
      WRITE (NOUT,104) K                                                4360
  104 FORMAT(' PROGRAMM 01705 : K= ',I5,' IM GESAMTEN KEMA-PROGRAMM SIND 4370
     1 NUR 8 ARGUMENTE ZULAESSIG')                                      4380
      STOP5                                                             4390
  103 IF(N.LE.4)  GO TO 71                                              4400
      WRITE (NOUT,72)N                                                  4410
   72 FORMAT(' PROGRAMM 01705 : N= ',I5,' DIE ANZAHL DER AUFZUFUELLENDEN 4420
     1 LUECKEN DARF NICHT GROESSER 4 SEIN')                             4430
      STOP5                                                             4440
   71 DO 74 NST=1,N                                                     4450
      DO 73 NK=1,K                                                      4460
      IF(UE(NK,NST,L).LT.OE(NK,NST,L)) GO TO 74                         4470
      IF(UE(NK,NST,L).EQ.OE(NK,NST,L)) GO TO 73                         4480
      WRITE (NOUT,75) UE(NK,NST,L),OE(NK,NST,L),TYPN(L)                 4490
   75 FORMAT(' PROGRAMM 01705 : DIE UNTERE LUECKENBEGRENZUNG ',E16.8,'IST 4500
     1 GROESSER ALS DIE OBERE LUECKENBEGRENZUNG',E16.8,' BEI DEM TYP',   4510
     2A8)                                                               4520
      STOP5                                                             4530
   73 CONTINUE                                                          4540
   74 CONTINUE                                                          4550
   66 CONTINUE                                                          4560
      CALL ALPHAT(NN,TYPN,NOUT)                                         4570
      N=3                                                               4580
      ICON=1                                                            4590
      CALL DDTEST (N,DD05,ICON,NST)                                     4600
      WRITE (NOUT,76)                                                   4610
   76 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01705 WURDE GEPRUEFT')     4620
      GO TO 7                                                           4630
C                                                                       4640
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01708                      4650
C                                                                       4660
   15 READ (NF) MATNA(1),MATNA(2),NST,N,(TYPN(L),L=1,N),(KOALT(L),L=1,N) 4670
      CALL ALPHA(2,MATNA,NM,MAT,NOUT)                                   4680
      IF(NST.EQ.1.OR.NST.EQ.2) GO TO 77                                 4690
      WRITE (NOUT,78) NST                                               4700
   78 FORMAT(' PROGRAMM 01708 : IST=',I5,' IST DARF NUR DEN WERT 1 ODER 4710
     12 ANNEHMEN')                                                      4720
      STOP5                                                             4730
   77 IF(N.LE.20) GO TO 79                                              4740
      WRITE (NOUT,80) N                                                 4750
   80 FORMAT(' PROGRAMM 01708 : N=',I5,' DIE ANZAHL DER TYPEN DARF NICHT 4760
     1 GROESSER 20 SEIN')                                               4770
      STOP5                                                             4780
   79 CALL ALPHAT (N,TYPN,NOUT)                                         4790
      N=3                                                               4800
      ICON=1                                                            4810
      CALL DDTEST(N,DD08,ICON,NST)                                      4820
      WRITE (NOUT,81)                                                   4830
   81 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01708 WURDE GEPRUEFT')     4840
      GO TO 7                                                           4850
C                                                                       4860
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01721                      4870
C                                                                       4880
  130 READ(NF)NNM,(MATNA(L),L=1,NNM)                                    4890
      CALL ALPHA (NNM,MATNA,NM,MAT,NOUT)                                4900
      N=2                                                               4910
      ICON=1                                                            4920
      CALL DDTEST(N,DD20,ICON,NST)                                      4930
      WRITE(NOUT,131)                                                   4940
  131 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01721 WURDE GEPRUEFT')     4950
      GO TO 7                                                           4960
C                                                                       4970
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01722                      4980
C                                                                       4990
  132 READ (NF) (FELD(L),L=1,5)                                         5000
      IF(TEXT(1).EQ.FELD(1).AND.TEXT(2).EQ.FELD(2).AND.TEXT(3).EQ.      5010
     1FFLD(3))  GO TO 133                                               5020
      WRITE (NOUT,134) (FELD(L),L=1,5)                                  5030
  134 FORMAT(' PROGRAMM 01722 : FEHLER IN DER EINGABEKARTE',3A5,2I10)   5040
      STOP5                                                             5050
  133 N=2                                                               5060
      ICON=1                                                            5070
      CALL DDTEST(N,DD22,ICON,NST)                                      5080
      WRITE(NOUT,135)                                                   5090
  135 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01722 WURDE GEPRUEFT')     5100
      GO TO 7                                                           5110
C                                                                       5120
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01751                      5130
C                                                                       5140
  141 READ(NF)IAU,IBA                                                   5150
      LN=1                                                              5160
      IF(IAU.EQ.0.OR.IAU.EQ.1)  GO TO 142                               5170
      WRITE(NOUT,143)                                                   5180
  143 FORMAT(' PROGRAMM 01751 : IAU IST NICHT 0 ODER 1 GESETZT')        5190
      STOP5                                                             5200
  142 IF(IBA.EQ.0.OR.IBA.EQ.1)  GO TO 144                               5210
      WRITE(NOUT,145)                                                   5220
  145 FORMAT(' PROGRAMM 01751 : IBA IST NICHT 0 ODER 1 GESETZT')        5230
      STOP5                                                             5240
  144 I17=2                                                             5250
      GO TO 22                                                          5260
C                                                                       5270
C     PRUEFUNG DER EINGABE FUER DAS PROGRAMM 01723                      5280
C                                                                       5290
```

```
  200 READ (NF) I,(MATNA(J),J=1,I)                                      5300
      IF(I.LE.20)  GO TO 202                                            5310
      WRITE (NOUT,203) I                                                5320
  203 FORMAT(' PROGRAMM 01723 : ES SOLLEN',I5,' MATERIALIEN UEBERPRUEFT 5330
     1WERDEN, ES DUERFEN JEDOCH NUR 20 SEIN')                           5340
      STOP5                                                             5350
  202 IF(I.EQ.1.AND.MATNA(1).EQ.ALL)  GO TO 204                         5360
      CALL ALPHA (I,MATNA,NM,MAT,NOUT)                                  5370
  204 N=2                                                               5380
      ICON=1                                                            5390
      CALL DDTEST(N,DD23,ICON,NST)                                      5400
      WRITE(NOUT,201)                                                   5410
  201 FORMAT(' DIE EINGABE FUER DAS PROGRAMM 01723 WURDE GEPRUEFT')     5420
C                                                                       5430
    7 CONTINUE                                                          5440
      WRITE (NOUT,82)                                                   5450
   82 FORMAT(' ENDE DER GESAMTEN EINGABEPRUEFUNG')                      5460
      REWIND NF                                                         5470
      RETURN                                                            5480
      END                                                               5490
```

```
      SUBROUTINE ALPHA (I,A,NM,MAT,NOUT)                                10
      REAL*8 A(1),MAT(1)                                                20
      IF(I.EQ.1)  RETURN                                                30
      L=1                                                               40
      DO 1 J=1,I                                                        50
      DO 2 K=1,NM                                                       60
      IF(A(J).EQ.MAT(K)) GO TO 3                                        70
    2 CONTINUE                                                          80
      GO TO 4                                                           90
    3 IF(K.GE.L) GO TO 6                                               100
      WRITE (NOUT,5) (A(L),L=1,I)                                      110
    5 FORMAT(' DIE MATERIALNAMEN SIND NICHT IN DER VORGESCHRIEBENEN REIH 120
     1ENFOLGE ANGEORDNET'/(10A9))                                      130
      STOP                                                             140
    6 L=K                                                              150
    1 CONTINUE                                                         160
    4 RETURN                                                           170
      END                                                              180
```

```
      SUBROUTINE ALPHAT (I,A,NOUT)                                      10
      REAL*8 A(1)                                                       20
      IF(I.EQ.1)  RETURN                                                30
      DO 1 J=2,I                                                        40
      IF(A(J-1).GT.A(J))  GO TO 1                                       50
      WRITE (NOUT,2) (A(L),L=1,I)                                       60
    2 FORMAT(' DIE FOLGENDEN TYPEN LIEGEN NICHT IN ALPHABETISCHER REIHEN 70
     1FOLGE VOR'/(10A9))                                               80
      STOP                                                              90
```

```
    1 CONTINUE                                                          100
      RETURN                                                            110
      END                                                               120
```

```
      SUBROUTINE P01717                                                  10
C                                                                        20
C     PROGRAMM ZUR ERZEUGUNG EINES SEQUENTIELLEN KERNDATENFILES          30
C                                                                        40
      REAL*8 Z(300)                                                      50
      DIMENSION FELD(880),IFELD(880),DAT(40000),IDAT(40000),MAT(4,100),  60
     1ITYP(7,100),NWN(9,400),XWN(9,400)                                  70
      COMMON Z,ZZ(302),NOUT                                              80
      EQUIVALENCE (FELD(1),IFELD(1)),(DAT(1),IDAT(1))                    90
     1,(NWN(1,1),XWN(1,1))                                              100
      CALL FSPIE                                                        110
      IS=1                                                              120
      WRITE (NOUT,2000)                                                 130
 2000 FORMAT(1H1/' PROGRAMM 01717'//)                                   140
      ITTTT=40000                                                       150
      NSZ=880                                                           160
      LBN=1                                                             170
      IMA=12                                                            180
      DEFINE FILE 1(3950,880,U,K8)                                      190
      READ (LBN'1) (FELD(I),I=1,NSZ)                                    200
      IDAT(1)=1                                                         210
      IDAT(2)=IFELD(4)                                                  220
      IDAT(3)=IFELD(11)                                                 230
      WRITE (IMA) (IDAT(I),I=1,3)                                       240
      WRITE (NOUT,1000) (IDAT(I),I=1,3)                                 250
 1000 FORMAT(10I12)                                                     260
      IS=IFELD(12)                                                      270
      IW=IFELD(13)                                                      280
      IF(IS-1) 1,2,1                                                    290
    1 READ (LBN'IS) (FELD(I),I=1,NSZ)                                   300
    2 L=IDAT(3)                                                         310
      DO 5 K=1,L                                                        320
      ID=IW                                                             330
      MAT(1,K)=IFELD(ID)                                                340
      IF(ID+1-NSZ)9,9,10                                                350
   10 IS=IS+1                                                           360
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   370
      ID=0                                                              380
    9 ID=ID+1                                                           390
      MAT(2,K)=IFELD(ID)                                                400
      IF(ID+1-NSZ)11,11,12                                              410
   12 IS=IS+1                                                           420
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   430
      ID=0                                                              440
   11 ID=ID+1                                                           450
      MAT(3,K)=IFELD(ID)                                                460
      IF(ID+1-NSZ)15,15,16                                              470
   16 IS=IS+1                                                           480
```

```
      READ (LBN'IS) (FELD(I),I=1,NSZ)
      ID=0
   15 ID=ID+1
      MAT(4,K)=IFELD(ID)
      IF(ID+1-NSZ)13,13,14
   14 IS=IS+1
      READ (LBN'IS) (FELD(I),I=1,NSZ)
      ID=0
   13 IW=ID+1
    5 CONTINUE
      WRITE (IMA) (MAT(1,I),I=1,L)
      WRITE (NOUT,1000) (MAT(1,I),I=1,L)
C
C     SCHLEIFE UEBER DIE MATERIALZAHL
C
    8 DO 101 I=1,L
      WRITE (IMA) MAT(1,I),MAT(2,I)
      WRITE (6,1000) MAT(1,I),MAT(2,I)
      J=MAT(2,I)
      IF(MAT(3,I)-IS)17,18,17
   17 IS=MAT(3,I)
      READ(LBN'IS) (FELD(K),K=1,NSZ)
   18 IW=MAT(4,I)
      ID=IW
      DO 21 K=1,J
      ITYP(1,K)=IFELD(ID)
      JK=1
   26 JK=JK+1
      IF(ID+1-NSZ)22,22,25
   25 IS=IS+1
      READ(LBN'IS) (FELD(KK),KK=1,NSZ)
      ID=0
   22 ID=ID+1
      IF(JK-7)23,23,21
   23 ITYP(JK,K)=IFELD(ID)

      GO TO 26
   21 CONTINUE
      CALL ORDTYP(ITYP,J)
      WRITE (IMA) (ITYP(1,K),K=1,J)
      WRITE (NOUT,1000) (ITYP(1,K),K=1,J)
C
C     SCHLEIFE UEBER DIE TYPENZAHL
C
   32 DO 101 K=1,J
      IARFU=ITYP(3,K)+ITYP(4,K)
      IF(ITYP(2,K))27,28,27
   28 IWP=ITYP(5,K)
      ITYP(5,K)=0
   27 WRITE (IMA) MAT(1,I),(ITYP(KK,K),KK=1,5)
      IF(ITYP(2,K))30,31,30
C
C     ES SIND WEITERE NAMEN VORHANDEN
C
   30 ID=ITYP(6,K)
      IF(ID-IS)34,35,34
   34 IS=ID
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)
   35 IW=ITYP(7,K)
      NK=ITYP(5,K)
      DO 102IK=1,NK
      NWN(1,IK)=IFELD(IW)
      JK=1
   36 JK=JK+1
      IF(IW+1-NSZ)39,39,40
   40 IS=IS+1
      READ(LBN'IS) (FELD(KK),KK=1,NSZ)
      IW=0
   39 IW=IW+1
      IF(JK-ITYP(2,K)-3)37,37,102
   37 NWN(JK,IK)=IFELD(IW)
      GO TO 36
  102 CONTINUE
      IN=ITYP(2,K)
C
C     SCHLEIFE UEBER DIE NAMENSKOMBINATIONEN
C
      DO 103 IK=1,NK
      WRITE (IMA) (XWN(KK,IK),KK=1,IN)
      WRITE (IMA) NWN(IN+1,IK)
      ID=NWN(IN+2,IK)
      IW=NWN(IN+3,IK)
      IF(ID-IS)41,42,41
   41 IS=ID
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)
   42 IP=NWN(IN+1,IK)*IARFU
      IF(IP-ITTTT)47,47,57
   57 WRITE (NOUT,58) MAT(1,I),MAT(2,I)
   58 FORMAT(' ZAHL DER ARGUMENTE + WERTE GROESSER 40000 FUER',2I10)
      STOP5
   47 DO 54 N=1,IP
      DAT(N)=FELD(IW)
      IF(IW+1-NSZ)52,52,53
   53 IS=IS+1
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)
      IW=0
   52 IW=IW+1
   54 CONTINUE
      WRITE (IMA) (DAT(KK),KK=1,IP)
  103 CONTINUE
      GO TO 101
C
C     ES SIND KEINE WEITEREN NAMEN VORHANDEN
C
   31 WRITE (IMA)  IWP
      ID=ITYP(6,K)
      IW=ITYP(7,K)
      IF(ID-IS)64,65,64
   64 IS=ID
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)
   65 IP=IWP*IARFU
```

```
      IF(IP-ITTTT) 66,66,67                                             1590
   67 WRITE (NOUT,58) MAT(1,I),MAT(2,I)                                 1600
      STOP5                                                             1610
   66 DO 68 N=1,IP                                                      1620
      DAT(N)=FELD(IW)                                                   1630
      IF(IW+1-NSZ)75,75,76                                              1640
   76 IS=IS+1                                                           1650
      READ(LBN'IS)(FELD(KK),KK=1,NSZ)                                   1660
      IW=0                                                              1670
   75 IW=IW+1                                                           1680
   68 CONTINUE                                                          1690
      WRITE (IMA) (DAT(KK),KK=1,IP)                                     1700
  101 CONTINUE                                                          1710
      REWIND IMA                                                        1720
      RETURN                                                            1730
      END                                                               1740
```

```
      SUBROUTINE ORDTYP(ITYP,J)                                          10
      DIMENSION ITYP(7,1),NTYP(7,100),JTYP(100),XTYP(2,1)                20
      REAL*8 ATYP(100),TYP(100),STYP                                     30
      EQUIVALENCE (XTYP(1,1),TYP(1))                                     40
C                                                                        50
C        SORT TYPE-ADRESSTABLE IN ALPHABETIC ORDER.                      60
C                                                                        70
      IF(J.EQ.1) RETURN                                                  80
      READ(1'1) (IDUM,I=1,7),NT,IRTYC,IWTYC                              90
      IF(NT.LE.100) GOTO 2                                              100
      WRITE(6,602) NT                                                   110
  602 FORMAT(/10X,'TYPECONVERSION-TABLE EXCEEDS INCORE STORAGE.'/)       120
      STOP                                                              130
    2 K=IWTYC-1                                                         140
      READ(1'IRTYC) (IDUM,I=1,K),(XTYP(1,I),XTYP(2,I),JTYP(I),I=1,NT)   150
      DO 10 K=1,7                                                       160
   10 NTYP(K,1)=ITYP(K,1)                                               170
      DO 12 K=1,NT                                                      180
      IF(JTYP(K).NE.ITYP(1,1)) GOTO 12                                  190
      ATYP(1)=TYP(K)                                                    200
      GOTO 14                                                           210
   12 CONTINUE                                                          220
      WRITE(6,601) ITYP(1,1)                                            230
  601 FORMAT(/10X,'TYPE ',I10,'  NOT FOUND IN TYPECONVERSIONTABLE.'/)    240
      STOP                                                              250
   14 N=1                                                               260
      DO 100 I=2,J                                                      270
      DO 20 K=1,NT                                                      280
      IF(ITYP(1,I).NE.JTYP(K)) GOTO 20                                  290
      STYP=TYP(K)                                                       300
      GOTO 22                                                           310
   20 CONTINUE                                                          320
      WRITE(6,601) ITYP(1,I)                                            330
      STOP                                                              340
   22 DO 30 K=1,N                                                       350
      IF(STYP.LT.ATYP(K)) GOTO 30                                       360
      L=K                                                               370
      GOTO 32                                                           380
   30 CONTINUE                                                          390
      L=N+1                                                             400
      GOTO 40                                                           410
   32 K=N+1                                                             420
      DO 34 M=L,N                                                       430
      DO 36 M1=1,7                                                      440
   36 NTYP(M1,K)=NTYP(M1,K-1)                                           450
      ATYP(K)=ATYP(K-1)                                                 460
   34 K=K-1                                                             470
   40 DO 42 M=1,7                                                       480
   42 NTYP(M,L)=ITYP(M,I)                                               490
      ATYP(L)=STYP                                                      500
      N=N+1                                                             510
  100 CONTINUE                                                          520
      J=N                                                               530
      DO 200 I=1,J                                                      540
      DO 200 K=1,7                                                      550
  200 ITYP(K,I)=NTYP(K,I)                                               560
      RETURN                                                            570
      END                                                               580
```

```
      SUBROUTINE P01750                                                  10
C                                                                        20
C     KERNDATENVERWALTUNGSPROGRAMM                                       30
C                                                                        40
      REAL*8        FFEST(4)/5HADD  ,5HDROPA,5HDROPS,5HENDE /,           50
     1             MATNA(200),TYPN(100),F,IFE,IFEL                       60
     2,IKO(2,20)                                                         70
      DIMENSION ARG(10),WERT(20),NAM(10),          NUNA(200),            80
     1NUTY(100),NKO(2,20),IZKO(20)                                       90
     2,FELD(2000),IFELD(2000)                                           100
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUT,NF                       110
      EQUIVALENCE (FELD(1),IFELD(1))                                    120
     2,(ARG(1),F),(ARG(3),IFE),(ARG(5),IFEL)                            130
      READ (NF) IAU,IBA,NNKO                                            140
      CALL ZEIT(NDTUM)                                                  150
      IF(NNKO)126,126,127                                               160
  127 READ (NF)((IKO(I,J),I=1,2),IZKO(J),J=1,NNKO)                      170
      DO 80 J=1,NNKO                                                    180
      DO 81 K=1,NZM                                                     190
      IF(IKO(1,J).EQ.MATNA(K))  GO TO 82                                200
   81 CONTINUE                                                          210
      WRITE (NOUT,83) IKO(1,J)                                          220
   83 FORMAT(' DAS MATERIAL',A10,' IST NICHT IN DER NAMENZUORDNUNGSTABEL 230
     1LE ENTHALTEN')                                                    240
      STOP5                                                             250
   82 NKO(1,J)=NUNA(K)                                                  260
      DO 84 K=1,NZT                                                     270
      IF(IKO(2,J).EQ.TYPN(K))  GO TO 85                                 280
```

```
   84 CONTINUE                                                          290
      WRITE (NOUT,86) IKO(2,J)                                          300
   86 FORMAT(' DER TYP',A8,' IST NICHT IN DER NAMENZUORDNUNGSTABELLE ENT 310
     1HALTEN')                                                          320
      STOP5                                                             330
   85 NKO(2,J)=NUTY(K)                                                  340
   80 CONTINUE                                                          350
  126 IAD=0                                                             360
      IDA=0                                                             370
      IDS=0                                                             380
      IF (IAU) 1,1,2                                                    390
    2 IL=NF                                                             400
    3 READ (IL) ND,(FELD(I),I=1,ND)                                     410
      ARG(1)=FELD(1)                                                    420
      ARG(2)=FELD(2)                                                    430
      ARG(3)=FELD(4)                                                    440
      ARG(4)=FELD(5)                                                    450
      ARG(5)=FELD(6)                                                    460
      ARG(6)=FELD(7)                                                    470
      IF(ND.LE.2000) GO TO 100                                          480
      WRITE (NOUT,500) ND                                               490
  500 FORMAT(1H ,'EINGABESATZ ENTHAELT',I5,' WORTE')                    500
      STOP5                                                             510
  100 DO 4 I=1,4                                                        520
      IF(F       .EQ.FFEST(I)) GO TO (5,6,7,1),I                        530
    4 CONTINUE                                                          540
      WRITE (NOUT,8) F                                                  550
    8 FORMAT(1H ,A6,' UNERLAUBTER BLOCKNAME')                           560
      STOP5                                                             570
C                                                                       580
    5 IF(IAD) 9,9,10                                                    590
    9 REWIND 9                                                          600
   10 NNAM=IFELD(3)                                                     610
      IF(NNAM-10)11,11,12                                               620
   12 WRITE(NOUT,13)NNAM                                                630
   13 FORMAT(1H ,'ZAHL DER NAMEN =',I4)                                 640
      STOP5                                                             650
   11 DO 14 I=1,NNAM                                                    660
      GO TO (103,104,105,105,105,105,105,105,105,105),I                 670
  103 DO 106 J=1,NZM                                                    680
      IF(IFE       .EQ.MATNA(J)) GO TO 107                              690
  106 CONTINUE                                                          700
      WRITE (NOUT,108) IFE                                              710
  108 FORMAT(1H ,'DER MATERIALNAME ',A8,' STEHT NICHT IN DER UMRECHNUNGS S 720
     1TABELLE')                                                         730
      STOP5                                                             740
  107 NAM(I)=NUNA(J)                                                    750
      GO TO 14                                                          760
  104 DO 109 J=1,NZT                                                    770
      IF(IFEL      .EQ.TYPN(J)) GO TO 110                               780
  109 CONTINUE                                                          790
      WRITE (NOUT,111) IFEL                                             800
  111 FORMAT (1H ,'DER TYPNAME ',A8,' STEHT NICHT IN DER UMRECHNUNGSTABE 810
     1LLE')                                                             820
      STOP5                                                             830
  110 NAM(I)=NUTY(J)                                                    840
      GO TO 14                                                          850
  105 NAM(I)=IFELD(I+5)                                                 860
   14 CONTINUE                                                          870
      NARG=IFELD(NNAM+6)                                                880
      IF(NARG-10)15,15,16                                               890
   16 WRITE (NOUT,17) NARG                                              900
   17 FORMAT(1H ,'ZAHL DER ARGUMENTE =',I4)                             910
      STOP5                                                             920
   15 NWERT=IFELD(NNAM+7)                                               930
      IF(NWERT-20)18,18,19                                              940
   19 WRITE (NOUT,20) NWERT                                             950
   20 FORMAT(1H ,'ZAHL DER WERTE =',I4)                                 960
      STOP5                                                             970
   18 NWE=NNAM+7                                                        980
   21 NAA=NWE+1                                                         990
      NAE=NWE+NARG                                                     1000
      IF(NARG.EQ.0)  NAE=NAE+1                                         1010
      J=0                                                              1020
      DO 22 I=NAA,NAE                                                  1030
      J=J+1                                                            1040
   22 ARG(J)=FELD(I)                                                   1050
      NWA=NAE+1                                                        1060
      NWE=NAE+NWERT                                                    1070
      J=0                                                              1080
      DO 24 I=NWA,NWE                                                  1090
      J=J+1                                                            1100
   24 WERT(J)=FELD(I)                                                  1110
      WRITE (9) NNAM,(NAM(I),I=1,NNAM),NARG,NWERT,(ARG(I),I=1,NARG),   1120
     1(WERT(I),I=1,NWERT)                                              1130
      IAD=IAD+1                                                        1140
      IF(NWE-ND) 21,3,23                                               1150
   23 WRITE (NOUT,25) (NAM(I),I=1,2)                                   1160
   25 FORMAT(1H ,2I8,' ZAHL DER DATEN FEHLERHAFT')                     1170
      STOP5                                                            1180
C                                                                      1190
    6 IF(IDA) 26,26,27                                                 1200
   26 REWIND 10                                                        1210
   27 NWE=0                                                            1220
      IA=0                                                             1230
      GO TO 327                                                        1240
   31 NWE=NWE+NNAM+1                                                   1250
      IFELD(3)=IFELD(NWE+IA+3)                                         1260
      IF(IFELD(3)-2)523,524,524                                        1270
  523 IE=IFELD(3)+1                                                    1280
      GO TO 525                                                        1290
  524 IE=IFELD(3)+2                                                    1300
  525 DO 526 I=1,IE                                                    1310
  526 IFELD(I+3)=IFELD(NWE+IA+I+3)                                     1320
      DO 527 I=1,4                                                     1330
  527 ARG(I+2)=FELD(I+3)                                               1340
  327 NNAM=IFELD(3)                                                    1350
      IF(NNAM-10)28,28,12                                              1360
   28 J=0                                                              1370
      DO 29 I=1,NNAM                                                   1380
```

```
      GO TO (112,113,114,114,114,114,114,114,114,114),I
  112 DO 115 K=1,NZM
      IF(IFE    .EQ.MATNA(K)) GO TO 116
  115 CONTINUE
      WRITE (NOUT,108) IFE
      STOP5
  116 J=J+1
      NAM(J)=NUNA(K)
      GO TO 29
  113 DO 117 K=1,NZT
      IF(IFEL   .EQ.TYPN(K)) GO TO 118
  117 CONTINUE
      WRITE(NOUT,111) IFEL
      STOP5
  118 J=J+1
      NAM(J)=NUTY(K)
      GO TO 29
  114 J=J+1
      NAM(J)=IFELD(I+5)
   29 CONTINUE
      WRITE(10) NNAM,(NAM(I),I=1,NNAM)
      IDA=IDA+1
      IF(NNAM-2)520,521,521
  520 IA=IA+1
      GO TO 522
  521 IA=IA+2
  522 IF(NWE+NNAM+IA+3-ND)31,3,23
C
    7 IF(IDS) 30,30,32
   30 REWIND 11
   32 NNAM=IFELD(3)
      IF(NNAM-10)33,33,12
   33 DO 34 I=1,NNAM
      GO TO (119,120,121,121,121,121,121,121,121,121),I
  119 DO 122 J=1,NZM
      IF(IFE      .EQ.MATNA(J)) GO TO 123
  122 CONTINUE
      WRITE (NOUT,108) IFE
      STOP5
  123 NAM(I)=NUNA(J)
      GO TO 34
  120 DO 124 J=1,NZT
      IF(IFEL     .EQ.TYPN(J)) GO TO 125
  124 CONTINUE
      WRITE(NOUT,111) IFEL
      STOP5
  125 NAM(I)=NUTY(J)
      GO TO 34
  121 NAM(I)=IFELD(I+5)
   34 CONTINUE
      NARG=IFELD(NNAM+6)
      IF(NARG-10)35,35,16
   35 NWE=NNAM+6
   37 NWA=NWE+1
      NWE=NWE+NARG
      J=0                                                              1940
      DO 36 I=NWA,NWE                                                  1950
      J=J+1                                                            1960
   36 ARG(J)=FELD(I)                                                   1970
      WRITE (11) NNAM,(NAM(I),I=1,NNAM),NARG,(ARG(I),I=1,NARG)         1980
      IDS=IDS+1                                                        1990
      IF(NWE-ND) 37,3,23                                               2000
C                                                                      2010
    1 IF(IBA) 38,38,39                                                 2020
   39 IL=13                                                            2030
      IBA=0                                                            2040
      GO TO 3                                                          2050
   38 IF(IAD)40,40,41                                                  2060
   41 REWIND 9                                                         2070
   40 IF(IDA)42,42,43                                                  2080
   43 REWIND 10                                                        2090
   42 IF(IDS)44,44,45                                                  2100
   45 REWIND 11                                                        2110
   44 REWIND 2                                                         2120
      REWIND 12                                                        2130
      CALL KOMT(NDTUM)                                                 2140
      CALL KEDAK (IAD,IDS,IDA,NNKO,NKO,IZKO,NDTUM)                     2150
      RETURN                                                           2160
      END                                                              2170
      SUBROUTINE KOMT (NDTUM)                                            10
      REAL*8 Z(300)                                                      20
      COMMON Z,ZZ(302),NOUT                                              30
      WRITE (NOUT,1) NDTUM                                               40
    1 FORMAT(1H1,10X,'SUMMARY OF THE KARLSRUHE NUCLEAR DATA FILE',I10/)  50
      WRITE(NOUT,2)                                                      60
    2 FORMAT(                                                            70
     X' COMMENT  1'                                                //   80
     X' NEUTRON CROSS SECTIONS AND RELATED DATA'                   //   90
     X' THE LAY-OUT OF DATA-RECORDS IS AS FOLLOWS'                  /   100
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                        /   110
     X' 2ND NAME IS THE NAME OF THE CROSS SECTION'                  /   120
     X' 3RD NAME IS THE ENERGY (GIVEN IN MEV) OF THE RESIDUAL NUCLEUS' /  130
     X'      LEVEL FOR INELASTIC EXCITATION (FOR TYPE SGIZ ONLY)'   /   140
     X' THE ARGUMENT IS THE VALUE OF ENERGY. THIS IS GIVEN IN EV'   /   150
     X' THE DATAWORD IS THE VALUE OF THE CROSS SECTION. THIS IS GIVEN' /  160
     X'      IN BARN'                                              //   170
     X' THE FOLLOWING TABLE SHOWS THE MEANING OF THE NAMES OF THE'  /   180
     X'      CROSS SECTIONS'                                       //   190
     X'      SGN     ELASTIC SCATTERING'                           /   200
     X'      SGI     TOTAL INELASTIC SCATTERING'                   /   210
     X'      SGIZ    INELASTIC SCATTERING OF LEVEL DEFINED BY 3RD NAME'  /  220
     X'      SGIZC   CONTINUUM PART OF THE INELASTIC SCATTERING '  /   230
     X'              IN THE DISCRETE REGION'                       /   240
     X'      SGG     RADIATIVE CAPTURE'                            )   250
      WRITE (NOUT,3)                                                   260
    3 FORMAT(                                                          270
```

```
     X'      SGF     FISSION'                                                /  280
     X'      SG2N    (N,2N) PROCESS'                                         /  290
     X'      SGALP   (N,ALPHA) PROCESS'                                      /  300
     X'      SGP     (N,P) PROCESS'                                          /  310
     X'      SGT     TOTAL'                                                  /  320
     X'      SGTR    TRANSPORT'                                              /  330
     X'      SGA     ABSORPTION          SGA=SGG+SGF+SGP+SGALP+SGD+SGH3'     /  340
     X'                                  +SGHE3+SG2HE'                       /  350
     X'      SGX     NON ELASTIC         SGX=SGT - SGN'                      /  360
     X'      MUEL    AVERAGE COSINE OF ELASTIC SCATTERING ANGLE'             /  370
     X'              IN LABOR SYSTEM'                                        /  380
     X'      CHIF    ENERGY DISTRIBUTION OF PROMPT FISSION NEUTRONS'         /  390
     X'      NUE     MEAN NUMBER OF SECONDARY NEUTRONS EMITTED PER'          /  400
     X'              FISSION'                                                )  410
      WRITE (NOUT,4)                                                            420
    4 FORMAT(                                                                   430
     X'      ETA     EFFECTIVE NUMBER OF SECONDARY NEUTRONS EMITTED'         /  440
     X'              PER NEUTRON ABSORPTION'                                 /  450
     X'      ALPHA   SGG / SGF'                                             //  460
     X' WHERE APPLICABLE THE FOLLOWING RELATIONS BETWEEN CROSS'              /  470
     X' SECTIONS HAVE BEEN CHECKED'                                          /  480
     X' ERRORS EXCEEDING 1 PERCENT HAVE BEEN CORRECTED EXCEPT FOR'           /  490
     X' SOME VALUES SHOWN IN A SEPARATE LIST'                               //  500
     X'      SGT    = SGN + SGG + SGF + SGI + SGP + SGALP + SG2N'            /  510
     X'               + SG3N + SGH3 + SGHE3 + SG2HE'                         /  520
     X'      SGI    = SUM(SGIZ) + SGIZC'                                     /  530
     X'      SGA    = SGG + SGF + SGP + SGALP + SGD + SGH3 + SGHE3'          /  540
     X'               + SG2HE'                                               /  550
     X'      SGTR   = SGT - MUEL * SGN'                                      /  560
     X'      SGX    = SGT - SGN'                                             /  570
     X'      ALPHA  = SGG / SGF'                                             /  580
     X'      ETA    = NUE / ( 1.+ ALPHA )'                                   /  590
     X'      INTEGRAL OVER CHIF(E) = 1.'                                    //)  600
      WRITE (NOUT,5)                                                            610
    5 FORMAT(                                                                   620
     X' COMMENT  2'                                                         //  630
     X' 1-6-70'                                                              /  640
     X' AVERAGE ENERGY INDEPENDENT STATISTICAL THEORY PARAMETERS'            //  650
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                        /  660
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                                 /  670
     X' 2ND NAME IS STD'                                                     /  680
     X' 1ST DATAWORD IS THE OBSERVED AVERAGE LEVEL DISTANCE'                 /  690
     X' 2ND DATAWORD IS THE PARAMETER A OF THE STATISTICAL THEORY'           /  700
     X' 3RD DATAWORD IS THE PARAMETER 2*SIGMA**2 OF THE STAT. THEORY'//)     /  710
      WRITE (NOUT,6)                                                            720
    6 FORMAT(                                                                   730
     X' COMMENT  3'                                                         //  740
     X' 1-6-70'                                                              /  750
     X' AVERAGE ENERGY DEPENDENT RESONANCE PARAMETERS'                       /  760
     X' DRESNER FACTORS COMPUTED BY KARLSRUHE PROGRAM 01741'                //  770
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                        /  780
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                                 /  790
     X' 2ND NAME IS STGF'                                                    /  800
     X' 1ST ARGUMENT IS THE ENERGY'                                          /  810
     X' 2ND ARGUMENT IS THE NEUTRON ORBITAL ANGULAR MOMENTUM L'              /  820
     X' 3RD ARGUMENT IS THE TOTAL ANGULAR MOMENTUM OF THE COMPOUND'          /  830
     X'      NUCLEUS J'                                                      /  840
     X' 1ST DATAWORD IS NUE , THE DEGREE OF FREEDOM FOR THE FISSION'         /  850
     X'      WIDTH DISTRIBUTION'                                             /  860
     X' 2ND DATAWORD IS THE AVERAGE FISSION WIDTH'                           /  870
     X' 3RD DATAWORD IS THE AVERAGE RADIATION WIDTH'                         /  880
     X' 4TH DATAWORD IS THE AVERAGE NEUTRON WIDTH'                           /  890
     X' 5TH , 6TH , 7TH , 8TH DATAWORDS ARE THE DRESNERFACTORS'              /  900
     X'      SF , SG , RF , RG'                                             //) 910
      WRITE (NOUT,7)                                                            920
    7 FORMAT(                                                                   930
     X' COMMENT  4'                                                         //  940
     X' 1-6-70'                                                              /  950
     X' CHARACTERISTIC ISOTOPE DATA'                                        //  960
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                        /  970
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                                 /  980
     X' 2ND NAME IS ISOT1'                                                   /  990
     X' 1ST DATAWORD IS THE ATOMIC WEIGHT'                                   / 1000
     X' 2ND DATAWORD IS THE ATOMIC NUMBER'                                   / 1010
     X' 3RD DATAWORD IS THE GROUND-STATE SPIN I'                            // 1020
      WRITE (NOUT,8)                                                           1030
    8 FORMAT(                                                                  1040
     X' COMMENT  5'                                                         // 1050
     X' 1-6-70'                                                              / 1060
     X' CHARACTERISTIC ISOTOPE DATA'                                        // 1070
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                        / 1080
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                                 / 1090
     X' 2ND NAME IS ISOT2'                                                   / 1100
     X' 1ST DATAWORD IS THE ENERGY INDEPENDENT REDUCED NEUTRON'              / 1110
     X'      WAVE LENGTH'                                                    / 1120
     X' 2ND DATAWORD IS THE NUCLEAR RADIUS'                                  / 1130
     X' 3RD DATAWORD IS THE EFFECTIVE BINDING ENERGY OF THE LAST'            / 1140
     X'      NEUTRON IN COMPOUND NUCLEUS'                                   // 1150
      WRITE (NOUT,9)                                                           1160
    9 FORMAT(                                                                  1170
     X' COMMENT  6'                                                         // 1180
     X' 1-6-70'                                                              / 1190
     X' AVERAGE ENERGY INDEPENDENT RESONANCE PARAMETERS'                    // 1200
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                        / 1210
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                                 / 1220
     X' 2ND NAME IS ST'                                                      / 1230
     X' 1ST ARGUMENT IS THE NEUTRON ORBITAL ANGULAR MOMENTUM L'              / 1240
     X' 2ND ARGUMENT IS THE TOTAL ANGULAR MOMENTUM OF THE COMPOUND'          / 1250
     X'      NUCLEUS J'                                                      / 1260
     X' 1ST DATAWORD IS THE AVERAGE RADIATION WIDTH'                         / 1270
     X' 2ND DATAWORD IS THE AVERAGE LEVEL DISTANCE'                          / 1280
     X' 3RD DATAWORD IS THE AVERAGE REDUCED NEUTRON WIDTH'                   / 1290
     X' 4TH DATAWORD IS THE STRENGTH FUNCTION'                               / 1300
     X' 5TH DATAWORD IS THE NUMBER OF FISSION CHANNELS'                      / 1310
     X' 6TH DATAWORD IS THE NUMBER OF NEUTRON CHANNELS'                     // 1320
      WRITE (NOUT,10)                                                          1330
   10 FORMAT(                                                                  1340
     X' COMMENT  7'                                                         // 1350
     X' 1-6-70'                                                              / 1360
     X' RESOLVED RESONANCE PARAMETERS'                                      // 1370
```

```
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                    / 1380
     X' CALL ENERGIES ARE GIVEN IN EV)'                                  / 1390
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                             / 1400
     X' 2ND NAME IS RES'                                                 / 1410
     X' 1ST ARGUMENT IS THE ENERGY OF RESONANCE'                         / 1420
     X' 2ND ARGUMENT IS THE ORBITAL ANGULAR MOMENTUM'                    / 1430
     X' 3RD ARGUMENT IS THE SPIN OF COMPOUND NUCLEUS'                    / 1440
     X' 1ST DATAWORD IS THE STATISTICAL FACTOR GJ'                       / 1450
     X' 2ND DATAWORD IS THE TOTAL WIDTH'                                 / 1460
     X' 3RD DATAWORD IS THE NEUTRON WIDTH'                               / 1470
     X' 4TH DATAWORD IS THE RADIATION WIDTH'                             / 1480
     X' 5TH DATAWORD IS THE FISSION WIDTH'                               / 1490
     X' 6TH DATAWORD IS THE PROTON WIDTH'                                / 1500
     X' 7TH DATAWORD IS THE ALPHA WIDTH'                                 / 1510
     X' 8TH DATAWORD IS THE INELASTIC WIDTH'                            /) 1520
      WRITE (NOUT,11)                                                     1530
  11 FORMAT (                                                             1540
     X' UNKNOWN FUNCTION-VALUES ARE SET EQUAL TO ZERO'                   / 1550
     X' FURTHER INFORMATIONS ARE GIVEN IN KEDAK-NOTIZ NO. 3'            // 1560
      WRITE (NOUT,12)                                                     1570
  12 FORMAT(                                                              1580
     X' COMMENT  8'                                                     // 1590
     X' 1-6-70'                                                          / 1600
     X' PARAMETER OF THE CRANBERG-FISSION-SPECTRUM'                      / 1610
     X' CHI(E)=A*EXP(-B*E)*SINH(SQRT(C*E))'                             // 1620
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                    / 1630
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                             / 1640
     X' 2ND NAME IS CHICR'                                               / 1650
     X' ARGUMENT IS THE ENERGY'                                          / 1660
     X' 1ST DATAWORD IS A'                                               / 1670
     X' 2ND DATAWORD IS B'                                               / 1680
     X' 3RD DATAWORD IS C'                                              // 1690
      WRITE (NOUT,13)                                                     1700
  13 FORMAT(                                                              1710
     X' COMMENT  9'                                                     // 1720
     X' 1-6-70'                                                          / 1730
     X' POLYNOMIAL COEFFICIENTS FOR CALCULATION OF THE AVERAGE NUMBER'   / 1740
     X' NUE OF THE PROMPT FISSION NEUTRONS AS FUNCTION OF THE ENERGY'    / 1750
     X' NUE=NUE0+NUE1*E+NUE2*E**2+NUE3*E**3'                            // 1760
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                    / 1770
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                             / 1780
     X' 2ND NAME IS PLNUE'                                               / 1790
     X' 1ST DATAWORD IS NUE0'                                            / 1800
     X' 2ND DATAWORD IS NUE1'                                            / 1810
     X' 3RD DATAWORD IS NUE2'                                            / 1820
     X' 4TH DATAWORD IS NUE3'                                           // 1830
      WRITE (NOUT,14)                                                     1840
  14 FORMAT(                                                              1850
     X' COMMENT 10'                                                     // 1860
     X' 1-6-70'                                                          / 1870
     X' ISOTOPIC ABUNDANCES'                                            // 1880
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                    / 1890
     X' 1ST NAME IS THE NAME OF THE ELEMENT'                             / 1900
     X' 2ND NAME IS ISOT3'                                               / 1910
     X' ARGUMENT IS THE ATOMIC WEIGHT OF THE ISOTOPE'                    / 1920
     X' DATAWORD IS THE ABUNDANCE OF THE ISOTOPE'                       // 1930
      WRITE (NOUT,15)                                                     1940
  15 FORMAT(                                                              1950
     X' COMMENT 11'                                                     // 1960
     X' 1-6-70'                                                          / 1970
     X' ANGULAR DISTRIBUTIONS OF ELASTICALLY SCATTERED NEUTRONS'        // 1980
     X' THE LAY-OUT OF THE DATA-RECORD IS AS FOLLOWS'                    / 1990
     X' 1ST NAME IS THE NAME OF THE ISOTOPE'                             / 2000
     X' 2ND NAME IS SGNC'                                                / 2010
     X' 3RD NAME IS THE ENERGY OF THE INCIDENT NEUTRON IN THE'           / 2020
     X'      LABORATORY SYSTEM'                                          / 2030
     X' THE ARGUMENT IS THE COSINE OF THE SCATTERING ANGLE IN THE'       / 2040
     X'      CENTER-OF-MASS SYSTEM'                                      / 2050
     X' THE DATAWORD IS THE VALUE OF THE DIFFERENTIAL ELASTIC'           / 2060
     X'      SCATTERING CROSS SECTION IN BARN/STERADIAN'                //) 2070
      RETURN                                                              2080
      END                                                                 2090
```

```
      SUBROUTINE KEDAK (IAD,IDS,IDA,NNKO,NKO,IZKO,NOTUM)                  10
C                                                                         20
C     ERZEUGUNG DES NEUEN SEQUENTIELLEN KEDAK-FILES                       30
C                                                                         40
      REAL*8MATNA(200),TYPN(100),TM(100)                                  50
      DIMENSION           NUMA(200),          NUTY(100),NUNA(10),ARG(10)  60
     1,WERT(20),NAM(10),MAT(10),W(40000),AW(40000),MAK(100),IANAM(8),     70
     2NKO(2,20),IZKO(20),ITYN(100),IFELD(100)                             80
     3,XNAM(10),XMAT(10),XIANAM(8),XNUNA(10)                              90
     4,ITYA(10)                                                          100
      COMMON MATNA,TYPN,NUMA,NUTY,NZZM,NZT,NOUT                          110
      EQUIVALENCE (NAM(1),XNAM(1)) ,(MAT(1),XMAT(1)),(IANAM(1),XIANAM(1) 120
     1),(NUNA(1),XNUNA(1))                                               130
      DATA A/'ARG '/                                                     140
      CALL ESPIE                                                         150
      IDAW=40000                                                         160
      ITTTT=40000                                                        170
      READ (12) IN,IDAT,NZM                                              180
      NZMM=NZM                                                           190
      READ (12) (MAK(J),J=1,NZM)                                         200
      IF(IDA)401,401,400                                                 210
  400 DO 50 I=1,IDA                                                      220
      READ(10)NNAM,(NAM(L),L=1,NNAM)                                     230
      IF(NNAM.NE.1) GO TO 50                                             240
      DO 51 L=1,NZM                                                      250
      IF(NAM(1).EQ.MAK(L)) GO TO 52                                      260
   51 CONTINUE                                                           270
      WRITE(NOUT,53) NAM(1)                                              280
   53 FORMAT(1H ,'LOESCHTYP',I8,' NICHT AUF KEDAK ENTHALTEN')            290
      GO TO 4000                                                         300
   52 NZM=NZM-1                                                          310
      IF(L.GT.NZM) GO TO 50                                              320
      DO 54 K=L,NZM                                                      330
   54 MAK(K)=MAK(K+1)                                                    340
```

```
   50 CONTINUE
      REWIND 10
  401 IF(IAD)402,402,403
  403 DO 55 I=1,IAD
      READ(9)NNAM,(NAM(L),L=1,NNAM)
      DO 56 L=1,NZM
      IF(NAM(1).EQ.MAK(L)) GO TO 55
   56 CONTINUE
      NZM=NZM+1
      MAK(NZM)=NAM(1)
   55 CONTINUE
      REWIND 9
  402 WRITE(2) IA,NOTYM,NZM
      WRITE(2) (MAK(J),J=1,NZM)
C
C     SCHLEIFE UEBER DIE MATERIALIEN
C
      DO 300 JM=1,NZMM
      IZA=0
      ITYA(1)=9999999
      READ(12)MT,NT
      NTA=NT
      DO 57 J=1,NZM
      IF(MT.EQ.MAK(J)) GO TO 58
   57 CONTINUE
      L=1
      GOTO 59
   58 L=2
C
C     L=1  MATERIAL IST NICHT MEHR IN DER MATERIALLISTE ENTHALTEN
C
C     L=2  MATERIAL IST WEITERHIN AUF KEDAK ENTHALTEN
      M=0
      IF(IDA)59,59,405
  405 I1=0
  605 I1=I1+1
      READ (1),END=601 ) NNAM,(NAM(J),J=1,NNAM)
      IF(NAM(1).NE.MT) GO TO 60
      IF(NNAM.NE.2) GO TO 605
      M=M+1
      IFELD(M     )=NAM(2)
      GO TO 605
   60 DO 606 I=1,I1
  606 BACKSPACE10
C
   59 READ(12) (ITYN(K),K=1,NT)
      GO TO (68,69),L
   69 IF(M)70,70,71
   71 DO 72 K=1,M
      DO 73 J=1,NT
      IF(ITYN(J).EQ.IFELD(K     )) GO TO 74
   73 CONTINUE
      GOTO 72
   74 NT=NT-1
      IF(J.GT.NT) GO TO 72
      DO 75 N=J,NT
   75 ITYN(N)=ITYN(N+1)
   72 CONTINUE
   70 I=0
      NTI=NT
C
C     EINFUEGEN NEUER TYPNAMEN
C
      IF(IAD)406,406,407
  407 I1=0
  401 I1=I1+1
      READ (9,END=307) NNAM,(NAM(J),J=1,NNAM)
      IF(NAM(1).NE.MT)  GO TO 307
      IF(I.EQ.NAM(2))  GO TO 601
      I=NAM(2)
      DO 308 IA=1,NT
      IF(ITYN(IA).EQ.NAM(2))  GO TO 601
  308 CONTINUE
      DO 702 N=1,NT
      DO 701 J=1,NZT
      IF(ITYN(N).EQ.NUTY(J))  GO TO 700
  701 CONTINUE
  700 TM(N)=TYPN(J)
      DO 702 J=1,NZT
      IF(NAM(2).EQ.NUTY(J))  GO TO 703
  702 CONTINUE
      WRITE (NOUT,704) NAM(1),NAM(2)
  704 FORMAT(' BLOCK ADD ZU DEM MATERIAL',I9,' IST DER TYP',I8,
     1' HINZUZUFUEGEN, DER IN DER''Z'' UMRECHNUNGSTABELLE NICHT VORGESEHE'
     2'N IST')
      GO TO 4000
  703 DO 705 N=1,NT
      IF(TYPN(J).GT.TM(N))  GO TO 706
  705 CONTINUE
  706 DO 707 I3=N,NT
      I2=NT +N+1-I3
  707 ITYN(I2)=ITYN(I2-1)
      ITYN(N)=NAM(2)
      NT=NT+1
      IF(M.EQ.0)  GO TO 601
      DO 3003 J=1,M
      IF(NAM(2).EQ.IFELD(J))  GO TO 3004
 3003 CONTINUE
      GO TO 601
 3004 IZA=IZA+1
      IF(IZA.LT.10)  GO TO 3001
      WRITE (NOUT,3002) NAM(1)
 3002 FORMAT(' DAS MATERIAL',I8,' ENTHAELT IN DER EINGABE MEHR ALS 9 TYP
     1EN, DIE ZUERST GELOESCHT UND DANN NEU AUFGENOMMEN WERDEN SOLLEN')
      GO TO 4000
 3001 ITYA(IZA)=NAM(2)
      GO TO 601
  307 DO 600 J=1,I1
  600 BACKSPACE 9
  406 WRITE (2) MT,NT
      WRITE(2) (ITYN(K),K=1,NT)
```

```
      IZZA=1                                                            1460
      ITYA(IZZA+1)=9999999                                              1470
C                                                                       1480
C     SCHLEIFE UEBER ALLE TYPEN                                         1490
C                                                                       1500
   68 NTY=0                                                             1510
      DO 82 JT=1,NTA                                                    1520
  301 READ (12) MAT(1),MAT(2),NWN,NAR,NWE,NKOMB                         1530
  585 NTY=NTY+1                                                         1540
      NN=NWN+2                                                          1550
      GO TO (85,91),L                                                   1560
   91 IF(NTY.GT.NT)  GO TO 92                                           1570
      IF(MAT(2).EQ.ITYN(NTY).AND.ITYA(IZZA).EQ.MAT(2))  GO TO 3005      1580
      IF(MAT(2).EQ.ITYN(NTY))  GO TO 84                                 1590
   92 ITA=2                                                             1600
      DO 83 I=1,NT                                                      1610
      IF(MAT(2).EQ.ITYN(I))  GO TO 584                                  1620
   83 CONTINUE                                                          1630
      ITA=1                                                             1640
      NTY=NTY-1                                                         1650
 3006 READ (10) NNAM,(NAM(I),I=1,NNAM)                                  1660
      IF(MAT(1).NE.NAM(1))  GO TO 720                                   1670
      IF(MAT(2).NE.NAM(2))  GO TO 720                                   1680
      GO TO (85,85,3007),ITA                                            1690
  720 WRITE (NOUT,721) MAT(1),MAT(2)                                    1700
  721 FORMAT(' BLOCK DROPA SATZ',2I8,' SOLL GELOESCHT WERDEN, ER IST ABE 1710
     1R NICHT IN DER KORREKTEN REIHENFOLGE IN DROPA SORTIERT')          1720
      GO TO 4000                                                        1730
 3005 ITA=3                                                             1740
      IZZA=IZZA+1                                                       1750
      GO TO 3006                                                        1760
 3007 DO 3008 INN=1,NKOMB                                               1770
      IF(NWN.GT.0) READ (12) (MAT(I),I=3,NN)                            1780
      READ (12) IDST                                                    1790
      IE=IDST*(NAR+NWE)                                                 1800
 3008 READ (12) (W(I),I=1,IE)                                           1810
C                                                                       1820
C     EINFUEGEN EINES NEUEN TYPS                                        1830
C                                                                       1840
  584 IF(IAD)622,622,623                                                1850
  622 WRITE (NOUT,624) MAT(1)                                           1860
  624 FORMAT(' ES SOLL FUER DAS MATERIAL',I8,' EIN TYP EINGEFUEGT WERDEN 1870
     6, DER NICHT VORHANDEN IST')                                       1880
      GO TO 4000                                                        1890
  623 READ (9) NNAM,(NAM(J),J=1,NNAM),NARG,NWERT,(ARG(J),J=1,NARG),     1900
     1(WERT(J),J=1,NWERT)                                               1910
      IF(NAM(1) .NE.MAT(1))  GO TO 586                                  1920
      IF(NAM(2).EQ.ITYN(NTY))  GO TO 587                                1930
  586 WRITE (NOUT,588) NAM(1),ITYN(NTY),NAM(2)                          1940
  588 FORMAT(' FUER DAS MATERIAL',I8,' SOLL STATT DES TYPS',I3,         1950
     1' DER TYP',I8,' EINSORTIERT WERDEN')                              1960
      GO TO 4000                                                        1970
  587 IF(NNAM.EQ.2)  GO TO 589                                          1980
      IF(NNKO)590,590,591                                               1990
  590 WRITE (NOUT,592)NAM(1),NAM(2)                                     2000
  592 FORMAT(' DER NEUHINZUZUFUEGENDE SATZ',2I8,' HAT NAMENSKOMBINATIONE 2010
     1N , DEREN ANZAHL IN DER/' AEUSSEREN EINGABE NICHT SPEZIFIZIERT W  2020
     2URDE')                                                            2030
      GO TO 4000                                                        2040
  591 DO 593 I=1,NNKO                                                   2050
      DO 594 J=1,2                                                      2060
      IF(NKO(J,I).NE.NAM(J))  GO TO 593                                 2070
  594 CONTINUE                                                          2080
      NKB=IZKO(I)                                                       2090
      GO TO 595                                                         2100
  593 CONTINUE                                                          2110
      GO TO 590                                                         2120
  589 NKB=0                                                             2130
  595 NWNN=NNAM-2                                                       2140
      WRITE (2) NAM(1),NAM(2),NWNN,NARG,NWERT,NKB                       2150
      IF(NNAM.EQ.2)   GO TO 596                                         2160
  607 WRITE (2) (NAM(I),I=3,NNAM)                                       2170
  596 IAW=1                                                             2180
      INS=0                                                             2190
  603 IF(ARG(1).EQ.A)  GO TO 597                                        2200
      DO 598 J=1,NARG                                                   2210
      AW(IAW)=ARG(J)                                                    2220
  598 IAW=IAW+1                                                         2230
  597 DO 599 J=1,NWERT                                                  2240
      AW(IAW)=WERT(J)                                                   2250
  599 IAW=IAW+1                                                         2260
      INS=INS+1                                                         2270
      READ (9,END=800)NNA ,(NUNA(J),J=1,NNA ),NARGU,NWERTE,(ARG(J),     2280
     1J=1,NARGU),(WERT(J),J=1,NWERTE)                                   2290
      DO 801 J=1,NNAM                                                   2300
      IF(NAM(J).NE.NUNA(J))  GO TO 602                                  2310
  801 CONTINUE                                                          2320
      IF(NWERTE.NE.NWERT)  GO TO 155                                    2330
      IF(NARGU.EQ.1)  GO TO 603                                         2340
      IF(NARGU.NE.NARG)  GO TO 154                                      2350
      GO TO 603                                                         2360
  800 IAD=0                                                             2370
      IA=IAW-1                                                          2380
      GO TO 604                                                         2390
  602 IA=IAW-1                                                          2400
      BACKSPACE 9                                                       2410
  604 IF(IA-IDAW)805,805,159                                            2420
  805 IF(NARG)805,806,608                                               2430
  806 IF(IA.EQ.NWERT)  GO TO 608                                        2440
      WRITE (NOUT,186) (NAM(J),J=1,NNAM)                                2450
      GO TO 4000                                                        2460
  608 IDST=IA/(NARG+NWERT)                                              2470
      IF((NARG+NWERT)*IDST-IA)609,610,609                               2480
  609 WRITE (NOUT,265) IA,NARG,NWERT,(NAM(J),J=1,NNAM)                  2490
      GO TO 4000                                                        2500
  610 WRITE (2) IDST                                                    2510
      IDEL=0                                                            2520
      IEX=0                                                             2530
      CALL PRINT(IDST,IDEL,INS,IEX,NNAM,NAM)                            2540
      IF(IDST.GE.1)  GO TO 2052                                         2550
```

```
      WRITE (NOUT,2051)                                                 2560
 2051 FORMAT(' ANZAHL DER DATENSAETZE =0 , STATT DROBS MUSS D30PA VERWEN 2570
     1DET WERDEN')                                                      2580
      GO TO 4000                                                        2590
 2052 WRITE (2) (AW(J),J=1,IA)                                          2600
      IF(NNAM.EQ.2)  GO TO (585,585,3021,3021),ITA                      2610
      IF(IAD)3022,3022,619                                              2620
 3022 IF(ITA-4)585,3021,3021                                            2630
  619 READ(9)NNAM,(NUNA(J),J=1,NNAM),NAGRU,NWERTE,(ARG(J),J=1,NAGRU),   2640
     1(WERT(J),J=1,NWERTE)                                              2650
      DO 621 J=1,2                                                      2660
      IF(NUNA(J).EQ.NAM(J))  GO TO 621                                  2670
      BACKSPACE 9                                                       2680
      GO TO (585,585,3021,3021),ITA                                     2690
  621 CONTINUE                                                          2700
      DO 3009 I=1,NNAM                                                  2710
 3009 NAM(I)=NUNA(I)                                                    2720
      GO TO 607                                                         2730
   84 ITA=2                                                             2740
C                                                                       2750
C     ITA=1  TYP IST NICHT MEHR IN TYPENLISTE ENTHALTEN                 2760
C     ITA=2  TYP IST WEITERHIN IN TYPENLISTE ENTHALTEN                  2770
C     ITA=3  TYP WIRD VOLLSTAENDIG ERSETZT                              2780
C     ITA=4  TYP WIRD ALS LETZTER HINTEN ANGEFUEGT                      2790
C                                                                       2800
      IF(NNKO)88,88,89                                                  2810
   89 DO 86 I=1,NNKO                                                    2820
      DO 97 J=1,2                                                       2830
      IF(NKO(J,I).NE.MAT(J))  GO TO 86                                  2840
   87 CONTINUE                                                          2850
      NKB=NKOMB+IZKO(I)                                                 2860
      GO TO 90                                                          2870
   86 CONTINUE                                                          2880
   88 NKB=NKOMB                                                         2890
   90 KD=0                                                              2900
      IF(IDA)403,408,409                                                2910
  409 READ (10,END=305) NNAM,(NAM(J),J=1,NNAM)                          2920
      IF(NNAM.NE.NN) GO TO 304                                          2930
      DO 132 J=1,2                                                      2940
      IF(NAM(J).NE.MAT(J)) GO TO 304                                    2950
  132 CONTINUE                                                          2960
      KD=KD+1                                                           2970
      GO TO 409                                                         2980
  304 IF(KD.EQ.0)  GO TO 137                                            2990
  316 DO 313 J=1,KD                                                     3000
  313 BACKSPACE 10                                                      3010
      GO TO 137                                                         3020
  305 IF(KD.NE.0)  GO TO 316                                            3030
      IDA=0                                                             3040
      GO TO 408                                                         3050
  137 BACKSPACE 10                                                      3060
      NKB=NKB-KD                                                        3070
  408 WRITE(2) MAT(1),MAT(2),NWN,NAR,NWF,NKB                            3080
C                                                                       3090
C     SCHLEIFE UEBER ALLE NAMENSKOMBINATIONEN                           3100
C                                                                       3110
   85 IAUS=0                                                            3120
      DO 242 INN=1,NKOMB                                                3130
      LK=2                                                              3140
      IXA=0                                                             3150
      MIK=0                                                             3160
      IA=0                                                              3170
      GO TO (413,411),L                                                 3180
  411 GO TO (413,412),ITA                                               3190
  413 IF(NWN)190,190,93                                                 3200
  412 IF(NWN)80,80,93                                                   3210
C                                                                       3220
C     LESEN DER WEITEREN NAMEN                                          3230
C                                                                       3240
   93 IF(INN.GT.1)  GO TO 415                                           3250
      DO 416 K=1,NWN                                                    3260
  416 MAT(K+2)=0.                                                       3270
  415 DO 414 K=1,NWN                                                    3280
  414 NANAM(K)=MAT(K+2)                                                 3290
      IE=NWN+2                                                          3300
      READ(12) (MAT(I),I=3,IE)                                          3310
      IA=0                                                              3320
      GO TO (190,99),L                                                  3330
   99 GO TO (190,128),ITA                                               3340
  128 IF(IAD)928,928,929                                                3350
  929 READ(9,END=934) NNAM,(NAM(J),J=1,NNAM),NARG,NWERT,(ARG(J),J=1,NARG 3360
     1),(WERT(J),J=1,NWERT)                                             3370
      DO 930 J=1,2                                                      3380
      IF(NAM(J).NE.MAT(J))  GO TO 931                                   3390
  930 CONTINUE                                                          3400
      DO 932 J=3,NNAM                                                   3410
      IF(    ((XNAM(J)-XMAT(J))/XNAM(J))-5.E-6)935,935,931              3420
  935 IF(    ((XNAM(J)-XMAT(J))/XNAM(J))+5.E-6)980,980,932              3430
  932 CONTINUE                                                          3440
      GO TO 931                                                         3450
  980 NK=2                                                              3460
      GO TO 933                                                         3470
  934 IAD=0                                                             3480
  931 BACKSPACE 9                                                       3490
  928 IF(IAUS.EQ.1)  GO TO 3021                                         3500
      NK=1                                                              3510
      IF(KD)138,138,135                                                 3520
  135 READ (10,END=328) NNAM,(NAM(J),J=1,NNAM)                          3530
      DO 134 J=1,NN                                                     3540
      IF(J.GT.2)  GO TO 653                                             3550
      IF(NAM(J).NE.MAT(J)) GO TO 133                                    3560
      GO TO 134                                                         3570
  653 IF(    ((XNAM(J)-XMAT(J))/XNAM(J))-5.E-6)654,654,133              3580
  654 IF(    ((XNAM(J)-XMAT(J))/XNAM(J))+5.E-6)133,133,134              3590
  134 CONTINUE                                                          3600
      IF(NNAM.NE.NN)  GO TO 133                                         3610
      LK=1                                                              3620
      KD=KD-1                                                           3630
      GO TO 190                                                         3640
  328 IDA=0                                                             3650
      GO TO 80                                                          3660
```

```
  133 BACKSPACE 10                                                        3670
C                                                                         3680
C     SUCHEN DER HINZUZUFUEGENDEN SAETZE                                  3690
C                                                                         3700
    80 IA=0                                                               3710
  138 IF(IAD)203,203,410                                                  3720
  410 READ (9,END=503)NNAM,(NAM(J),J=1,NNAM),NARG,NWERT,(ARG(J),J=1,NARG  3730
     1),(WERT(J),J=1,NWERT)                                               3740
      DO 140 J=1,2                                                        3750
      IF(MAT(J).NE.NAM(J))  GO TO 309                                     3760
  140 CONTINUE                                                            3770
  933 IF(NNAM.NE.NN)  GO TO 310                                           3780
      IF(NARG.NE.NAR) GO TO 145                                           3790
      IF(NWERT.EQ.NWE) GO TO 146                                          3800
  155 WRITE(NOUT,147) NWERT,NWE,(NAM(J),J=1,NNAM)                         3810
  147 FORMAT(' BLOCK ADD ZAHL DER WERTE',I4,' ZAHL DER WERTE AUF KEDAK',  3820
     1I4/' FUER DIE NAMEN',2I8,6E16.8)                                    3830
      GO TO 4000                                                          3840
  145 IF(NARG.NE.1) GO TO 154                                             3850
      IF(ARG(1).EQ.A) GO TO 146                                           3860
  154 WRITE (NOUT,148) NARG,NAR,(NAM(J),J=1,NNAM)                         3870
  148 FORMAT(' BLOCK ADD ZAHL DER ARGUMENTE',I4,' ZAHL DER ARGUMENTE AUF  3880
     1 KEDAK',I4/' FUER DIE NAMEN',2I8,6E16.8)                            3890
      GO TO 4000                                                          3900
  310 WRITE (NOUT,311) NNAM,NN,(MAT(J),J=1,NN)                            3910
  311 FORMAT(' BLOCK ADD ZAHL DER NAMEN',I4,' ZAHL DER NAMEN AUF KEDAK ', 3920
     1,I4/' FUER DIE NAMEN',2I8,6E16.8)                                   3930
      GO TO 4000                                                          3940
  309 BACKSPACE 9                                                         3950
      GO TO 203                                                           3960
C                                                                         3970
  146 IF(NN.EQ.2) GO TO 143                                               3980
      DO 141 J=3,NN                                                       3990
      IF(   ((XNAM(J)-XIANAM(J-2))/XNAM(J))-5.E-6)689,689,687             4000
  689 IF(NN.EQ.3)  GO TO 510                                              4010
      IF(NN.GT.3.AND.(XNAM(J)-XIANAM(J-2))/XNAM(J)-5.E-6.LT.0.            4020
     1          .AND.((XNAM(J)-XIANAM(J-2))/XNAM(J)+5.E-6.GT.0.)         4030
     2GO TO 687                                                           4040
      GO TO 510                                                           4050
  687 IF(   ((XMAT(J)-XNAM(J))/XMAT(J))+5.E-6)530,530,688                 4060
  688 IF(   ((XMAT(J)-XNAM(J))/XMAT(J))-5.E-6)141,141,241                 4070
  141 CONTINUE                                                            4080
      GO TO 143                                                           4090
  530 BACKSPACE 9                                                         4100
      GO TO 142                                                           4110
  510 WRITE (NOUT,511) J,NAM(J),IANAM(J-2),(NAM(KV),KV=1,NNAM)            4120
  511 FORMAT(' BLOCK ADD DER',I3,' -TE NAME',E15.3,' STEHT HINTER',       4130
     1E15.8/' FUER DIE NAMEN',2I8,6E16.8)                                 4140
      GO TO 4000                                                          4150
C                                                                         4160
C     EINFUEGEN BZW KORRIGIEREN DER DATEN                                 4170
C                                                                         4180
  241 WRITE (2) (NAM(J),J=3,NNAM)                                         4190
      MIK=1                                                               4200
      IXA=1                                                               4210
      IAW=1                                                               4220
      INS=0                                                               4230
  157 IF(ARG(1).EQ.A) GO TO 151                                           4240
      DO 149 J=1,NARG                                                     4250
      AW(IAW)=ARG(J)                                                      4260
  149 IAW=IAW+1                                                           4270
  151 DO 150 J=1,NWERT                                                    4280
      AW(IAW)=WERT(J)                                                     4290
  150 IAW=IAW+1                                                           4300
      INS=INS+1                                                           4310
      READ(9,END=452)NNAM,(NUNA(J),J=1,NNAM),NARG,NWERT,(ARG(J),J=1,NARG  4320
     1),(WERT(J),J=1,NWERT)                                               4330
      DO 153 J=1,NNAM                                                     4340
  153 IF(NAM(J).NE.NUNA(J)) GO TO 152                                     4350
      IF(NNAM.NE.NN)  GO TO 310                                           4360
      IF(NWERT.NE.NWE) GO TO 155                                          4370
      IF(NARG.EQ.1) GO TO 157                                             4380
      IF(NARG.NE.NAR) GO TO 154                                           4390
      GO TO 157                                                           4400
  452 IAD=0                                                               4410
  152 IA=IAW-1                                                            4420
      BACKSPACE 9                                                         4430
      IF(IAW-IDAW) 153,158,159                                            4440
  159 WRITE (NOUT,160) IA,IDAW,(NAM(J),J=1,NNAM)                          4450
  160 FORMAT(' ZAHL DER HINZUZUFUEGENDEN ARGUMENTE UND WERTE =',I5,' ZUL  4460
     1AESSIG SIND NUR',I10/'  NAMEN =',2I8,6E16.8)                        4470
      GO TO 4000                                                          4480
  158 IF(NAR)187,187,188                                                  4490
  187 IF(IA.EQ.NWE)  GO TO 188                                            4500
      WRITE (NOUT,296) NWE,IA,(NAM(J),J=1,NNAM)                           4510
  296 FORMAT(1H ,' ZAHL DER ARGUMENTE=0, ZAHL DER WERTE=',I5,' ZAHL DER   4520
     1PUNKTE=',I5/' FUER DIE NAMEN',2I8,6E16.8)                           4530
      GO TO 4000                                                          4540
  188 IDST=IA/(NAR+NWE)                                                   4550
      IF((NAR+NWE)*IDST-IA)161,162,161                                    4560
  161 WRITE(NOUT,265) IA,NAR,NWE,(NAM(J),J=1,NNAM)                        4570
  265 FORMAT(' ZAHL DER INSGESAMT HINZUZUFUEGENDEN ARGUMENTE + WERTE =',  4580
     1I5/' ZAHL DER ARGUMENTE PRO WERTEPAAR =',I5/' ZAHL DER WERTE PRO W  4590
     2ERTEPAAR =',I5/' NAMEN =',2I8,6E16.8)                               4600
      GO TO 4000                                                          4610
  162 WRITE (2) IDST                                                      4620
      IDEL=1                                                              4630
      IEX=0                                                               4640
      CALL PRINT(IDST,IDEL,INS,IEX,NN,NAM)                                4650
      IF(IDST.GE.1)  GO TO 2050                                           4660
      WRITE (NOUT,2051)                                                   4670
      GO TO 4000                                                          4680
 2050 WRITE(2) (AW(ILK),ILK=1,IA)                                         4690
      MIK=0                                                               4700
      IXA=0                                                               4710
      GO TO (138,128),NK                                                  4720
C                                                                         4730
C     ALLE NAMEN SIND GLEICH                                              4740
C                                                                         4750
  143 IAW=1                                                               4760
      IXA=1                                                               4770
      IF(NN.EQ.2) GO TO 182                                               4780
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      WRITE(2)(MAT(J),J=3,NN)                                           4790
      MIK=1                                                             4800
  192 IF(ARG(1).EQ.A) GO TO 176                                         4810
      DO 177 J=1,NARG                                                   4820
      AW(IAW)=ARG(J)                                                    4830
  177 IAW=IAW+1                                                         4840
  176 DO 178 J=1,NWERT                                                  4850
      AW(IAW)=WERT(J)                                                   4860
  178 IAW=IAW+1                                                         4870
      READ(9,END=979) NNAM,(NUNA(J),J=1,NNAM),NARG,NWERT,(ARG(J),J=1,   4880
     1NARG),(WERT(J),J=1,NWERT)                                         4890
      DO 180 J=1,NNAM                                                   4900
      IF(NAM(J).NE.NUNA(J))  GO TO 179                                  4910
  180 CONTINUE                                                          4920
      IF(NNAM.NE.NN)  GO TO 310                                         4930
      IF(NWERT.NE.NWE) GO TO 155                                        4940
      IF(NARG.EQ.1) GO TO 182                                           4950
      IF(NARG.NE.NAR) GO TO 154                                         4960
      GO TO 182                                                         4970
  979 IAD=0                                                             4980
  179 IA=IAW-1                                                          4990
      BACKSPACE 9                                                       5000
      IF(IA-IDAW) 181,181,159                                           5010
  181 IF(NAR) 183,183,184                                               5020
  183 IF(IA.EQ.NWE) GO TO 184                                           5030
      WRITE(NOUT,186) (MAT(J),J=1,NNAM)                                 5040
  186 FORMAT(' DER SATZ SOLL VERMUTLICH ZWEIMAL ERSETZT WERDEN'/1X,      5050
     12I8,6E16.8)                                                       5060
      GO TO 4000                                                        5070
  184 IDST=IA/(NAR+NWE)                                                 5080
      IF((NAR+NWE)*IDST-IA) 161,203,161                                 5090
C                                                                       5100
C     DURCHSUCHEN VON DROPS                                             5110
C                                                                       5120
  503 IAD=0                                                             5130
  203 LOE=0                                                             5140
      IF(MIK.NE.0)  GO TO 1004                                          5150
      IF(NN.EQ.2)  GO TO 1004                                           5160
      WRITE (2) (MAT(J),J=3,NN)                                         5170
      MIK=1                                                             5180
 1004 IF(IDS)190,190,185                                                5190
  185 READ(11,END=490) NNAM,(NUNA(J),J=1,NNAM),NARG,(ARG(J),J=1,        5200
     1NARG)                                                             5210
      DO 202 J=1,NNAM                                                   5220
      IF(J.GT.2)  GO TO 275                                             5230
      IF(MAT(J).NE.NUNA(J)) GO TO 190                                   5240
      GO TO 202                                                         5250
  275 IF(    ((XMAT(J)-XNUNA(J))/XMAT(J))-5.E-6)276,276,190             5260
  276 IF(    ((XMAT(J)-XNUNA(J))/XMAT(J))+5.E-6)190,190,202             5270
  202 CONTINUE                                                          5280
      IF(NNAM.EQ.NN)  GO TO 485                                         5290
  488 WRITE (NOUT,486) NNAM,NN                                          5300
  486 FORMAT(' BLOCK DROPS ZAHL DER NAMEN',I5,' ZAHL DER NAMEN AUF KEDAK 5310
     1',  I5/' FUER DIE NAMEN',2I8,6E16.8)                              5320
      GO TO 4000                                                        5330
  485 IF(NARG.NE.1) GO TO 189                                           5340
      IF(ARG(1).NE.A) GO TO 189                                         5350
      IF((NARG-1).NE.NAR) GO TO 154                                     5360
      LOE=1                                                             5370
      GO TO 190                                                         5380
  454 WRITE (NOUT,487) NARG,NAR,(NAM(J),J=1,NNAM)                       5390
  487 FORMAT(' BLOCK DROPS ZAHL DER ARGUMENTE',I4,' ZAHL DER ARGUMENTE A 5400
     1UF KEDAK',I4/' FUER DIE NAMEN',2I8,6E16.8)                        5410
      GO TO 4000                                                        5420
  189 IF(NARG.NE.NAR) GO TO 454                                         5430
      LOE=1                                                             5440
      GO TO 190                                                         5450
C                                                                       5460
C     EINSORTIEREN UND LOESCHEN DER DATEN                               5470
C                                                                       5480
  490 IDS=0                                                             5490
  190 READ (12) NDAT                                                    5500
      IF((NAR+NWE)*NDAT+IA-ITTTT)198,198,199                            5510
  199 WRITE(NOUT,200)(MAT(J),J=1,NN)                                    5520
  200 FORMAT(' MEHR ALS 40000 WERTE ENTHAELT DER SATZ'/1X,2I8,6E16.8)    5530
      GO TO 4000                                                        5540
  198 I2=(NAR+NWE)*NDAT                                                 5550
      READ (12) (W(J),J=1,I2)                                           5560
      GO TO (242,904),L                                                 5570
  904 GO TO (242,905),ITA                                               5580
  905 IF(LK.EQ.1.AND.NN.GT.2)  MAT(3)=0.                                5590
      IF(LK.EQ.1.AND.INN.EQ.NKOMB.AND.NKB.GT.NKOMB)  GO TO 3000         5600
      IF(LK.EQ.1)  GO TO 242                                            5610
C                                                                       5620
C     W ENTHAELT DIE DATEN DER KERNDATENBIBLIOTHEK                      5630
C     AW ENTHAELT DIE DATEN AUS ADD                                     5640
C     LOE =0  DROPS ENTHAELT KEINEN LOESCHSATZ                          5650
C     LOE =1  ES WIRD GELOESCHT                                         5660
C                                                                       5670
      I1=NAR+NWE                                                        5680
      IAW=1                                                             5690
      IDEL=0                                                            5700
      IF(LOE) 204,303,204                                               5710
C                                                                       5720
C     LOESCHEN DER DROPS-DATEN                                          5730
C                                                                       5740
  204 CONTINUE                                                          5750
      IF (NAR)205,206,205                                               5760
  205 DO 207 J=1,NAR                                                    5770
      IF(W(J+IAW-1)*0.999995-ARG(J))614,614,215                         5780
  614 IF(W(J+IAW-1)*1.000005-ARG(J))213,207,207                         5790
  215 IF(ABS((ABS(W(J+IAW-1))-ABS(ARG(J)))/ABS(W(J+IAW-1)))-5.E-6)207,   5800
     1207,255                                                           5810
  207 CONTINUE                                                          5820
  206 I3=I2-I1                                                          5830
      IF(I3-IAW)208,208,214                                             5840
  214 DO 209 J=IAW,I3                                                   5850
  209 W(J)=W(J+I1)                                                      5860
  208 I2=I3                                                             5870
      NDAT=NDAT-1                                                       5880
      IDEL=IDEL+1                                                       5890
  255 IAW=IAW-I1                                                        5900
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      READ(11,END=903) NNAM,(NUNA(J),J=1,NNAM),NARG,(ARG(J),J=1,NARG)     5910
      DO 211 J=1,NNAM                                                     5920
      IF(J.GT.2)  GO TO 277                                               5930
      IF(MAT(J).NE.NUNA(J)) GO TO 303                                     5940
      GO TO 211                                                           5950
  277 IF(   ((XMAT(J)-XNUNA(J))/XMAT(J))-5.E-6)278,278,303                5960
  278 IF(   ((XMAT(J)-XNUNA(J))/XMAT(J))+5.E-6)303,303,211                5970
  211 CONTINUE                                                            5980
      IF(NNAM.NE.NN)  GO TO 488                                           5990
      IF(NARG.NE.1) GO TO 212                                             6000
      IF(ARG(1).NE.A) GO TO 212                                           6010
      IF((NARG-1).NE.NAR) GO TO 454                                       6020
      GO TO 213                                                           6030
  212 IF(NARG.NE.NAR) GO TO 454                                           6040
  213 IAW=IAW+I1                                                          6050
      IF(IAW-I2) 204,204,303                                              6060
  903 IDS=0                                                               6070
C                                                                         6080
C     EINFUEGEN DER ADD-DATEN                                             6090
C                                                                         6100
  303 IF(IDS.GT.0)  BACKSPACE 11                                          6110
      IEX=0                                                               6120
      INS=0                                                               6130
      IF(IXA)306,226,306                                                  6140
  306 IAW=0                                                               6150
      J=1-I1                                                              6160
  201 J=J+I1                                                              6170
      IF(J-I2)228,229,229                                                 6180
  229 IF(IAW.EQ.IA) GO TO 224                                             6190
      IK=0                                                                6200
      J1=J+IA-IAW-1                                                       6210
      IE=0                                                                6220
      DO 230 I3=J,J1                                                      6230
      IK=IK+1                                                             6240
      IF=IE+1                                                             6250
      IF(IE.NE.I1)  GO TO 230                                             6260
      INS=INS+1                                                           6270
      IE=0                                                                6280
  230 W(I3)=AW(IAW+IK)                                                    6290
      I2=J+IA-IAW-1                                                       6300
      NDAT=NDAT+(IA-IAW)/I1                                               6310
      GO TO 224                                                           6320
  228 IK=0                                                                6330
      IF(NAR)216,217,216                                                  6340
  216 DO 218 I3=1,NAR                                                     6350
      IF(W(J+I3-1)*0.999995-AW(IAW+I3))761,761,762                        6360
  761 IF(W(J+I3-1)*1.000005-AW(IAW+I3))201,220,220                        6370
  762 IF(W(J+I3-1).EQ.0)  GO TO 764                                       6380
      IF(ABS((ABS(W(J+I3-1))-ABS(AW(IAW+I3)))/ABS(W(J+I3-1)))-5.E-6)220,  6390
     1220,763                                                             6400
  764 IF(ABS((ABS(AW(IAW+I3))-ABS(W(J+I3-1)))/ABS(AW(IAW+I3)))-5.E-6)     6410
     1220,220,763                                                         6420
  763 IZ=I2+1                                                             6430
      DO 221 IE=J,I2                                                      6440
      IZ=IZ-1                                                             6450
      W(I1+IZ)=W(IZ)                                                      6460
  221 CONTINUE                                                            6470
      IZ=0                                                                6480
      IL=I1+J-1                                                           6490
      DO 222 IE=J,IL                                                      6500
      IZ=IZ+1                                                             6510
  222 W(IE)=AW(IAW+IZ)                                                    6520
      INS=INS+1                                                           6530
      I2=I2+I1                                                            6540
      NDAT=NDAT+1                                                         6550
      IAW=IAW+I1                                                          6560
      IF(IAW.EQ.IA) GO TO 224                                             6570
      GO TO 201                                                           6580
  220 IK=IK+1                                                             6590
  218 CONTINUE                                                            6600
      IF(IK.NE.NAR) GO TO 201                                             6610
      DO 227 I3=1,I1                                                      6620
  227 W(J+I3-1)=AW(IAW+I3)                                                6630
      IEX=IEX+1                                                           6640
      IAW=IAW+I1                                                          6650
      IF(IAW.EQ.IA) GO TO 224                                             6660
      GO TO 201                                                           6670
  217 DO 223 J=1,NWE                                                      6680
  223 W(J)=AW(J)                                                          6690
      IEX=IEX+1                                                           6700
  224 IF(NDAT)226,238,226                                                 6710
  238 WRITE(NOUT,239)(MAT(J),J=1,NNAM)                                    6720
  239 FORMAT(' IN DER KERNDATENBIBLIOTHEK IST DER SATZ NICHT MEHR VORHAN  6730
     1DEN'/2I3,6E16.8)                                                    6740
      GO TO 4000                                                          6750
  226 WRITE(2) NDAT                                                       6760
      CALL PRINT(NDAT,IDEL,INS,IEX,NN,MAT)                                6770
      IF(NDAT.GE.1)  GO TO 2053                                           6780
      WRITE (NOUT,2051)                                                   6790
      GO TO 4000                                                          6800
 2053 I3=I1*NDAT                                                          6810
      WRITE(2) (W(J),J=1,I3)                                              6820
      IF(NN.EQ.2) GO TO 3021                                              6830
      IF(INN.EQ.NKOMB.AND.NKB.GT.NKOMB)  GO TO 3000                       6840
      GO TO 242                                                           6850
 3000 NKOMB=NKOMB+1                                                       6860
      IAUS=1                                                              6870
      XMAT(3)=1.E70                                                       6880
      GO TO 128                                                           6890
C                                                                         6900
C     BEREITS VORHANDENE DATEN KOPIEREN                                   6910
C                                                                         6920
  142 WRITE (2) (MAT(J),J=3,NNAM)                                         6930
      MIK=1                                                               6940
      IXA=0                                                               6950
      GO TO 203                                                           6960
  242 CONTINUE                                                            6970
C     ENDE DER NAMENSKOMBINATIONSSCHLEIFE                                 6980
C                                                                         6990
 3021 IF(JT.LT.NTA)  GO TO 82                                             7000
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      IF(JT.EQ.NTA.AND.NT.EQ.NTY)  GO TO 82                              7010
      NTY=NTY+1                                                          7020
      ITA=4                                                              7030
      GO TO 584                                                          7040
C                                                                        7050
   82 CONTINUE                                                           7060
C     ENDE DER TYPENSCHLEIFE                                             7070
  300 CONTINUE                                                           7080
C     ENDE DER MATERIALSCHLEIFE                                          7090
C                                                                        7100
C     HINZUFUEGEN NEUER MATERIALNAMEN                                    7110
C                                                                        7120
  388 IF(IAD.EQ.0)  GO TO 301                                            7130
      READ (9,END=301) NNAM,(NAM(J),J=1,NNAM),NARG,NWERT,(ARG(J),        7140
     1J=1,NARG),(WERT(J),J=1,NWERT)                                      7150
      M=1                                                                7160
      N=1                                                                7170
      IFELD(1)=NAM(2)                                                    7180
  385 READ(9,END=302) NN,(NUNA(J),J=1,NN),NAR,NWE,(ARG(J),J=1,NAR),      7190
     1(WERT(J),J=1,NWE)                                                  7200
      M=M+1                                                              7210
      IF(NAM(1).NE.NUNA(1))  GO TO 383                                   7220
      IF(NAM(2).NE.NUNA(2))  GO TO 384                                   7230
      IF(NN.EQ.NNAM)  GO TO 385                                          7240
      WRITE (NOUT,386) (NAM(J),J=1,2)                                    7250
  386 FORMAT(' BLOCK ADD FUER DIE NAMEN',2I8,' IST DIE ANZAHL DER NAMEN  7260
     1UNTERSCHIEDLICH')                                                  7270
      GO TO 4000                                                         7280
  384 N=N+1                                                              7290
      IFELD(N)=NUNA(2)                                                   7300
      NAM(2)=NUNA(2)                                                     7310
      NNAM=NN                                                            7320
      GO TO 385                                                          7330
  302 M=M+1                                                              7340
  383 DO 387 J=1,M                                                       7350
  387 BACKSPACE 9                                                        7360
      WRITE (2) NAM(1),N                                                 7370
      WRITE (2) (IFELD(I),I=1,N)                                         7380
      DO 315 I=1,N                                                       7390
      READ (9) NNAM,(NAM(J),J=1,NNAM),NARG,NWERT,(ARG(J),J=1,NARG),      7400
     1(WERT(J),J=1,NWERT)                                                7410
      NWN=NNAM-2                                                         7420
      NNK=0                                                              7430
      IF(NWN.EQ.0)  GO TO 390                                            7440
      IF(NNKO.NE.0)  GO TO 391                                           7450
  314 WRITE (NOUT,312) NAM(1),NAM(2)                                     7460
  312 FORMAT(' FUER DIE NAMEN',2I8,' WERDEN NAMENSKOMBINATIONEN HINZUGEF 7470
     1UEGT , OHNE DASS SIE IN DER AEUSSEREN EINGABE SPEZIELZIERT WURDEN' 7480
     2)                                                                  7490
      GO TO 4000                                                         7500
  391 DO 340 J=1,NNKO                                                    7510
      IF(NKO(1,J).NE.NAM(1))  GO TO 340                                  7520
      IF(NKO(2,J).EQ.NAM(2))  GO TO 393                                  7530
  340 CONTINUE                                                           7540
      GO TO 314                                                          7550
  393 NNK=IZKO(J)                                                        7560
  390 WRITE (2) NAM(1),NAM(2),NWN,NARG,NWERT,NNK                         7570
      IF(NNK.EQ.0)  NNK=1                                                7580
      DO 315 J=1,NNK                                                     7590
      IF(IAD.EQ.0)  GO TO 301                                            7600
      IF(NNAM.EQ.2)  GO TO 396                                           7610
      WRITE (2) (NAM(K),K=3,NNAM)                                        7620
  396 IAW=1                                                              7630
  322 IF(ARG(1).EQ.A)  GO TO 317                                         7640
      DO 318 K=1,NARG                                                    7650
      AW(IAW)=ARG(K)                                                     7660
  318 IAW=IAW+1                                                          7670
  317 DO 319 K=1,NWERT                                                   7680
      AW(IAW)=WERT(K)                                                    7690
  319 IAW=IAW+1                                                          7700
      READ(9,END=323) NN,(NUNA(K),K=1,NN),NAR,NWE,(ARG(K),K=1,NAR),      7710
     1(WERT(K),K=1,NWE)                                                  7720
      DO 320 K=1,2                                                       7730
      IF(NAM(K).NE.NUNA(K))  GO TO 321                                   7740
  320 CONTINUE                                                           7750
      IF(NN.EQ.2)  GO TO 378                                             7760
      DO 330 K=3,NN                                                      7770
      IF(   ((XNAM(K)-XNUNA(K))/XNAM(K))-5.E-6)395,395,329               7780
  395 IF(   ((XNAM(K)-XNUNA(K))/XNAM(K))+5.E-6)329,329,330               7790
  330 CONTINUE                                                           7800
      GO TO 378                                                          7810
  329 IM=2                                                               7820
      GO TO 331                                                          7830
  378 IF(NWERT.NE.NWE)  GO TO 155                                        7840
      IF(NARG.EQ.1)  GO TO 322                                           7850
      IF(NARG.NE.NAR)  GO TO 154                                         7860
      GO TO 322                                                          7870
  323 IAD=0                                                              7880
  321 IF(J.EQ.NNK)  GO TO 333                                            7890
      WRITE (NOUT,334)(NAM(K),K=1,NNAM)                                  7900
  334 FORMAT(' IN DER BLOCKEINGABE SIND MEHR NAMENSKOMBINATIONEN ENTHALT 7910
     1EN , ALS IN NNKO ANGEGEBEN WURDE'/' FUER DIE NAMEN',2I8,6E16.8)    7920
      GO TO 4000                                                         7930
  333 BACKSPACE 9                                                        7940
      IM=1                                                               7950
  331 IA=IAW-1                                                           7960
      IF(IA-IOAW)324,324,159                                             7970
  324 IF(NARG)325,325,326                                                7980
  325 IF(IA.EQ.NWERT)  GO TO 326                                         7990
      WRITE (NOUT,196)(NAM(K),K=1,NNAM)                                  8000
      GO TO 4000                                                         8010
  326 IDST=IA/(NARG+NWERT)                                               8020
      IF((NARG+NWERT)*IDST-IA)161,327,161                                8030
  327 WRITE (2) IDST                                                     8040
      WRITE (2) (AW(K),K=1,IA)                                           8050
      IDEL=0                                                             8060
      CALL PRINT(IDST,IDEL,IDST,IDEL,NNAM,NAM)                           8070
      GO TO (315,360),IM                                                 8080
  360 DO 332 K=1,NN                                                      8090
  332 NAM(K)=NUNA(K)                                                     8100
```

```
  315 CONTINUE                                                          8110
      GO TO 333                                                         8120
  331 RETURN                                                            8130
 4000 STOP5                                                             8140
      END                                                               8150
```

```
      SUBROUTINE PRINT(IDST,IDEL,INS,IEX,NNAM,NAM)                        10
      REAL*8 MATNA(200),TYPN(100),A/'XY123'/                              20
      DIMENSION NAM(10),NUMA(200),NUTY(100)                               30
      COMMON MATNA,TYPN,NUMA,NUTY,NZZM,NZT,NOUT                           40
      DO 2040 I=1,NZZM                                                    50
      IF(NAM(1).EQ.NUMA(I))  GO TO 2041                                   60
 2040 CONTINUE                                                            70
 2041 DO 2042 J=1,NZT                                                     80
      IF(NAM(2).EQ.NUTY(J))  GO TO 2013                                   90
 2042 CONTINUE                                                           100
 2013 IF(MATNA(I).EQ.A)  GO TO 1                                         110
      WRITE (NOUT,2) MATNA(I)                                            120
    2 FORMAT(1H1/' NUMBER OF RECORDS',22X,'FOR MATERIAL',A9/'   AVAILABL  130
     1E  DELETED   INSERTED EXCHANGED'/)                                 140
    1 IF(NNAM.GT.2)  GO TO 3                                             150
      WRITE (NOUT,4) IDST,IDEL,INS,IEX,MATNA(I),TYPN(J)                  160
    4 FORMAT(2I9,I11,I10,2X,2A10,4E16.8)                                 170
      GO TO 5                                                            180
    3 IF(NNAM.GT.6)  GO TO 6                                             190
      WRITE (NOUT,4) IDST,IDEL,INS,IEX,MATNA(I),TYPN(J),(NAM(ILK),ILK=3,  200
     1NNAM)                                                              210
      GO TO 5                                                            220
    6 WRITE (NOUT,7) IDST,IDEL,INS,IEX,MATNA(I),TYPN(J),(NAM(ILK),ILK=3,  230
     1NNAM)                                                              240
    7 FORMAT(2I9,I11,I10,2X,2A10,4E16.8/61X,4E16.8)                      250
    5 A=MATNA(I)                                                         260
      RETURN                                                             270
      END                                                                280
```

```
      SUBROUTINE P01701 (MATE,NYP)                                        10
C                                                                         20
C     PROGRAMM ZUR ERSTELLUNG DER KERNDATENBIBLIOTHEK                     30
C                                                                         40
      REAL*8 MATNA(200),TYPN(100)                                         50
      DIMENSION SATZ(40000),ISATZ(40000),MAT(880),NOTYP(880),             60
     1XNAM(10),X(40000),ISUM(880),MATE(400),NYP(200)                      70
      COMMON MATNA,TYPN,NUNA(200),NUTY(100),NZM,NZT,NOUTP,NF6             80
      EQUIVALENCE (SATZ(1),ISATZ(1))                                      90
      ITTTT=40000                                                        100
      NSZ=880                                                            110
      NUM=NSZ+1                                                          120
      WRITE (NOUTP,1)                                                    130
    1 FORMAT(1H1/' PROGRAMM 01701')                                      140
```

```
      II=2                                                               150
      REWIND II                                                          160
      IFILE=14                                                           170
      DEFINE FILE 14(3950,880,U,K8)                                      180
      KLZ=0                                                              190
      JJ=1                                                               200
      IS=1                                                               210
      DO 701 I=1,NSZ                                                     220
  701 SATZ(I)=0.                                                         230
      DO 750 I=1,3950                                                    240
      K=I                                                                250
  750 WRITE(IFILE'K) (SATZ(J),J=1,NSZ)                                   260
C                                                                        270
C     EINLESEN DER ERKLAERUNGSSAETZE                                     280
C                                                                        290
      READ (NF6) (ISATZ(I),I=1,3),NMAT                                   300
      CALL ZEIT(ISATZ(4))                                                310
      ISATZ(5)=NZM                                                       320
      ISATZ(8)=NZT                                                       330
      ISATZ(6)=1                                                         340
      ISATZ(7)=14                                                        350
      ISATZ(11)=NMAT                                                     360
      N=ISATZ(5)*3                                                       370
      M=ISATZ(8)*3                                                       380
      M=N+M+13                                                           390
      J=M/NSZ                                                            400
      ISATZ(12)=J+1                                                      410
      ISATZ(13)=M-J*NSZ+1                                                420
      I=N+13                                                             430
      J=I/NSZ                                                            440
      ISATZ(9)=J+1                                                       450
      ISATZ(10)=I-J*NSZ+1                                                460
      K=14                                                               470
      L=1                                                                480
      LL=1                                                               490
      MM=1                                                               500
      NN=1                                                               510
      DO 200 J=K,I                                                       520
      GO TO (201,202,203),LL                                             530
  201 ISATZ(J)=MATE(MM)                                                  540
      MM=MM+1                                                            550
      LL=2                                                               560
      GO TO 200                                                          570
  202 ISATZ(J)=MATE(MM)                                                  580
      MM=MM+1                                                            590
      LL=3                                                               600
      GO TO 200                                                          610
  203 ISATZ(J)=NUNA(NN)                                                  620
      NN=NN+1                                                            630
      LL=1                                                               640
  200 CONTINUE                                                           650
      GO TO 204                                                          660
   28 LL=1                                                               670
      MM=1                                                               680
      NN=1                                                               690
```

```
      DO 205 J=K,I                                                      700
      GO TO (206,207,208),LL                                            710
  206 ISATZ(J)=NYP(MM)                                                  720
      MM=MM+1                                                           730
      LL=2                                                              740
      GO TO 205                                                         750
  207 ISATZ(J)=NYP(MM)                                                  760
      MM=MM+1                                                           770
      LL=3                                                              780
      GO TO 205                                                         790
  208 ISATZ(J)=NUTY(NN)                                                 800
      NN=NN+1                                                           810
      LL=1                                                              820
  205 CONTINUE                                                          830
  204 ND=0                                                              840
   27 IF(I-NSZ)5,6,7                                                    850
    6 N=1                                                               860
      GO TO 8                                                           870
    7 N=2                                                               880
    8 WRITE (NOUTP,800)IS                                               890
      WRITE(IFILE'IS) (ISATZ(J),J=1,NSZ)                                900
  800 FORMAT(3I8)                                                       910
      ND=ND+1                                                           920
      IS=IS+1                                                           930
      K=1                                                               940
      GO TO (9,25),N                                                    950
   25 DO 26 J=NUM,I                                                     960
      KW=J-NSZ                                                          970
   26 ISATZ(KW)=ISATZ(J)                                                980
      I=I-NSZ                                                           990
      GO TO 27                                                         1000
    5 K=I+1                                                            1010
    9 L=L+1                                                            1020
      I=M-ND*NSZ                                                       1030
      IF(L-3)28,404,404                                                1040
  404 IBR=K-1                                                          1050
      MIK=K                                                            1060
      IF(IBR)4,4,405                                                   1070
  405 J=1                                                              1080
      WRITE (NOUTP,800) IS,J,IBR                                       1090
      WRITE (IFILE'IS) (ISATZ(J),J=1,IBR)                              1100
C                                                                      1110
C     LESEN DER BAENDER KNOT                                           1120
C                                                                      1130
    4 IBR=0                                                            1140
      IPS=0                                                            1150
      IRS=0                                                            1160
      READ (II,  ERR=300) KSI,KSI,KK                                   1170
      KLZ=KLZ+1                                                        1180
      READ(II,ERR=300)(MAT(L),L=1,KK)                                  1190
      KLZ=KLZ+1                                                        1200
      DO 10 KMAT=1 ,KK                                                 1210
      READ (II,  ERR=300) MATN,NTYP                                    1220
      KLZ=KLZ+1                                                        1230
      READ(II,ERR=300)(NDTYP(I),I=1,NTYP)                              1240
      KLZ=KLZ+1                                                        1250
      DO 15 ITYP=1,NTYP                                                1260
      READ (II,  ERR=300) MATN,NTYPN,NWN,NA,NW,NNK                     1270
      KLZ=KLZ+1                                                        1280
      ND=NA+NW                                                         1290
      IF(NWN)12,12,13                                                  1300
   12 NNK1=1                                                           1310
      GO TO 14                                                         1320
   13 NNK1=NNK                                                         1330
   14 DO 15 INK=1,NNK1                                                 1340
      IF(NWN)16,16,17                                                  1350
   17 READ(II,ERR=300)(XNAM(I),I=1,NWN)                                1360
      KLZ=KLZ+1                                                        1370
   16 READ (II,  ERR=300) NDAT                                         1380
      KLZ=KLZ+1                                                        1390
      I2=NDAT*ND                                                       1400
      IF(I2.LE.ITTTT)  GO TO 900                                       1410
      WRITE (NOUTP,901) I2,ITTTT                                       1420
  901 FORMAT(' DIE ANZAHL DER ARGUMENTE + WERTE IST GLEICH',I7,' UND SOM 1430
     1IT GROESSER',I7)                                                 1440
      STOP                                                             1450
  900 READ(II,ERR=300)(X(I),I=1,I2)                                    1460
      KLZ=KLZ+1                                                        1470
C                                                                      1480
C     EINSPEICHERN DER KNOT-DATEN                                      1490
C     SCHREIBEN DES BLOCKES DER ISOTOPENNAMEN                          1500
C                                                                      1510
      KV=1                                                             1520
      WRITE (NOUTP,302) KV,INK,ITYP,KMAT,JJ                            1530
  302 FORMAT (1H ,4HKV =I3,2X,5HINK =I3,2X,6HITYP =I3,2X,6HKMAT =I3,   1540
     12X,4HJJ =I3)                                                     1550
      IF(INK-1)69,69,73                                                1560
   69 IF(ITYP-1)38,38,41                                               1570
   38 K=MIK                                                            1580
      ISATZ(K)=MATN                                                    1590
      ISATZ(K+1)=NTYP                                                  1600
      IF(KMAT*JJ-1)30,30,31                                            1610
   31 IR=ITR                                                           1620
      IK=ITK                                                           1630
      GO TO 115                                                        1640
   30 J=NMAT*4                                                         1650
      I=K+J                                                            1660
      J=I/NSZ                                                          1670
      IR=IS+J                                                          1680
      ITS=IR                                                           1690
      IK=I-J*NSZ                                                       1700
  115 ISATZ(K+2)=IR                                                    1710
      ISATZ(K+3)=IK                                                    1720
      NR=0                                                             1730
      LR=IR                                                            1740
      M=K                                                              1750
      K=K+4                                                            1760
      MIK=K                                                            1770
      L=K-1                                                            1780
      IF(L-NSZ)34,35,36                                                1790
```

```
   35 N=1                                                                1800
      GO TO 37                                                           1810
   36 N=2                                                                1820
   37 IF(KMAT*JJ-1)120,120,121                                           1830
  121 READ(IFILE'IS) (ISUM(I),I=1,NSZ)                                   1840
      JA=M-1                                                             1850
      WRITE(IFILE'IS) (ISUM(I),I=1,JA),(ISATZ(I),I=M,NSZ)                1860
      I=NSZ                                                              1870
      WRITE (NOUTP,800)IS,M,I                                            1880
      M=1                                                                1890
      GO TO 122                                                          1900
  120 WRITE(IFILE'IS) (ISATZ(I),I=1,NSZ)                                 1910
      WRITE (NOUTP,800)IS                                                1920
  122 IS=IS+1                                                            1930
      K=K-NSZ                                                            1940
      GO TO (141,39),N                                                   1950
   39 DO 40 J=NUM,L                                                      1960
      KW=J-NSZ                                                           1970
   40 ISATZ(KW)=ISATZ(J)                                                 1980
      L=L-NSZ                                                            1990
   34 IF(IS-ITS)116,116,117                                              2000
  116 READ(IFILE'IS) (ISUM(I),I=1,NSZ)                                   2010
      IF(M-1)118,118,119                                                 2020
  118 WRITE(IFILE'IS) (ISATZ(I),I=1,L),(ISUM(I),I=K,NSZ)                 2030
      I=1                                                                2040
      WRITE (NOUTP,800)IS,I,L                                            2050
      GO TO 141                                                          2060
  119 N=M-1                                                              2070
      WRITE(IFILE'IS) (ISUM(I),I=1,N),(ISATZ(I),I=M,L),(ISUM(I),I=K,NSZ  2080
     1)                                                                  2090
      WRITE (NOUTP,800)IS,M,L                                            2100
      GO TO 141                                                          2110
  117 IF(M-1)123,123,116                                                 2120
  123 WRITE(IFILE'IS) (ISATZ(I),I=1,L)                                   2130
      I=1                                                                2140
      WRITE (NOUTP,800)IS,I,L                                            2150
  141 IF(KMAT*JJ-1)124,124,125                                           2160
  124 IRA=IS                                                             2170
      GO TO 41                                                           2180
  125 IRA=ITR                                                            2190
C                                                                        2200
C     SCHREIBEN DES BLOCKES DER TYPNAMEN                                 2210
C                                                                        2220
   41 KV=2                                                               2230
      WRITE (NOUTP,303) KV                                               2240
  303 FORMAT (1H ,4HKV =I3)                                              2250
      ISATZ(IK)=NTYPN                                                    2260
      ISATZ(IK+1)=NWN                                                    2270
      ISATZ(IK+2)=NA                                                     2280
      ISATZ(IK+3)=NW                                                     2290
      IF(NWN)42,42,43                                                    2300
   42 ISATZ(IK+4)=NDAT                                                   2310
      GO TO 44                                                           2320
   43 ISATZ(IK+4)=NNK                                                    2330
   44 IF(ITYP-1)45,45,46                                                 2340
   45 J=NTYP*7                                                           2350
      I=IK+J                                                             2360
      J=I/NSZ                                                            2370
      ITR=IR+J                                                           2380
      ITK=I-J*NSZ                                                        2390
      ITN=ITR                                                            2400
   46 ISATZ(IK+5)=ITR                                                    2410
      ISATZ(IK+6)=ITK                                                    2420
      J=IK                                                               2430
      IK=IK+7                                                            2440
      L=IK-1                                                             2450
      IF(IR-IRA)98,99,98                                                 2460
   99 NR=IR                                                              2470
   98 IF(L-NSZ)47,48,49                                                  2480
   48 N=1                                                                2490
      GO TO 50                                                           2500
   49 N=2                                                                2510
   50 IF(IR-NR)74,173,74                                                 2520
  173 READ(IFILE'IR) (ISUM(I),I=1,NSZ)                                   2530
      K=J-1                                                              2540
      WRITE(IFILE'IR) (ISUM(I),I=1,K),(ISATZ(I),I=J,NSZ)                 2550
      I=NSZ                                                              2560
      WRITE (NOUTP,800)IR,J,I                                            2570
      GO TO 76                                                           2580
   74 WRITE(IFILE'IR) (ISATZ(I),I=1,NSZ)                                 2590
      WRITE (NOUTP,800)IR                                                2600
   76 IR=IR+1                                                            2610
      IK=IK-NSZ                                                          2620
      GO TO (51,52),N                                                    2630
   52 DO 11 N=NUM,L                                                      2640
      KW=N-NSZ                                                           2650
   11 ISATZ(KW)=ISATZ(N)                                                 2660
      L=L-NSZ                                                            2670
      J=1                                                                2680
   47 IF(IR-NR)95,78,95                                                  2690
   95 IF(IR-ITN)96,78,96                                                 2700
   78 READ(IFILE'IR) (ISUM(I),I=1,NSZ)                                   2710
      K=J-1                                                              2720
      M=L+1                                                              2730
      IF(K)32,32,33                                                      2740
   32 WRITE (IFILE'IR) (ISATZ(I),I=J,L),(ISUM(I),I=M,NSZ)                2750
      WRITE (NOUTP,800)IR,J,L                                            2760
      NR=IR                                                              2770
      GO TO 51                                                           2780
   33 WRITE(IFILE'IR)(ISUM(I),I=1,K),(ISATZ(I),I=J,L),(ISUM(I),I=M,NSZ)  2790
      WRITE (NOUTP,800)IR,J,L                                            2800
      GO TO 51                                                           2810
   96 WRITE(IFILE'IR)(ISATZ(I),I=1,L)                                    2820
      I=1                                                                2830
      WRITE (NOUTP,800)IR,I,L                                            2840
      NR=IR                                                              2850
   51 IF(NWN)82,82,53                                                    2860
C                                                                        2870
C     SCHREIBEN DES BLOCKES DER WEITEREN NAMEN                           2880
C                                                                        2890
```

```
   53 IWNK=ITK                                                          2900
      IWNR=ITR                                                          2910
   73 ITW=IWNK                                                          2920
      DO 54 J=1,NWN                                                     2930
      SATZ(IWNK)=XNAM(J)                                                2940
   54 IWNK=IWNK+1                                                       2950
      ISATZ(IWNK)=NDAT                                                  2960
      IF(INK-1)55,55,56                                                 2970
   55 J=(NWN+3)*NNK                                                     2980
      I=J+ITW                                                           2990
      J=I/NSZ                                                           3000
      ITK=I-J*NSZ                                                       3010
      ITR=IWNR+J                                                        3020
   56 ISATZ(IWNK+1)=ITR                                                 3030
      ISATZ(IWNK+2)=ITK                                                 3040
      IWNK=IWNK+3                                                       3050
      L=IWNK-1                                                          3060
      IF(IWNR-NR)85,86,85                                               3070
   86 IRS=IWNR                                                          3080
   85 IF(L-NSZ)84,58,59                                                 3090
   58 N=1                                                               3100
      GO TO 60                                                          3110
   59 N=2                                                               3120
   60 IF (ITW-1)80,79,80                                                3130
   80 READ(IFILE'IWNR) (ISUM(I),I=1,NSZ)                                3140
      J=ITW-1                                                           3150
      WRITE(IFILE'IWNR)(ISUM(I),I=1,J),(ISATZ(I),I=ITW,NSZ)             3160
      GO TO 81                                                          3170
   79 WRITE (IFILE'IWNR) (ISATZ(I),I=1,NSZ)                             3180
   81 IWNR=IWNR+1                                                       3190
      IWNK=IWNK-NSZ                                                     3200
      ITW=1                                                             3210
      GO TO (82,62),N                                                   3220
   62 DO 63 N=NUM,L                                                     3230
      KW=N-NSZ                                                          3240
   63 ISATZ(KW)=ISATZ(N)                                                3250
      L=L-NSZ                                                           3260
   84 IF(IWNR-IRS)57,83,57                                              3270
   57 IF(IWNR-IBR)397,83,397                                            3280
  397 IF(IWNR-IPS)97,83,97                                              3290
   83 READ(IFILE'IWNR) (ISUM(I),I=1,NSZ)                                3300
      J=ITW-1                                                           3310
      K=L+1                                                             3320
      IF(J)102,102,101                                                  3330
  101 WRITE(IFILE'IWNR) (ISUM(I),I=1,J),(ISATZ(I),I=ITW ,L),(ISUM(I),   3340
     1I=K,NSZ)                                                          3350
      GO TO182                                                          3360
  102 WRITE(IFILE'IWNR) (ISATZ(I),I=ITW ,L),(ISUM(I),I=K,NSZ)           3370
      GO TO182                                                          3380
   97 WRITE(IFILE'IWNR) (ISATZ(I),I=1,L)                                3390
  182 IRS=IWNR                                                          3400
C                                                                       3410
C     SCHREIBEN DES BLOCKES DER DATEN                                   3420
C                                                                       3430
   82 J=NDAT*ND                                                         3440
      IF(INK-1)61,61,64                                                 3450
   61 IBR=ITR                                                           3460
      IMK=0                                                             3470
   64 IB=ITK                                                            3480
      DO 65 I=1,J                                                       3490
      SATZ(ITK)=X(I)                                                    3500
   65 ITK=ITK+1                                                         3510
      L=ITK-1                                                           3520
      IF(ITR-IPS)87,88,87                                               3530
   87 IF (ITR-IRS)287,88,287                                            3540
   88 IMK=ITR                                                           3550
  287 IF(L-NSZ)66,67,68                                                 3560
   67 N=1                                                               3570
      GO TO 70                                                          3580
   68 N=2                                                               3590
   70 IF(ITR-IMK)126,90,126                                             3600
   90 IF(IB-1)126,126,127                                               3610
  126 WRITE(IFILE'ITR) (SATZ(I),I=1,NSZ)                                3620
      GO TO 91                                                          3630
  127 READ (IFILE'ITR) (ISUM(I),I=1,NSZ)                                3640
      J=IB-1                                                            3650
      WRITE (IFILE'ITR) (ISUM(I),I=1,J),(SATZ(I),I=IB,NSZ)              3660
   91 ITR=ITR+1                                                         3670
      ITK=ITK-NSZ                                                       3680
      IB=1                                                              3690
      GO TO (15,71),N                                                   3700
   71 DO 72 N=NUM,L                                                     3710
      KW=N-NSZ                                                          3720
   72 SATZ(KW)=SATZ(N)                                                  3730
      L=L-NSZ                                                           3740
      GO TO287                                                          3750
   66 IF(ITR-IMK)92,93,92                                               3760
   93 READ (IFILE'ITR)(ISUM(I),I=1,NSZ)                                 3770
      J=IB-1                                                            3780
      K=L+1                                                             3790
      IF(J)103,103,104                                                  3800
  103 WRITE(IFILE'ITR) ( SATZ(I),I=IB,L),(ISUM(I),I=K,NSZ)              3810
      GO TO 114                                                         3820
  104 WRITE(IFILE'ITR) (ISUM(I),I=1,J),(SATZ(I),I=IB,L),(ISUM(I),I=K,   3830
     1NSZ)                                                              3840
  114 IPS=ITR                                                           3850
      GO TO 15                                                          3860
   92 J=IB-1                                                            3870
      READ (IFILE'ITR) (ISUM(I),I=1,NSZ)                                3880
      IF(J)111,111,112                                                  3890
  112 WRITE(IFILE'ITR)(ISUM(I),I=1,J),(SATZ(I),I=IB,L)                  3900
      GO TO 113                                                         3910
  111 WRITE(IFILE'ITR)(SATZ(I),I=1,L)                                   3920
  113 IMK=ITR                                                           3930
      IPS=ITR                                                           3940
   15 CONTINUE                                                          3950
   10 CONTINUE                                                          3960
C                                                                       3970
C                                                                       3980
      KV=5                                                              3990
```

```
      WRITE (NOUTP,303) KV                                                4000
      GO TO 305                                                           4010
C                                                                         4020
  300 KLZ=KLZ+1                                                           4030
      WRITE (NOUTP,301) KLZ                                               4040
  301 FORMAT (1HO,5HKLZ =I6,16H  ERROR IN 01701)                          4050
  305 RETURN                                                              4060
      END                                                                 4070
```

```
      SUBROUTINE P01751                                                     10
C                                                                           20
C     DIREKTE AENDERUNGEN AN DER KERNDATENBIBLIOTHEK IN DIRECT ACCESS       30
C     SCHREIBWEISE                                                          40
C                                                                           50
      REAL*8 F,IFE,IFEL,MATNA(200),TYPN(100),FFEST(4)/5HADD  ,5HDROPS,      60
     15HDROPA,5HENDE /                                                      70
      DIMENSION FELD(880),IFELD(880),B(880),ARG(10),NUNA(200),NUTY(100),    80
     1IDENT(3),A(2000),IA(2000)                                             90
      DATA IDENT/'KEDA','BIBL','IOTH'/                                     100
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUT,NF                          110
      EQUIVALENCE (FELD(1),IFELD(1)),(ARG(1),F),(ARG(3),IFE),(ARG(5),IFE   120
     1L),(A(1),IA(1))                                                      130
      CALL FSPIE                                                           140
      KE=1                                                                 150
      NSZ=880                                                              160
      DEFINE FILE 1 (3950,880,U,K8)                                        170
      READ (NF) IAU,IBA                                                    180
      CALL ZEIT(NDTUM)                                                     190
      IS=1                                                                 200
      READ (KE'1) (FELD(I),I=1,NSZ)                                        210
      DO 11 I=1,3                                                          220
      IF(IFELD(I).NE.IDENT(I)) GO TO 12                                    230
   11 CONTINUE                                                             240
      GO TO 13                                                             250
   12 WRITE (NOUT,14)                                                      260
   14 FORMAT(' DIE DD-KARTE FUER EINHEIT 1 BEZEICHNET KEINE GUELTIGE KER   270
     1NDATENBIBLIOTHEK')                                                   280
      STOP5                                                                290
   13 IFELD(4)=NDTUM                                                       300
      WRITE (KE'1) (FELD(I),I=1,NSZ)                                       310
      IF(IAU)1,1,2                                                         320
    2 IL=NF                                                                330
   77 READ (IL) ND,(A(I),I=1,ND)                                           340
      IF(ND.LE.2000) GO TO 3                                               350
      WRITE (NOUT,4) ND                                                    360
    4 FORMAT(1H ,' EINGABESATZ ENTHAELT',I5,' WORTE')                      370
      STOP5                                                                380
    3 ARG(1)=A(1)                                                          390
      ARG(2)=A(2)                                                          400
      IF(F.EQ.FFEST(4))  GO TO 1                                           410
      IFALL=0                                                              420
  109 NNAM=IA(IFALL+3)                                                     430
      ARG(3)=A(IFALL+4)                                                    440
      ARG(4)=A(IFALL+5)                                                    450
      IF(F.EQ.FFEST(3).AND.NNAM.EQ.1) GO TO 99                             460
      ARG(5)=A(IFALL+6)                                                    470
      ARG(6)=A(IFALL+7)                                                    480
      IF(F.EQ.FFEST(3))  GO TO 99                                          490
      NARG=IA(IFALL+NNAM+6)                                                500
      IF(F.NE.FFEST(1)) GO TO 99                                           510
      NWERT=IA(IFALL+NNAM+7)                                               520
   99 DO 5 I=1,3                                                           530
      IF(F.EQ.FFEST(I)) GO TO 6                                            540
    5 CONTINUE                                                             550
      WRITE (NOUT,10) F                                                    560
   10 FORMAT(1H ,A9,' UNERLAUBTER BLOCKNAME')                              570
      STOP5                                                                580
C                                                                          590
C     AUFSUCHEN DER GEWUENSCHTEN DATEN IN DER KERNDATENBIBLIOTHEK          600
C                                                                          610
C     AUFSUCHEN DES MATERIALNAMENS                                         620
C                                                                          630
    6 IF(IS.EQ.1)  GO TO 150                                               640
      IS=1                                                                 650
      READ(KE'IS) (FELD(I),I=1,NSZ)                                        660
  150 DO 15 I=1,NZM                                                        670
      IF(IFE.EQ.MATNA(I)) GO TO 16                                         680
   15 CONTINUE                                                             690
      WRITE (NOUT,17) IFE                                                  700
   17 FORMAT(1H ,' DAS MATERIAL',A9,' IST NICHT IN DER NAMENZUORDNUNGSTA   710
     1BELLE DER KERNDATENBIBLIOTHEK ENTHALTEN')                            720
      STOP5                                                                730
   16 MAT=NUNA(I)                                                          740
      IF(F.EQ.FFEST(3).AND.NNAM.EQ.1) GO TO 100                            750
      DO 18 I=1,NZT                                                        760
      IF(IFEL.EQ.TYPN(I)) GO TO 19                                         770
   18 CONTINUE                                                             780
      WRITE (NOUT,20) IFEL                                                 790
   20 FORMAT(1H ,' DER TYP',A9,' IST NICHT IN DER NAMENZUORDNUNGSTABELLE   800
     1DER KERNDATENBIBLIOTHEK ENTHALTEN')                                  810
      STOP5                                                                820
   19 ITY=NUTY(I)                                                          830
  100 IN=IFELD(11)                                                         840
      IS=IFELD(12)                                                         850
      IW=IFELD(13)                                                         860
      IF(IS.EQ.1)  GO TO 21                                                870
      READ(KE'IS) (FELD(I),I=1,NSZ)                                        880
   21 DO 22JJ=1,IN                                                         890
      IF(IFELD(IW).EQ.MAT)  GO TO 23                                       900
      IW=IW+4                                                              910
      IF(IW.LE.NSZ) GO TO 22                                               920
      IS=IS+1                                                              930
      READ (KE'IS) (FELD(I),I=1,NSZ)                                       940
      IW=IW-NSZ                                                            950
   22 CONTINUE                                                             960
      WRITE (NOUT,24) IFE                                                  970
   24 FORMAT(1H ,' DAS MATERIAL',A9,' IST NICHT IN DER KERNDATENBIBLIOTH   980
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     1EK ENTHALTEN')                                                    990
      STOP5                                                            1000
   23 IF(F.EQ.FFEST(3).AND.NNAM.EQ.1) GO TO 101                        1010
C                                                                      1020
C     AUFSUCHEN DES TYPNAMENS                                          1030
C                                                                      1040
      J=1                                                              1050
   26 IW=IW+1                                                          1060
      IF(IW.LE.NSZ)  GO TO 25                                          1070
      IS=IS+1                                                          1080
      READ (KE'IS) (FELD(I),I=1,NSZ)                                   1090
      IW=IW-NSZ                                                        1100
   25 GO TO (27,28,29),J                                               1110
   27 NT=IFELD(IW)                                                     1120
      NTW=IW                                                           1130
      NTS=IS                                                           1140
      J=2                                                              1150
      GO TO 26                                                         1160
   28 IK=IFELD(IW)                                                     1170
      J=3                                                              1180
      GO TO 26                                                         1190
   29 IX=IFELD(IW)                                                     1200
      IF(JJ.LT.IN) GO TO 129                                           1210
      NAS=1001                                                         1220
      NAW=1                                                            1230
      GO TO 130                                                        1240
  129 IW=IW+3                                                          1250
      J=1                                                              1260
  134 IF(IW.LE.NSZ) GO TO 131                                          1270
      IS=IS+1                                                          1280
      READ(KE'IS) (FELD(I),I=1,NSZ)                                    1290
      IW=IW-NSZ                                                        1300
  131 GO TO (132,133),J                                                1310
  132 NAS=IFELD(IW)                                                    1320
      J=2                                                              1330
      IW=IW+1                                                          1340
      GO TO 134                                                        1350
  133 NAW=IFELD(IW)                                                    1360
  130 IF(IK.EQ.IS) GO TO 30                                            1370
      IS=IK                                                            1380
      READ(KE'IS) (FELD(I),I=1,NSZ)                                    1390
   30 IW=IX                                                            1400
      DO 31JJ=1,NT                                                     1410
      IF(IFELD(IW).EQ.ITY)  GO TO 33                                   1420
      IW=IW+7                                                          1430
      IF(IW.LE.NSZ) GO TO 31                                           1440
      IS=IS+1                                                          1450
      READ (KE'IS) (FELD(I),I=1,NSZ)                                   1460
      IW=IW-NSZ                                                        1470
   31 CONTINUE                                                         1480
      WRITE (NOUT,32) IFEL,IFE                                         1490
   32 FORMAT(1H ,' DER TYPNAME',A9,' IST NICHT IN DER KERNDATENBIBLIOTHE 1500
     1K FUER DAS MATERIAL',A9,' ENTHALTEN')                            1510
      STOP5                                                            1520
   33 IF(F.EQ.FFEST(3).AND.NNAM.EQ.2)  GO TO 110                       1530
      J=1                                                              1540
   42 IW=IW+1                                                          1550
      IF(IW.LE.NSZ) GO TO 34                                           1560
      IS=IS+1                                                          1570
      READ (KE'IS) (FELD(I),I=1,NSZ)                                   1580
      IW=IW-NSZ                                                        1590
   34 GO TO (35,36,37,38,39,40),J                                      1600
   35 NWN=IFELD(IW)                                                    1610
      IF (NWN.EQ.NNAM-2) GO TO 51                                      1620
      I=NWN+2                                                          1630
      WRITE(NOUT,52) IFE,IFEL,NNAM,I                                   1640
   52 FORMAT(1H ,' DER SATZ',2A9,' ENTHAELT AUF KEDAK',I5,' NAMEN, IN DE 1650
     1R EINGABE JEDOCH',I5)                                            1660
      STOP5                                                            1670
   51 J=2                                                              1680
      GO TO 42                                                         1690
   36 NA=IFELD(IW)                                                     1700
      IF(F.EQ.FFEST(3)) GO TO 53                                       1710
      IF(NA.EQ.NARG) GO TO 53                                          1720
      WRITE(NOUT,54) IFE,IFEL,NARG,NA                                  1730
   54 FORMAT(1H ,' DER SATZ',2A9,' ENTHAELT AUF KEDAK',I5,' ARGUMENTE,  1740
     1IN DER EINGABE JEDOCH',I5)                                       1750
      STOP5                                                            1760
   53 J=3                                                              1770
      GO TO 42                                                         1780
   37 NW=IFELD(IW)                                                     1790
      IF(F.NE.FFEST(1)) GO TO 55                                       1800
      IF(NW.EQ.NWERT) GO TO 55                                         1810
      WRITE (NOUT,56) IFE,IFEL,NWERT,NW                                1820
   56 FORMAT(1H ,' DER SATZ',2A9,' ENTHAELT AUF KEDAK',I5,' FUNKTIONSWER 1830
     1TE, IN DER EINGABE JEDOCH',I5)                                   1840
      STOP5                                                            1850
   55 NWERT=NW                                                         1860
      J=4                                                              1870
      GO TO 42                                                         1880
   38 IF(NWN.EQ.0) GO TO 43                                            1890
      NNAS=IS                                                          1900
      NKB=IFELD(IW)                                                    1910
      NNAW=IW                                                          1920
      GO TO 44                                                         1930
   43 NWP=IFELD(IW)                                                    1940
      NWPP=NWP                                                         1950
      NWPS=IS                                                          1960
      NWPW=IW                                                          1970
   44 J=5                                                              1980
      GO TO 42                                                         1990
   39 IF(NWN.EQ.0) GO TO 45                                            2000
      NAKS=IFELD(IW)                                                   2010
      GO TO 46                                                         2020
   45 NDATS=IFELD(IW)                                                  2030
   46 J=6                                                              2040
      GO TO 42                                                         2050
   40 IF(NWN.EQ.0) GO TO 47                                            2060
      NAKW=IFELD(IW)                                                   2070
      GO TO 48                                                         2080
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   47 NDATW=IFELD(IW)                                                    2090
   48 IF(JJ.EQ.NT)GOTO 135                                               2100
      IW=IW+6                                                            2110
      J=1                                                                2120
  139 IF(IW.LE.NSZ) GO TO 136                                            2130
      IS=IS+1                                                            2140
      READ(KE'IS)(FELD(I),I=1,NSZ)                                       2150
      IW=IW-NSZ                                                          2160
  136 GO TO (137,138),J                                                  2170
  137 NAS=IFELD(IW)                                                      2180
      J=2                                                                2190
      IW=IW+1                                                            2200
      GO TO 139                                                          2210
  138 NAW=IFELD(IW)                                                      2220
  135 IF(NWN.EQ.0) GO TO 168                                             2230
C                                                                        2240
C     AUFSUCHEN DER WEITEREN NAMEN                                       2250
C                                                                        2260
      IF(NAKS.EQ.IS)  GO TO 50                                           2270
      IS=NAKS                                                            2280
      READ (KE'IS) (FELD(I),I=1,NSZ)                                     2290
   50 IW=NAKW                                                            2300
      DO 57 K=1,NKB                                                      2310
      DO 58 J=1,NWN                                                      2320
      IF(((FELD(IW)-A(IFALL+J+7))/FELD(IW))-5.E-6)230,230,231            2330
  230 IF(((FELD(IW)-A(IFALL+J+7))/FELD(IW))+5.E-6)59,59,60               2340
  231 WRITE(NOUT,61)IFE,IFEL                                             2350
   61 FORMAT(1H ,' FUER DEN SATZ',2A9,' SIND DIE WEITEREN NAMEN')        2360
      WRITE (NOUT,62) (A(IFALL+I+7),I=1,NWN)                             2370
   62 FORMAT(8E16.8)                                                     2380
      WRITE (NOUT,63)                                                    2390
   63 FORMAT(' NICHT AUF KEDAK ENTHALTEN')                               2400
      STOP5                                                              2410
   59 IW=IW+(NWN-J)+4                                                    2420
      IF(IW.LE.NSZ) GO TO 57                                             2430
      IS=IS+1                                                            2440
      READ (KE'IS)(FELD(I),I=1,NSZ)                                      2450
      IW=IW-NSZ                                                          2460
      GO TO 57                                                           2470
   60 IW=IW+1                                                            2480
      IF(IW.LE.NSZ) GO TO 58                                             2490

      IS=IS+1                                                            2500
      READ(KE'IS) (FELD(I),I=1,NSZ)                                      2510
      IW=IW-NSZ                                                          2520
   58 CONTINUE                                                           2530
      IF(F.EQ.FFEST(3).AND.NNAM.GT.2) GO TO 118                          2540
      NWPS=IS                                                            2550
      NWPW=IW                                                            2560
      NWPP=IFELD(IW)                                                     2570
      NWP=IFELD(IW)                                                      2580
      J=1                                                                2590
   67 IW=IW+1                                                            2600
      IF(IW.LE.NSZ)  GO TO 64                                            2610
      IS=IS+1                                                            2620
      READ (KE'IS) (FELD(I),I=1,NSZ)                                     2630
      IW=IW-NSZ                                                          2640
   64 GO TO (65,66),J                                                    2650
   65 NDATS=IFELD(IW)                                                    2660
      J=2                                                                2670
      GO TO 67                                                           2680
   66 NDATW=IFELD(IW)                                                    2690
      IF(K.EQ.NKB) GO TO 168                                             2700
      IW=IW+NWN+2                                                        2710
      J=1                                                                2720
  143 IF(IW.LE.NSZ) GO TO 140                                            2730
      IS=IS+1                                                            2740
      READ(KE'IS)(FELD(I),I=1,NSZ)                                       2750
      IW=IW-NSZ                                                          2760
  140 GO TO (141,142),J                                                  2770
  141 NAS=IFELD(IW)                                                      2780
      IW=IW+1                                                            2790
      J=2                                                                2800
      GO TO 143                                                          2810
  142 NAW=IFELD(IW)                                                      2820
      GO TO 168                                                          2830
   57 CONTINUE                                                           2840
      WRITE (NOUT,61) IFE,IFEL                                           2850
      WRITE (NOUT,62) (A(IFALL+I+7),I=1,NWN)                             2860
      WRITE (NOUT,63)                                                    2870
      STOP5                                                              2880
C                                                                        2890
C     SUCHEN DES ARGUMENTE - WERTEPAARES                                 2900
C                                                                        2910
  168 J=NNAM+7                                                           2920
      IF(F.EQ.FFEST(2))  J=J-1                                           2930
  167 IF(NDATS.EQ.IS) GO TO 68                                           2940
      IS=NDATS                                                           2950
      READ (KE'IS) (FELD(I),I=1,NSZ)                                     2960
   68 IW=NDATW                                                           2970
   83 DO 69 K=1,NWP                                                      2980
      DO 71 L=1,NARG                                                     2990
      IF(NARG.EQ.0) GO TO 79                                             3000
      IF(FELD(IW)*0.999995-A(J+L))190,190,180                            3010
  190 IF(FELD(IW)*1.000005-A(J+L))70,72,72                               3020
  180 IF(FELD(IW).EQ.0)  GO TO 181                                       3030
      IF(ABS((ABS(FELD(IW))-ABS(A(J+L)))/ABS(FELD(IW)))-5.E-6)72,72,191  3040
  181 IF(ABS((ABS(A(J+L))-ABS(FELD(IW)))/ABS(A(J+L)))-5.E-6)72,72,191    3050
  191 IF(NWP*(NARG+NWERT).LT.(NAS-NDATS)*NSZ+NAW-NDATW) GO TO 73          3060
      WRITE (NOUT,74)                                                    3070
   74 FORMAT(1H ,' IM FALLE EINES ADD-SATZES KANN DAS ARGUMENT BZW. ARGU 3080
     1MENTENPAAR')                                                       3090
      WRITE (NOUT,75) (A(J+I  ),I=1,NARG)                                3100
   75 FORMAT(8E16.8)                                                     3110
      WRITE (NOUT,76) IFE,IFEL                                           3120
   76 FORMAT(' FUER DEN SATZ',2A9,' NICHT EINGESCHOBEN WERDEN, WEIL KEIN 3130
     1 ENTSPRECHENDER PLATZ FREI IST; ODER IM FALLE EINES DROPS-SATZES I 3140
     2ST DIESES ARGUMENT NICHT VORHANDEN')                               3150
      J=J+NARG+NWERT                                                     3160
      IF(J.LT.ND-1) GO TO 69                                             3170
      IF(NWP.EQ.NWPP) GO TO 77                                           3180
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      IF(IS.EQ.NWPS) GO TO 78                                           3190
      READ (KE'NWPS) (FELD(I),I=1,NSZ)                                  3200
   78 IFELD(NWPW)=NWP                                                   3210
      WRITE(KE'NWPS) (FELD(I),I=1,NSZ)                                  3220
      GO TO 77                                                          3230
   70 IW=IW+(NARG-L+1)+NWERT                                            3240
      IF(IW.LE.NSZ) GO TO 69                                            3250
      IS=IS+1                                                           3260
      READ (KE'IS) (FELD(I),I=1,NSZ)                                    3270
      IW=IW-NSZ                                                         3280
      GO TO 69                                                          3290
   72 IW=IW+1                                                           3300
      IF(IW.LE.NSZ) GO TO 71                                            3310
      IS=IS+1                                                           3320
      READ (KE'IS) (FELD(I),I=1,NSZ)                                    3330
      IW=IW-NSZ                                                         3340
   71 CONTINUE                                                          3350
      GO TO 79                                                          3360
   69 CONTINUE                                                          3370
      IF(NWP*(NARG+NWERT).LT.(NAS-NDATS)*NSZ+NAW-NDATW)  GO TO 80       3380
      WRITE (NOUT,74)                                                   3390
      WRITE (NOUT,75) (A(J+I  ),I=1,NARG)                               3400
      WRITE (NOUT,76) IFE,IFEL                                          3410
      WRITE (NOUT,81)                                                   3420
   81 FORMAT(' EVENTUELL FOLGENDE ARGUMENTE - WERTEPAARE IN DEMSELBEN AD 3430
     1D - SATZ WERDEN NICHT BERUECKSICHTIGT')                           3440
      GO TO 85                                                          3450
   79 IF(F.EQ.FFEST(1))  GO TO 179                                      3460
C                                                                       3470
C     LOESCHEN EINES DATENPAARES                                        3480
C                                                                       3490
      M=(NWP-K)*(NARG+NWERT)                                            3500
      IF(M.EQ.0)  GO TO 214                                             3510
      Iw=IW+NWERT                                                       3520
      KK=0                                                              3530
      DO 170 K=1,M                                                      3540
      IF(KK.EQ.1)  GO TO 171                                            3550
      IF(IW.LE.NSZ)  GO TO 172                                          3560
      KK=1                                                              3570
      IS=IS+1                                                           3580
      READ(KE'IS) (B(I),I=1,NSZ)                                        3590
      IW=IW-NSZ                                                         3600
  171 FELD(NSZ+IW-NARG-NWERT)=B(IW)                                     3610
      IW=IW+1                                                           3620
      IF(IW.EQ.NARG+NWERT+1)  GO TO 173                                 3630
      GO TO 170                                                         3640
  173 IS=IS-1                                                           3650
      WRITE(KE'IS) (FELD(I),I=1,NSZ)                                    3660
      DO 174 I=1,NSZ                                                    3670
  174 FELD(I)=B(I)                                                      3680
      KK=0                                                              3690
      IS=IS+1                                                           3700
      GO TO 170                                                         3710
  172 FELD(IW-NARG-NWERT)=FELD(IW)                                      3720
      IW=IW+1                                                           3730
  170 CONTINUE                                                          3740
      WRITE(KE'IS) (FELD(I),I=1,NSZ)                                    3750
  214 IF(NNAM.GT.2)  GO TO 213                                          3760
      WRITE(NOUT,200) IFE,IFEL                                          3770
  200 FORMAT(1H0,2A10)                                                  3780
      WRITE(NOUT,212)                                                   3790
  212 FORMAT(' ONE RECORD DELETED')                                     3800
      GO TO 169                                                         3810
  213 K=NNAM+5                                                          3820
      WRITE(NOUT,203) IFE,IFEL,(A(I),I=8,K)                             3830
  203 FORMAT(1H0,2A10,8E13.5)                                           3840
      WRITE(NOUT,212)                                                   3850
  169 NWP=NWP-1                                                         3860
      J=J+NARG                                                          3870
      IF(J.LE.ND-1)  GO TO 167                                          3880
      GO TO 85                                                          3890
C                                                                       3900
C     ANFUEGEN NEUER ARGUMENTE - WERTEPAARE                             3910
C                                                                       3920
   80 K=NARG+NWERT                                                      3930
      J=J+1                                                             3940
      DO 82 L=1,K                                                       3950
      FELD(IW)=A(J)                                                     3960
      J=J+1                                                             3970
      IW=IW+1                                                           3980
      IF(IW.LE.NSZ) GO TO 82                                            3990
      WRITE(KE'IS) (FELD(I),I=1,NSZ)                                    4000
      IS=IS+1                                                           4010
      READ (KE'IS) (FELD(I),I=1,NSZ)                                    4020
      IW=IW-NSZ                                                         4030
   82 CONTINUE                                                          4040
      WRITE(KE'IS) (FELD(I),I=1,NSZ)                                    4050
      NWP=NWP+1                                                         4060
      IF(NNAM.GT.2)  GO TO 215                                          4070
      WRITE(NOUT,200) IFE,IFEL                                          4080
      WRITE(NOUT,206)                                                   4090
      GO TO 216                                                         4100
  215 L=NNAM+5                                                          4110
      WRITE(NOUT,203) IFE,IFEL,(A(I),I=8,L)                             4120
      WRITE(NOUT,206)                                                   4130
  216 IF(J.LT.ND) GO TO 167                                             4140
   85 IF(NWP.EQ.NWPP) GO TO 77                                          4150
      IF(IS.EQ.NWPS) GO TO 84                                           4160
      READ(KE'NWPS)(FELD(I),I=1,NSZ)                                    4170
   84 IFELD(NWPW)=NWP                                                   4180
      WRITE(KE'NWPS)(FELD(I),I=1,NSZ)                                   4190
      GO TO 77                                                          4200
C                                                                       4210
C     ERSETZEN DER ALTEN WERTE DURCH NEUE WERTE                         4220
C                                                                       4230
  179 DO 86 K=1,NWERT                                                   4240
      N=NARG                                                            4250
      IF(N.EQ.0)  N=1                                                   4260
      FELD(IW)=A(J+N+K)                                                 4270
      IW=IW+1                                                           4280
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      IF(IW.LE.NSZ) GO TO 86                                            4290
      WRITE(KE'IS)(FELD(I),I=1,NSZ)                                     4300
      IS=IS+1                                                           4310
      READ(KE'IS) (FELD(I),I=1,NSZ)                                     4320
      IW=IW-NSZ                                                         4330
   86 CONTINUE                                                          4340
      WRITE(KE'IS)(FELD(I),I=1,NSZ)                                     4350
      IF(NNAM.GT.2)  GO TO 201                                          4360
      WRITE(NOUT,200) IFE,IFEL                                          4370
      WRITE(NOUT,204)                                                   4380
      GO TO 202                                                         4390
  201 K=NNAM+5                                                          4400
      WRITE(NOUT,203) IFE,IFEL,(A(I),I=8,K)                             4410
      WRITE(NOUT,204)                                                   4420
  204 FORMAT(' ONE RECORD EXCHANGED')                                   4430
  202 J=J+N+NWERT                                                       4440
      IF(J.LT.ND-1)  GO TO 167                                          4450
      GO TO 85                                                          4460
C                                                                       4470
C     EINSCHIEBEN EINES ARGUMENTE - WERTEPAARES                         4480
C                                                                       4490
C     OEFFNEN DER ENTSPRECHENDEN LUECKE                                 4500
C                                                                       4510
   73 LL=(NWP-K+1)*(NARG+NWERT)                                         4520
      N=0                                                               4530
      M=NDATW+(NWP+1)*(NARG+NWERT)-1                                    4540
      MM=M                                                              4550
   88 IF(M.LE.NSZ) GO TO 87                                             4560
      N=N+1                                                             4570
      M=M-NSZ                                                           4580
      GO TO 88                                                          4590
   87 NDATS=NDATS+N                                                     4600
      IF(NDATS.EQ.IS)  GO TO 89                                         4610
      READ (KE'NDATS) (FELD(I),I=1,NSZ)                                 4620
      NDATS=NDATS-1                                                     4630
   89 NS=0                                                              4640
      KK=0                                                              4650
   94 IF(M-NARG-NWERT.GT.0)  GO TO 90                                   4660
      IF(NS.EQ.1)  GO TO 96                                             4670
      READ (KE'NDATS) (B(I),I=1,NSZ)                                    4680
      NDATS=NDATS-1                                                     4690
      NS=1                                                              4700
   96 FELD(M)=B(NSZ+M-NARG-NWERT)                                       4710
      GO TO 91                                                          4720
   90 IF(NS.EQ.0)  GO TO 92                                             4730
      NDA=NDATS+2                                                       4740
      WRITE(KE'NDA) (FELD(I),I=1,NSZ)                                   4750
      NS=0                                                              4760
      DO 93 I=1,NSZ                                                     4770
   93 FELD(I)=B(I)                                                      4780
   92 FELD(M)=FELD(M-NARG-NWERT)                                        4790
   91 M=M-1                                                             4800
      KK=KK+1                                                           4810
      IF(KK.GT.LL) GO TO 95                                             4820
      IF(M.EQ.0) M=NSZ                                                  4830
      GO TO 94                                                          4840
C                                                                       4850
C     EINSPEICHERN DES NEUEN DATENPAARES                                4860
C                                                                       4870
   95 IW=IW-L+1                                                         4880
      IF(IW.GT.0)  GO TO 97                                             4890
      IS=IS-1                                                           4900
      READ (KE'IS) (FELD(I),I=1,NSZ)                                    4910
      IW=NSZ-IW                                                         4920
   97 N=NARG+NWERT                                                      4930
      DO 98 L=1,N                                                       4940
      FELD(IW)=A(J+L)                                                   4950
      IW=IW+1                                                           4960
      IF(IW.LE.NSZ)  GO TO 98                                           4970
      IF(L.EQ.N) GO TO 98                                               4980
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                                   4990
      IS=IS+1                                                           5000
      READ (KE'IS) (FELD(I),I=1,NSZ)                                    5010
      IW=IW-NSZ                                                         5020
   98 CONTINUE                                                          5030
      NWP=NWP+1                                                         5040
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                                   5050
      IF(NNAM.GT.2)  GO TO 205                                          5060
      WRITE(NOUT,200) IFE,IFEL                                          5070
      WRITE(NOUT,206)                                                   5080
  206 FORMAT(' ONE RECORD INSERTED')                                    5090
      GO TO 207                                                         5100
  205 L=NNAM+5                                                          5110
      WRITE(NOUT,203) IFE,IFEL,(A(I),I=8,L)                             5120
      WRITE(NOUT,206)                                                   5130
  207 J=J+N                                                             5140
      IF(J.LT.ND-1)  GO TO 167                                          5150
      GO TO 85                                                          5160
C                                                                       5170
C     LOESCHEN EINES MATERIALNAMENS                                     5180
C                                                                       5190
  101 M=(IN-JJ)*4                                                       5200
      IF(M.EQ.0)  GO TO 107                                             5210
      IW=IW+4                                                           5220
      KK=0                                                              5230
      DO 102 K=1,M                                                      5240
      IF(KK.EQ.1) GO TO 105                                             5250
      IF(IW.LE.NSZ) GO TO 103                                           5260
      KK=1                                                              5270
      IS=IS+1                                                           5280
      READ (KE'IS) (B(I),I=1,NSZ)                                       5290
      IW=IW-NSZ                                                         5300
  105 FELD(NSZ+IW-4)=B(IW)                                              5310
      IW=IW+1                                                           5320
      IF(IW.EQ.5) GO TO 104                                             5330
      GO TO 102                                                         5340
  104 IS=IS-1                                                           5350
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                                   5360
      DO 106 I=1,NSZ                                                    5370
  106 FELD(I)=B(I)                                                      5380
```

```
      KK=0                                                          5390
      IS=IS+1                                                       5400
      GO TO 102                                                     5410
  103 FELD(IW-4)=FELD(IW)                                           5420
      IW=IW+1                                                       5430
  102 CONTINUE                                                      5440
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               5450
  107 IF(IS.EQ.1)  GO TO 108                                        5460
      IS=1                                                          5470
      READ (KE'IS) (FELD(I),I=1,NSZ)                                5480
  108 IFELD(11)=IFELD(11)-1                                         5490
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               5500
      WRITE(NOUT,208) IFE                                           5510
  208 FORMAT(1HO,A10)                                               5520
      WRITE(NOUT,209)                                               5530
  209 FORMAT(' ALL DATA DELETED')                                   5540
      IFALL=IFALL+3                                                 5550
      IF(IFALL+3.LT.ND)  GO TO 109                                  5560
      GO TO 77                                                      5570
C                                                                   5580
C     LOESCHEN EINES TYPNAMENS                                      5590
C                                                                   5600
  110 M=(NT-JJ)*7                                                   5610
      IF(M.EQ.0) GO TO 111                                          5620
      IW=IW+7                                                       5630
      KK=0                                                          5640
      DO 112 K=1,M                                                  5650
      IF(KK.EQ.1) GO TO 113                                         5660
      IF(IW.LE.NSZ) GO TO 114                                       5670
      KK=1                                                          5680
      IS=IS+1                                                       5690
      READ (KE'IS) (B(I),I=1,NSZ)                                   5700
      IW=IW-NSZ                                                     5710
  113 FELD(NSZ+IW-7)=B(IW)                                          5720
      IW=IW+1                                                       5730
      IF(IW.EQ.8) GO TO 115                                         5740
      GO TO 112                                                     5750
  115 IS=IS-1                                                       5760
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               5770
      DO 116 I=1,NSZ                                                5780
  116 FELD(I)=B(I)                                                  5790
      KK=0                                                          5800
      IS=IS+1                                                       5810
      GO TO 112                                                     5820
  114 FELD(IW-7)=FELD(IW)                                           5830
      IW=IW+1                                                       5840
  112 CONTINUE                                                      5850
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               5860
  111 IF(NTS.EQ.IS)  GO TO 117                                      5870
      READ (KE'NTS) (FELD(I),I=1,NSZ)                               5880
      IS=NTS                                                        5890
  117 IFELD(NTW)=IFELD(NTW)-1                                       5900
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               5910
      WRITE(NOUT,200) IFE,IFEL                                      5920
      WRITE(NOUT,209)                                               5930
      IFALL =IFALL+NNAM+3                                           5940
      IF(IFALL+3.LT.ND)  GO TO 109                                  5950
      GO TO 77                                                      5960
C                                                                   5970
C     LOESCHEN DER DATEN EINES WEITEREN NAMENS                      5980
C                                                                   5990
  118 IW=IW-NWN                                                     6000
      KK=0                                                          6010
      IF(IW.GT.0) GO TO 119                                         6020
      IS=IS-1                                                       6030
      DO 144 I=1,NSZ                                                6040
  144 B(I)=FELD(I)                                                  6050
      READ(KE'IS) (FELD(I),I=1,NSZ)                                 6060
      KK=1                                                          6070
  119 M=(NKB-K)*(NWN+3)                                             6080
      IF(M.EQ.0)  GO TO 120                                         6090
      IW=IW+NWN+3                                                   6100
      DO 121 K=1,M                                                  6110
      IF(KK.EQ.1)  GO TO 122                                        6120
      IF(IW.LE.NSZ)  GO TO 123                                      6130
      KK=1                                                          6140
      IS=IS+1                                                       6150
      READ (KE'IS) (B(I),I=1,NSZ)                                   6160
      IW=IW-NSZ                                                     6170
  122 FELD(NSZ+IW-NWN-3)=B(IW)                                      6180
      IW=IW+1                                                       6190
      IF(IW.EQ.NWN+4)  GO TO 125                                    6200
      GO TO 121                                                     6210
  125 IS=IS-1                                                       6220
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               6230
      DO 124 I=1,NSZ                                                6240
  124 FELD(I)=B(I)                                                  6250
      KK=0                                                          6260
      IS=IS+1                                                       6270
      GO TO 121                                                     6280
  123 FELD(IW-NWN-3)=FELD(IW)                                       6290
      IW=IW+1                                                       6300
  121 CONTINUE                                                      6310
      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               6320
  120 IF(NNAS.EQ.IS)  GO TO 126                                     6330
      READ (KE'NNAS) (FELD(I),I=1,NSZ)                              6340
      IS=NNAS                                                       6350
  126 IFELD(NNAW)=IFELD(NNAW)-1                                     6360

      WRITE (KE'IS) (FELD(I),I=1,NSZ)                               6370
      K=NNAM+5                                                      6380
      WRITE(NOUT,203) IFE,IFEL,(A(I),I=8,K)                         6390
      WRITE(NOUT,209)                                               6400
      IFALL=IFALL+5+NWN                                             6410
      IF(IFALL+3.LT.ND)  GO TO 109                                  6420
      GO TO 77                                                      6430
C                                                                   6440
    1 IF(IBA)127,127,128                                            6450
  128 IL=13                                                         6460
      IBA=0                                                         6470
      GO TO 77                                                      6480
```

```
127 RETURN                                                              6490
    END                                                                 6500
```

```
    SUBROUTINE P01723                                                     10
    REAL*8 MATNA(200),TYPN(100),NAME(20),ALL/'ALL   '/                    20
    DIMENSION DAT(40000),ARG(20000),WERT(20000),ISOT(200),ITYP(100),      30
   1WNAME(10),NUNA(200),NUTY(100),EN(20000),WQ(20000),NNAME(20)           40
    COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NT,NE                             50
    EQUIVALENCE(DAT(1),ARG(1)),(DAT(20001),WERT(1))                       60
    WRITE(NT,23)                                                          70
 23 FORMAT(1H1/' PROGRAMM 01723'/)                                        80
    READ (NE) NM,(NAME(I),I=1,NM)                                         90
    EPS=0.001                                                            100
    NINP=12                                                              110
    NOUT=2                                                               120
    N2X=20000                                                            130
    N1=1                                                                 140
    MM=1                                                                 150
    IF(NM.EQ.1.AND.NAME(1).EQ.ALL)  GO TO 28                             160
    DO 24 I=1,NM                                                         170
    DO 25 J=1,NZM                                                        180
    IF(NAME(I).EQ.MATNA(J))  GO TO 26                                    190
 25 CONTINUE                                                             200
    WRITE (NT,27) NAME(I)                                                210
 27 FORMAT(' DAS MATERIAL',A10,' EXISTIERT NICHT AUF KEDAK')             220
    STOP5                                                                230
 26 NNAME(I)=NUNA(J)                                                     240
 24 CONTINUE                                                             250
 28 READ(NINP) C,IDAT,NISO                                               260
    WRITE(NOUT) C,IDAT,NISO                                              270
    READ(NINP) (ISOT(I),I=1,NISO)                                        280
    WRITE(NOUT)(ISOT(I),I=1,NISO)                                        290
    DO 29J=1,NISO                                                        300
    NA=0                                                                 310
    READ (NINP) MAT,NTYP                                                 320
    WRITE(NOUT) MAT,NTYP                                                 330
    READ (NINP) (ITYP(I),I=1,NTYP)                                       340
    WRITE (NOUT)(ITYP(I),I=1,NTYP)                                       350
    DO 2 K=1,NTYP                                                        360
    READ (NINP) MAT,KTYP,NFN,NARG,NWERT,NKOMB                            370
    WRITE (NOUT)MAT,KTYP,NFN,NARG,NWERT,NKOMB                            380
    IF(NKOMB.EQ.0)  GO TO 3                                              390
    DO 4 L=1,NKOMB                                                       400
    READ (NINP) (WNAME(I),I=1,NFN)                                       410
    WRITE (NOUT)(WNAME(I),I=1,NFN)                                       420
    READ (NINP) NDI                                                      430
    IF(NAME(1).NE.ALL.AND.MAT.NE.NNAME(MM))  GO TO 22                    440
    NA=1                                                                 450
    IF(KTYP.EQ.40021)  GO TO 22                                          460
    IF(KTYP.EQ.40022)  GO TO 22                                          470
    IF(KTYP.EQ.40041)  GO TO 22                                          480
    IF(KTYP.EQ.40042)  GO TO 22                                          490
    IF(KTYP.EQ.40051)  GO TO 22                                          500
    IF(KTYP.EQ.40052)  GO TO 22                                          510
    IF(KTYP.EQ.40291)  GO TO 22                                          520
    IF(KTYP.EQ.40292)  GO TO 22                                          530
    IF(NARG.EQ.1.AND.NWERT.EQ.1)  GO TO 5                                540
 22 WRITE (NOUT) NDI                                                     550
    N=(NARG+NWERT)*NDI                                                   560
    READ (NINP) (DAT(I),I=1,N)                                           570
    WRITE (NOUT)(DAT(I),I=1,N)                                           580
    GO TO 4                                                              590
  5 READ (NINP) (ARG(I),WERT(I),I=1,NDI)                                 600
    XL=ARG(1)                                                            610
    XH=ARG(NDI)                                                          620
    N2=NDI                                                               630
    DO 9 I=1,NDI                                                         640
    EN(I)=ARG(I)                                                         650
  9 WQ(I)=WERT(I)                                                        660
    CALL ELIM (XL,XH,EPS,N2,N2X,EN,WQ,$30)                               670
    IF(N2.EQ.NDI)  GO TO 12                                              680
    DO 13 I=1,NZM                                                        690
    IF(MAT.EQ.NUNA(I))  GO TO 14                                         700
 13 CONTINUE                                                             710
 14 DO 15 M=1,NZT                                                        720
    IF(KTYP.EQ.NUTY(M))  GO TO 16                                        730
 15 CONTINUE                                                             740
 16 WRITE (NT  ,17) MATNA(I),TYPN(M),NDI,N2,(WNAME(N),N=1,NFN)           750
 17 FORMAT(2A12,2I12,4E16.8/(8E16.8))                                    760
 12 WRITE (NOUT) N2                                                      770
    WRITE (NOUT) (EN(I),WQ(I),I=1,N2)                                    780
  4 CONTINUE                                                             790
    GO TO 2                                                              800
C                                                                        810
  3 READ (NINP) NDI                                                      820
    IF(NAME(1).NE.ALL.AND.MAT.NE.NNAME(MM))  GO TO 21                    830
    NA=1                                                                 840
    IF(KTYP.EQ.14510)  GO TO 21                                          850
    IF(NARG.EQ.1.AND.NWERT.EQ.1)  GO TO 6                                860
 21 WRITE (NOUT) NDI                                                     870
    N=(NARG+NWERT)*NDI                                                   880
    READ (NINP) (DAT(I),I=1,N)                                           890
    WRITE (NOUT)(DAT(I),I=1,N)                                           900
    GO TO 2                                                              910
  6 READ (NINP)(ARG(I),WERT(I),I=1,NDI)                                  920
    XL=ARG(1)                                                            930
    XH=ARG(NDI)                                                          940
    N2=NDI                                                               950
    DO 8 I=1,NDI                                                         960
    EN(I)=ARG(I)                                                         970
  8 WQ(I)=WERT(I)                                                        980
    CALL ELIM (XL,XH,EPS,N2,N2X,EN,WQ,&30)                               990
    IF(N2.EQ.NDI)  GO TO 7                                              1000
    DO 1 I=1,NZM                                                        1010
    IF (MAT.EQ.NUNA(I))  GO TO 18                                       1020
  1 CONTINUE                                                            1030
 18 DO 19 M=1,NZT                                                       1040
```

```
      IF (KTYP.EQ.NUTY(M))  GO TO 20                                    1050
   19 CONTINUE                                                          1060
   20 WRITE (NT  ,11)MATNA(I),TYPN(M),NDI,N2                            1070
   11 FORMAT(2A12,2I12)                                                 1080
    7 WRITE (NOUT) N2                                                   1090
      WRITE (NOUT) (EN(I),WQ(I),I=1,N2)                                 1100
    2 CONTINUE                                                          1110
      IF(NA.EQ.0)  GO TO 29                                             1120
      MM=MM+1                                                           1130
      IF(MM.GT.NM)  MM=MM-1                                             1140
   29 CONTINUE                                                          1150
      RETURN                                                            1160
   30 WRITE (NT,31) MAT,KTYP                                            1170
   31 FORMAT(/' AUF KEDAK SIND 3 GLEICHE ENERGIEPUNKTE ENTHALTEN BEI',  1180
     1 2I10)                                                            1190
      STOP5                                                             1200
      END                                                               1210
```

```
      SUBROUTINE ELIM(XL,XH,EPS,N2,N2X,X,Y,*)                           10
      DIMENSION X(1),Y(1)                                               20
C-----ELIMINATE UNNECESSARY POINTS                                      30
C-----POINTS BETWEEN TWO POINTS ARE ONLY ELIMINATED IF ALL POINTS       40
C-----BETWEEN CAN BE OBTAINED BY INTERPOLATION WITH AN ERROR LESS EPS.  50
  400 IF(N2.LE.2)  GO TO 800                                            60
      K1=1                                                              70
  401 K2=K1+2                                                           80
C     LETZTES INTERVALL ERREICHT?                                       90
      IF(K2.GT.N2) GOTO 800                                            100
C     INTERVALLANFANG GLEICH INTERVALLENDE?                            110
      IF(X(K1).EQ.X(K2)) GOTO 420                                      120
  403 K1=K1+1                                                          130
C     LAUFENDER PUNKT GLEICH INTERVALLANFANG ODER INTERVALLENDE?        140
      IF(X(K1).EQ.X(K1).OR.X(K1).EQ.X(K2)) GOTO 420                    150
C     Y - WERTE MIT WERTEN <=1.0E-10 WERDEN NICHT ELIMINIERT           160
  405 IF(Y(K1).LE.1.0E-10)  GO TO 420                                  170
C     LINEAR INTERPOLATION                                             180
      XA=X(K1)                                                         190
      XB=X(K2)                                                         200
      YA=Y(K1)                                                         210
      YB=Y(K2)                                                         220
      XP=X(K1)                                                         230
      IF(XA.EQ.XB)  RETURN 1                                           240
      YP=YA+(XP-XA)*(YB-YA)/(XB-XA)                                    250
      IF(ABS((Y(K1)-YP)/Y(K1)).GT.EPS) GOTO 420                        260
C     NAECHSTER ZU ELIMINIERENDER PUNKT IM INTERVALL K1...K2.          270
      K1=K1+1                                                          280
      IF(K1.LT.K2) GOTO 405                                            290
C     VERGROESSERN DES INTERVALLS.                                     300
      K2=K2+1                                                          310
      IF(K2.LE.N2) GOTO 403                                            320
C     INTERVALL WAR ZU GROSS. LETZTER PUNKT ERREICHT.                  330
C     GENAUIGKEIT NICHT ERFUELLT. INTERVALL VERKLEINERN UND            340
C     EVENTUELL PUNKTE ELIMINIEREN.                                    350
  420 K2=K2-1                                                          360
      IF(K2.GT.(K1+1)) GOTO 406                                        370
C     INTERVALL NACH OBEN VERSCHIEBEN.                                 380
      K1=K1+1                                                          390
      GOTO 401                                                         400
C     ELIMINIEREN DER PUNKTE K1+1 BIS K2-1                             410
  406 K1P1=K1+1                                                        420
      K2M1=K2-1                                                        430
      KANZ=K2-K1-1                                                     440
      DO 407 K=K2,N2                                                   450
      X(K-KANZ)=X(K)                                                   460
  407 Y(K-KANZ)=Y(K)                                                   470
      N2=N2-KANZ                                                       480
      K2=K2-KANZ                                                       490
      K1=K2                                                            500
      GOTO 401                                                         510
C-----FINISHED                                                         520
  800 RETURN                                                           530
      END                                                              540
```

```
      SUBROUTINE P01705                                                 10
C                                                                       20
C     PROGRAMM ZUM AUFFUELLEN DER SEKUNDAERDATEN MIT STANDARDDATEN      30
C                                                                       40
      REAL*8 MATNA(200),TYPN(100),MAT(2),TYP(10)                        50
      DIMENSION NUNA(200),NUTY(100),UE(8,4,10),OE(8,4,10),NMAT(2),      60
     1NTYP(10),NDTYP(100),DAT(40000),XNAM(10),NAW(4,10),AW(40000),      70
     2WN(800,4),NL(10),MNAME(200),NZW(4)                                80
     3,NAD(400)                                                         90
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUT,NE                      100
      WRITE(NOUT,1)                                                    110
    1 FORMAT(1H1/' PROGRAMM 01705'//)                                  120
      ITTTT=40000                                                      130
      NP=15                                                            140
      NKE=3                                                            150
      NKA=4                                                            160
      IRE=0                                                            170
      LP=0                                                             180
      MEX=0                                                            190
      KDAT=0                                                           200
      REWIND NKE                                                       210
      REWIND NKA                                                       220
      READ (NE) MAT(1),MAT(2),MM                                       230
C                                                                      240
C     MAT(1) NAME DES MATERIALS , DESSEN DATEN AUFGEFUELLT WERDEN SOLLEN 250
C     MAT(2) NAME DES MATERIALS , MIT DESSEN DATEN AUFGEFUELLT WIRD    260
C     MM     ANZAHL DER AUFZUFUELLENDEN TYPEN                          270
C                                                                      280
      DO 2 I=1,MM                                                      290
      READ (NE) TYP(I),N,K,((UE(NK,L,I),NK=1,K),(OE(NK,L,I),NK=1,K),L=1, 300
     1N)                                                               310
```

```
      NL(I)=N                                                           320
    2 CONTINUE                                                          330
C                                                                       340
C     TYP      NAME DES TYPS , DESSEN DATEN AUFGEFUELLT WERDEN SOLLEN   350
C     NL       ANZAHL DER AUFZUFUELLENDEN LUECKEN                       360
C     K        WENN NWN>0  ANZAHL DER WEITEREN NAMEN                    370
C              WENN NWN=0  ANZAHL DER ARGUMENTE                         380
C     UE       UNTERE LUECKENBEGRENZUNG IM DATENBEREICH VON MAT(1)      390
C     OE       OBERE LUECKENBEGRENZUNG IM DATENBEREICH VON MAT(1)       400
C                                                                       410
      DO 91 I=1,4                                                       420
   91 NZW(I)=0                                                          430
      READ (NKE) KSA,KSI,KK                                             440
      WRITE (NKA) KSA,KSI,KK                                            450
      READ (NKE) (MNAME(L),L=1,KK)                                      460
      WRITE (NKA) (MNAME(L),L=1,KK)                                     470
      DO 3 K=1,2                                                        480
      DO 4 I=1,NZM                                                      490
      IF(MAT(K).EQ.MATNA(I)) GO TO 5                                    500
    4 CONTINUE                                                          510
      WRITE (NOUT,6) MAT(K)                                             520
    6 FORMAT (' DAS MATERIAL',A9,' IST NICHT IN DER NAMENUMRECHNUNGSTABE 530
     1LLE ENTHALTEN')                                                   540
      STOP                                                              550
    5 NMAT(K)=NUNA(I)                                                   560
    3 CONTINUE                                                          570
      DO 77 K=1,2                                                       580
      DO 78 I=1,KK                                                      590
      IF(NMAT(K).EQ.MNAME(I))  GO TO 77                                 600
   78 CONTINUE                                                          610
      WRITE (NOUT,79) NMAT(K)                                           620
   79 FORMAT(' DAS MATERIAL',I9,' IST NICHT AUF KEDAK ENTHALTEN')       630
      STOP                                                              640
   77 CONTINUE                                                          650
      DO 10 K=1,MM                                                      660
      DO 7 I=1,NZT                                                      670
      IF(TYP(K).EQ.TYPN(I)) GO TO 8                                     680
    7 CONTINUE                                                          690
      WRITE (NOUT,9) TYP(K)                                             700
    9 FORMAT(' DER TYP',A9,' IST NICHT IN DER NAMENUMRECHNUNGSTABELLE EN 710
     1THALTEN')                                                         720
      STOP                                                              730
    8 NTYP(K)=NUTY(I)                                                   740
   10 CONTINUE                                                          750
      DO 11 L=1,KK                                                      760
      IF(NMAT(2).EQ.MNAME(L)) GOTO 12                                   770
      IF(NMAT(1).EQ.MNAME(L)) IRE=1                                     780
   11 CONTINUE                                                          790
      WRITE (NOUT,13) NMAT(2)                                           800
   13 FORMAT(' DER MATERIALNAME',A9,' STEHT NICHT IN DER SEQUENTIELLEN K 810
     1ERNDATENBIBLIOTHEK')                                              820
      STOP                                                              830
C                                                                       840
C     SUCHEN DER AUFFUELLDATEN                                          850
C                                                                       860
C     SCHLEIFE UEBER DIE MATERIALIEN                                    870
C                                                                       880
   12 DO 100 M=1,KK                                                     890
      READ (NKE) MA,NTY                                                 900
      IF(IRE.EQ.0) WRITE(NKA)MA,NTY                                     910
      READ (NKE) (NDTYP(I),I=1,NTY)                                     920
      IF(IRE.EQ.0) WRITE(NKA) (NDTYP(I),I=1,NTY)                        930
C                                                                       940
C     SCHLEIFE UEBER DIE TYPEN                                          950
C                                                                       960
      IIT=1                                                             970
      JW=0                                                              980
      NKO=0                                                             990
      DO 14 IT=1,NTY                                                   1000
      LK=1                                                             1010
      ME=0                                                             1020
      READ (NKE) MATN,NTYPN,NWN,NA,NW,NNK                              1030
      IF(IRE.EQ.0) WRITE(NKA)MATN,NTYPN,NWN,NA,NW,NNK                  1040
      ND=NA+NW                                                         1050
      IF(NWN)15,15,16                                                  1060
   15 NNK1=1                                                           1070
      GO TO 17                                                         1080
   16 NNK1=NNK                                                         1090
C                                                                      1100
C     SCHLEIFE UEBER DIE NAMENKOMBINATIONEN                            1110
C                                                                      1120
   17 DO 18 INK=1,NNK1                                                 1130
      IF(NWN)19,19,20                                                  1140
   20 READ(NKE)(XNAM(I),I=1,NWN)                                       1150
      IF(IRE.EQ.0) WRITE(NKA) (XNAM(I),I=1,NWN)                        1160
   19 READ(NKE) NDAT                                                   1170
      IF(IRE.EQ.0) WRITE(NKA) NDAT                                     1180
      I2=NDAT*ND                                                       1190
      READ(NKE) (DAT(I),I=1,I2)                                        1200
      IF(IRE.EQ.0) WRITE(NKA) (DAT(I),I=1,I2)                          1210
      IF(MATN.NE.NMAT(2)) GO TO 18                                     1220
      IF(NTYPN.NE.NTYP(IIT)) GO TO 18                                  1230
      ME=1                                                             1240
      IF(NWN)21,21,22                                                  1250
C                                                                      1260
C     AUFFINDEN DER EINZUFUEGENDEN DATEN NWN>0                         1270
C                                                                      1280
   22 IF(LK.GT.NL(IIT)) GO TO 18                                       1290
      DO 23 NN=1,NWN                                                   1300
      IF((XNAM(NN)-UE(NN,LK,IIT))/XNAM(NN)+5.E-6)18,24,24              1310
   24 IF((XNAM(NN)-UE(NN,LK,IIT))/XNAM(NN)-5.E-6)23,23,25              1320
   23 CONTINUE                                                         1330
      GO TO 18                                                         1340
   25 IP=0                                                             1350
      DO 26 NN=1,NWN                                                   1360
      IF((XNAM(NN)-OE(NN,LK,IIT))/ XNAM(NN)+5.E-6)27,28,28             1370
   28 IF((XNAM(NN)-OE(NN,LK,IIT))/XNAM(NN)-5.E-6)26,26,29              1380
   27 IP=1                                                             1390
   26 CONTINUE                                                         1400
      IF(IP.EQ.1) GO TO 30                                             1410
```

```
   29 LK=LK+1                                                          1420
      JW=0                                                             1430
      GO TO 22                                                         1440
   30 NAD(NKO+1)=NDAT                                                  1450
      NKO=NKO+1                                                        1460
      NZW(LK)=NZW(LK)+1                                                1470
      DO 31 I=1,NWN                                                    1480
   31 WN(I+JW,LK)=XNAM(I)                                              1490
      JW=JW+NWN                                                        1500
      IF(KDAT+I2.LE.ITTTT) GO TO 32                                    1510
      WRITE (NP)KDAT,(AW(I),I=1,KDAT)                                  1520
      KDAT=0                                                           1530
      LP=LP+1                                                          1540
   32 DO 33 I=1,I2                                                     1550
   33 AW(KDAT+I)=DAT(I)                                                1560
      KDAT=KDAT+I2                                                     1570
      IF(JW+NWN.LE.800) GO TO 18                                       1580
      WRITE (NOUT,81)MATN,NTYPN,LK                                     1590
   81 FORMAT(' MATERIAL',I9,' TYP',I9,' LUECKE',I3,' BENOETIGT MEHR ALS 1600
     1800 SPEICHERPLAETZE'/' FUER DIE WEITEREN NAMEN ; DIE LUECKE WIRD D 1610
     2ESHALB NICHT VOLL AUFGEFUELLT')                                  1620
      LK=LK+1                                                          1630
      JW=0                                                             1640
      GO TO 18                                                         1650
C                                                                      1660
C     AUFFINDEN DER EINZUFUEGENDEN DATEN NWN=0                         1670
C                                                                      1680
   21 NAW(1,IIT)=0                                                     1690
      DO 34 I=1,NDAT                                                   1700
   43 DO 35 J=1,NA                                                     1710
      IND=(I-1)*ND+J                                                   1720
      IF(NTYPN.NE.21520)  GO TO 89                                     1730
      IF(DAT(IND)*0.999995.LT.UE(J,LK,IIT))  GO TO 34                  1740

      GO TO 37                                                         1750
   89 IF(DAT(IND)*1.000005-UE(J,LK,IIT))86,36,36                       1760
   36 IF(DAT(IND)*0.999995-UE(J,LK,IIT))35,35,37                       1770
   86 IF(DAT(IND).EQ.0)  GO TO 34                                      1780
      IF(ABS((ABS(DAT(IND))-ABS(UE(J,LK,IIT)))/ABS(DAT(IND)))-5.E-6)   1790
     135,35,34                                                         1800
   35 CONTINUE                                                         1810
      GOTO 34                                                          1820
   37 IP=0                                                             1830
      DO 38 J=1,NA                                                     1840
      IND=(I-1)*ND+J                                                   1850
      IF(NTYPN.NE.21520)  GO TO 88                                     1860
      IF(DAT(IND)*1.000005.LT.OE(J,LK,IIT))  GO TO 42                  1870
      GO TO 41                                                         1880
   88 IF(DAT(IND)*1.000005-OE(J,LK,IIT))87,40,40                       1890
   40 IF(DAT(IND)*0.999995-OE(J,LK,IIT))38,38,41                       1900
   87 IF(DAT(IND).EQ.0)  GO TO 39                                      1910
      IF(ABS((ABS(DAT(IND))-ABS(OE(J,LK,IIT)))/ABS(DAT(IND)))-5.E-6)   1920
     138,38,39                                                         1930
   39 IP=1                                                             1940
      GO TO 42                                                         1950
   38 CONTINUE                                                         1960
      IF(IP.EQ.1) GO TO 42                                             1970
   41 LK=LK+1                                                          1980
      JW=0                                                             1990
      IF(LK.GT.NL(IIT)) GO TO 18                                       2000
      NAW(LK,IIT)=0                                                    2010
      GO TO 43                                                         2020
   42 NAW(LK,IIT)=NAW(LK,IIT)+1                                        2030
      IF(KDAT+ND.LE.ITTTT) GO TO 44                                    2040
      WRITE(NP) KDAT,(AW(J),J=1,KDAT)                                  2050
      KDAT=0                                                           2060
      LP=LP+1                                                          2070
   44 DO 45 J=1,ND                                                     2080
      IND=(I-1)*ND+J                                                   2090
   45 AW(KDAT+J)=DAT(IND)                                              2100
      KDAT=KDAT+ND                                                     2110
   34 CONTINUE                                                         2120
C                                                                      2130
   18 CONTINUE                                                         2140
C     ENDE DER SCHLEIFE UEBER DIE NAMENSKOMBINATION                    2150
C                                                                      2160
      IF(ME.EQ.0) GO TO 14                                             2170
      IIT=IIT+1                                                        2180
      MEX=1                                                            2190
      IF(IIT.LE.MM)  GO TO 14                                          2200
      IIT=IIT-1                                                        2210
   14 CONTINUE                                                         2220
C     ENDE DER SCHLEIFE UEBER DIE TYPEN                                2230
C                                                                      2240
      IF(MEX.EQ.1) GO TO 46                                            2250
  100 CONTINUE                                                         2260
C     ENDE DER SCHLEIFE UEBER DIE MATERIALIEN                          2270
C                                                                      2280
   46 IF(IRE.EQ.1)  GO TO 82                                           2290
      I1=M+1                                                           2300
      GO TO 80                                                         2310
   82 REWIND NKE                                                       2320
      I1=1                                                             2330
   80 IF(LP.EQ.0) GO TO 60                                             2340
      REWIND NP                                                        2350
      READ(NP)NN,(AW(I),I=1,NN)                                        2360
C                                                                      2370
C     SUCHEN DES AUFZUFUELLENDEN MATERIALNAMENS                        2380
C                                                                      2390
   60 KDAT=0                                                           2400
      LPP=1                                                            2410
C                                                                      2420
      DO 101 M=I1,KK                                                   2430
      READ (NKE) MA,NTY                                                2440
      WRITE (NKA) MA,NTY                                               2450
      READ (NKE) (NDTYP(I),I=1,NTY)                                    2460
      WRITE(NKA) (NDTYP(I),I=1,NTY)                                    2470
      IIT=1                                                            2480
      JW=0                                                             2490
      NKO=0                                                            2500
C                                                                      2510
```

```
      DO 47 IT=1,NTY                                                    2520
      ITP=0                                                             2530
      LK=1                                                              2540
      READ (NKE) MATN,NTYPN,NWN,NA,NW,NNK                               2550
      NN=NNK                                                            2560
      IDRU=1                                                            2570
      IF(MATN.NE.NMAT(1))  GO TO 96                                     2580
      IF(NTYPN.NE.NTYP(IIT))  GO TO 96                                  2590
      IDRU=2                                                            2600
      IF(NN.EQ.0)  GO TO 96                                             2610
      LN=NL(IIT)                                                        2620
      DO 93 I=1,LN                                                      2630
   93 NN=NN+NZW(I)                                                      2640
   96 WRITE (NKA) MATN,NTYPN,NWN,NA,NW,NN                               2650
      IF(IDRU.EQ.1)  GO TO 99                                           2660
      WRITE (NOUT,200) MATN,NTYPN,NWN,NA,NW,NN                          2670
  200 FORMAT(10I10)                                                     2680
   99 ND=NA+NW                                                          2690
      IF(NWN) 48,48,49                                                  2700
   48 NNK1=1                                                            2710
      GO TO 50                                                          2720
   49 NNK1=NNK                                                          2730
C                                                                       2740
   50 DO 51 INK=1,NNK1                                                  2750
      IF(NWN)52,52,53                                                   2760
   53 READ(NKE) (XNAM(I),I=1,NWN)                                       2770
      IUN=1                                                             2780
      IF(MATN.NE.NMAT(1)) GO TO 54                                      2790
      IF(NTYPN.NE.NTYP(IIT)) GO TO 54                                   2800
      IUN=2                                                             2810
   64 IF(LK.GT.NL(IIT)) GO TO 54                                        2820
      ITP=1                                                             2830
      INZ=1                                                             2840
      KZ=0                                                              2850
   63 DO 55 NN=1,NWN                                                    2860
      IF(XNAM(NN)*0.999995.GT.WN(NN+JW,LK))  GO TO 56                   2870
   55 CONTINUE                                                          2880
      IF(KZ)54,54,62                                                    2890
C                                                                       2900
C     EINFUEGEN DER DATEN NWN>0                                         2910
C                                                                       2920
   56 WRITE (NKA) (WN(I+JW,LK),I=1,NWN)                                 2930
      WRITE (NOUT,201) (WN(I+JW,LK),I=1,NWN)                            2940
  201 FORMAT(8E16.8)                                                    2950
      JW=JW+NWN                                                         2960
      KZ=KZ+1                                                           2970
      WRITE (NKA) NAD(NKO+1)                                            2980
      WRITE (NOUT,200) NAD(NKO+1)                                       2990
      I2=NAD(NKO+1)*ND                                                  3000
      NKO=NKO+1                                                         3010
      IF(KDAT+I2.LE.ITTTT) GO TO 57                                     3020
      IF(LPP.LE.LP) GO TO 58                                            3030
   68 WRITE(NOUT,59) LPP,LP                                             3040
   59 FORMAT(' AUF DER EXTERNEN EINHEIT NP WERDEN',I3,' SAETZE GESUCHT ,3050
     1 ES SIND NUR',I3,' SAETZE VORHANDEN')                             3060
      STOP5                                                             3070
   58 READ (NP) NN,(AW(I),I=1,NN)                                       3080
      LPP=LPP+1                                                         3090
      KDAT=0                                                            3100
   57 WRITE (NKA) (AW(KDAT+I),I=1,I2)                                   3110
      WRITE (NOUT,201) (AW(KDAT+I),I=1,I2)                              3120
      KDAT=KDAT+I2                                                      3130
      INZ=INZ+1                                                         3140
      IF(INZ.LE.NZW(LK))  GO TO 63                                      3150
   62 LK=LK+1                                                           3160
      JW=0                                                              3170
      GO TO 64                                                          3180
   54 WRITE (NKA) (XNAM(I),I=1,NWN)                                     3190
      IF(IUN.EQ.2)  WRITE (NOUT,201) (XNAM(I),I=1,NWN)                  3200
   65 READ (NKE) NDAT                                                   3210
      WRITE (NKA) NDAT                                                  3220
      IF(IUN.EQ.2)  WRITE (NOUT,200) NDAT                               3230
      I2=NDAT*ND                                                        3240
      READ (NKE) (DAT(I),I=1,I2)                                        3250
      WRITE (NKA) (DAT(I),I=1,I2)                                       3260
      IF(IUN.EQ.1)  GO TO 51                                            3270
      IF(INK.LT.NNK1)  GO TO 51                                         3280
      IF(LK.GT.NL(IIT))  GO TO 51                                       3290
      NN=NZW(LK)                                                        3300
      JW=0                                                              3310
      DO 94 I=1,NN                                                      3320
      WRITE (NKA) (WN(J+JW,LK),J=1,NWN)                                 3330
      WRITE (NOUT,201) (WN(J+JW,LK),J=1,NWN)                            3340
      JW=JW+NWN                                                         3350
      WRITE (NKA) NAD(NKO+1)                                            3360
      WRITE (NOUT,200) NAD(NKO+1)                                       3370
      I2=NAD(NKO+1)*ND                                                  3380
      NKO=NKO+1                                                         3390
      IF(KDAT+I2.LE.ITTTT)  GO TO 95                                    3400
      IF(LPP.GT.LP)  GO TO 68                                           3410
      READ(NP) IND,(AW(J),J=1,IND)                                      3420
      LPP=LPP+1                                                         3430
      KDAT=0                                                            3440
   95 WRITE (NKA) (AW(KDAT+J),J=1,I2)                                   3450
      WRITE (NOUT,201) (AW(KDAT+J),J=1,I2)                              3460
   94 KDAT=KDAT+I2                                                      3470
      GO TO 51                                                          3480
C                                                                       3490
C     EINFUEGEN DER NAMEN NWN=0                                         3500
C                                                                       3510
   52 IUN=1                                                             3520
      IF(MATN.NE.NMAT(1))  GO TO 65                                     3530
      IF(NTYPN.NE.NTYP(IIT)) GO TO 65                                   3540
      IF(LK.GT.NL(IIT)) GO TO 65                                        3550
      ITP=1                                                             3560
      READ (NKE) NDAT                                                   3570
      I2=NDAT*ND                                                        3580
      READ (NKE) (DAT(I),I=1,I2)                                        3590
      IF(KDAT+ND.LE.ITTTT) GO TO 66                                     3600
      IF(LPP.GT.LP) GO TO 68                                            3610
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      READ (NP) NN,(AW(I),I=1,NN)                                       3620
      LPP=LPP+1                                                         3630
      KDAT=0                                                            3640
   66 DO 69 I=1,NDAT                                                    3650
      DO 70 J=1,NA                                                      3660
      IND=(I-1)*ND+J                                                    3670
      IF(NTYPN.NE.21520)  GO TO 90                                      3680
      IF(DAT(IND)*0.999995.GT.AW(KDAT+J))  GO TO 71                     3690
      GO TO 69                                                          3700
   90 IF(DAT(IND)*0.999995.GT.AW(KDAT+J))  GO TO 71                     3710
      IF(DAT(IND)*1.000005.GT.AW(KDAT+J))  GO TO 70                     3720
      GO TO 69                                                          3730
   70 CONTINUE                                                          3740
      GO TO 69                                                          3750
   71 K=(NDAT-I+1)*ND                                                   3760
      L=0                                                               3770
      DO 72 J=1,K                                                       3780
      NN=I2+ND*NAW(LK,IIT)-L                                            3790
      DAT(NN)=DAT(I2-L)                                                 3800
   72 L=L+1                                                             3810
      K=NAW(LK,IIT)                                                     3820
      DO 73 J=1,K                                                       3830
      DO 75 L=1,ND                                                      3840
      NN=(I-1)*ND+L+(J-1)*ND                                            3850
   75 DAT(NN)=AW(KDAT+L)                                                3860
      KDAT=KDAT+ND                                                      3870
      IF(KDAT+ND.LE.ITTTT) GO TO 73                                     3880
      IF(LPP.GT.LP) GO TO 68                                            3890
      READ (NP) NN,(AW(L),L=1,NN)                                       3900
      LPP=LPP+1                                                         3910
      KDAT=0                                                            3920
   73 CONTINUE                                                          3930
      NDAT=NDAT+K                                                       3940
      I2=NDAT*ND                                                        3950
      LK=LK+1                                                           3960
      IF(LK.LE.NL(IIT)) GO TO 66                                        3970
      GO TO 83                                                          3980
   69 CONTINUE                                                          3990
      NN=0                                                              4000
      K=NAW(LK,IIT)                                                     4010
      DO 84 J=1,K                                                       4020
      DO 85 L=1,ND                                                      4030
      NN=NN+1                                                           4040
   85 DAT(I2+NN)=AW(KDAT+L)                                             4050
      KDAT=KDAT+ND                                                      4060
      IF(KDAT+ND.LE.ITTTT)  GO TO 84                                    4070
      IF(LPP.GT.LP)  GO TO 68                                           4080
      READ (NP) IND,(AW(L),L=1,IND)                                     4090
      LPP=LPP+1                                                         4100
      KDAT=0                                                            4110
   84 CONTINUE                                                          4120
      NDAT=NDAT+K                                                       4130
      I2=NDAT*ND                                                        4140
      LK=LK+1                                                           4150
      IF(LK.LE.NL(IIT))  GO TO 66                                       4160

   83 WRITE (NKA) NDAT                                                  4170
      WRITE (NOUT,200) NDAT                                             4180
      WRITE (NKA) (DAT(I),I=1,I2)                                       4190
      WRITE (NOUT,201) (DAT(I),I=1,I2)                                  4200
   51 CONTINUE                                                          4210
C     ENDE DER SCHLEIFE UEBER DIE NAMENSKOMBINATIONEN                   4220
C                                                                       4230
      IF(ITP.EQ.0)  GO TO 47                                            4240
      IIT=IIT+1                                                         4250
      IF(IIT.GT.MM)  IIT=IIT-1                                          4260
   47 CONTINUE                                                          4270
C     ENDE DER SCHLEIFE UEBER DIE TYPEN                                 4280
C                                                                       4290
  101 CONTINUE                                                          4300
C     ENDE DER SCHLEIFE UEBER DIE MATERIALIEN                           4310
C                                                                       4320
      ENDFILE NKA                                                       4330
      RETURN                                                            4340
      END                                                               4350

      SUBROUTINE P01708                                                   10
C                                                                         20
C     ERKLAERUNG DER PROBIERDATEN ZU STANDARDDATEN                        30
C                                                                         40
      REAL*8 MATNA(200),TYPN(100),MAT(2),TYP(20)                          50
      DIMENSION NUNA(200),NUTY(100),XNAM(10),DAT(40000),MNAME(200),NMAT(  60
     12),NDTYP(100),AW(40000),WN(800),NAW(200),KO(21),KOALT(20)           70
     2,NTYP(20)                                                           80
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUT,NF                         90
      WRITE (NOUT,1)                                                     100
    1 FORMAT(1H1//' PROGRAMM P01708'//)                                  110
      ITTTT=40000                                                        120
      LP=0                                                               130
      NKE=4                                                              140
      NP=20                                                              150
      NKA=19                                                             160
      REWIND NKE                                                         170
      REWIND NP                                                          180
C     REWIND NKA                                                         190
      MEX=0                                                              200
      READ (NF) MAT(1),MAT(2),IST,N,(TYP(I),I=1,N),(KOALT(I),I=1,N)      210
C                                                                        220
C     MAT    MATERIALNAME                                              230
C     IST    1:  MAT(1) IST DAS STANDARDMATERIAL                       240
C            2:  MAT(2) IST DAS STANDARDMATERIAL                       250
C     N      ANZAHL DER TYPEN                                          260
C     TYP    NAME DES TYPS , DESSEN DATEN ZU STANDARDDATEN ERKLAERT    270
C            WERDEN SOLLEN                                             280
C     KOALT ANZAHL DER IM STANDARDMATERIAL ZU UEBERSPEICHERNDEN NAMENKOM 290
C     BINATIONEN                                                        300
C                                                                       310
      READ (NKE) KSA,KSI,KK                                             320
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      WRITE (NKA) KSA,KSI,KK                                            330
      READ (NKE) (MNAME(L),L=1,KK)                                      340
      WRITE (NKA) (MNAME(L),L=1,KK)                                     350
      DO 2 K=1,2                                                        360
      DO 3 I=1,NZM                                                      370
      IF(MAT(K).EQ.MATNA(I)) GO TO 4                                    380
    3 CONTINUE                                                          390
      WRITE (NOUT,5) MAT(K)                                             400
    5 FORMAT(' DAS MATERIAL',A9,' IST NICHT IN DER NAMENUMRECHUNGSTABEL 410
     1LE ENTHALTEN')                                                    420
      STOP5                                                             430
    4 NMAT(K)=NUNA(I)                                                   440
    2 CONTINUE                                                          450
      DO 6 K=1,N                                                        460
      DO 7 I=1,NZT                                                      470
      IF(TYP(K).EQ.TYPN(I)) GO TO 8                                     480
    7 CONTINUE                                                          490
      WRITE(NOUT,9) TYP(K)                                              500
    9 FORMAT(' DER TYP',A9,' IST NICHT IN DER NAMENUMRECHNUNGSTABELLE EN 510
     1THALTEN')                                                         520
      STOP5                                                             530
    8 NTYP(K)=NUTY(I)                                                   540
    6 CONTINUE                                                          550
      DO 11 I=1,2                                                       560
      DO 10 L=1,KK                                                      570
      IF(NMAT(I).EQ.MNAME(L)) GO TO 11                                  580
   10 CONTINUE                                                          590
      WRITE (NOUT,13) NMAT(I)                                           600
   13 FORMAT(' DAS MATERIAL',I9,' IST NICHT AUF KEDAK VORHANDEN')       610
      STOP5                                                             620
   11 CONTINUE                                                          630
      KDAT=0                                                            640
C                                                                       650
C     SCHLEIFE UEBER DIE MATERIALIEN                                    660
C                                                                       670
      J=1                                                               680
      IF(IST.EQ.1) J=2                                                  690
      DO 12 M=1,KK                                                      700
      READ (NKE) MA,NTY                                                 710
      IF(IST.EQ.2) WRITE(NKA) MA,NTY                                    720
      READ (NKE) (NDTYP(I),I=1,NTY)                                     730
      IF(IST.EQ.2) WRITE(NKA) (NDTYP(I),I=1,NTY)                        740
C                                                                       750
C     SCHLEIFE UEBER DIE TYPEN                                          760
C                                                                       770
      IDW=0                                                             780
      IIT=1                                                             790
      JW=0                                                              800
      DO 14 IT=1,NTY                                                    810
      KO(IIT)=0                                                         820
      ME=0                                                              830
      READ (NKE) MATN,NTYPN,NWN,NA,NW,NNK                               840
      IF(IST.EQ.2) WRITE(NKA) MATN,NTYPN,NWN,NA,NW,NNK                  850
      IF(MATN.NE.NMAT(J)) GO TO 98                                      860
      IF(NTYPN.NE.NTYP(IIT)) GO TO 98                                   870
      ME=1                                                              880
   98 ND=NA+NW                                                          890
      IF(NWN)15,15,16                                                   900
   15 NNK1=1                                                            910
      GO TO 17                                                          920
   16 NNK1=NNK                                                          930
C                                                                       940
C     SCHLEIFE UEBER DIE NAMENKOMBINATIONEN                             950
C                                                                       960
   17 DO 18 INK=1,NNK1                                                  970
      IF(NWN)19,19,20                                                   980
   20 READ(NKE) (XNAM(I),I=1,NWN)                                       990
      IF(IST.EQ.2) WRITE(NKA) (XNAM(I),I=1,NWN)                        1000
   19 READ (NKE) NDAT                                                  1010
      IF(IST.EQ.2) WRITE(NKA) NDAT                                     1020
      I2=NDAT*ND                                                       1030
      READ (NKE) (DAT(I),I=1,I2)                                       1040
      IF(IST.EQ.2) WRITE (NKA) ( DAT(I),I=1,I2)                        1050
      IF(ME.EQ.0)  GO TO 18                                            1060
      IF(NWN)21,21,22                                                  1070
C                                                                      1080
   22 DO 23 I=1,NWN                                                    1090
   23 WN(I+JW)=XNAM(I)                                                 1100
      JW=JW+NWN                                                        1110
      KO(IIT)=KO(IIT)+1                                                1120
   21 NAW(INK+IDW)=NDAT                                                1130
      IF(KDAT+I2.LE.ITTTT) GO TO 24                                    1140
      WRITE (NP) KDAT,(AW(I),I=1,KDAT)                                 1150
      KDAT=0                                                           1160
      LP=LP+1                                                          1170
   24 DO 25 I=1,I2                                                     1180
   25 AW(KDAT+I)=DAT(I)                                                1190
      KDAT=KDAT+I2                                                     1200
      IF(JW+NWN.LE.800) GO TO 18                                       1210
      WRITE (NOUT,26)                                                  1220
   26 FORMAT(' BEIM PROBIERMATERIAL IST DIE ANZAHL DER NAMENKOMBINATIONE 1230
     1N * ANZAHL DER WEITEREN NAMEN > 800')                            1240
      NNK1=INK                                                         1250
      GO TO 27                                                         1260
   18 CONTINUE                                                         1270
C     ENDE DER SCHLEIFE UEBER DIE NAMENKOMBINATIONEN                   1280
C                                                                      1290
      IF(ME.EQ.0) GO TO 14                                             1300
   27 IDW=IDW+NNK1                                                     1310
      IIT=IIT+1                                                        1320
      MEX=1                                                            1330
      IF(IIT.LE.(N+1))  GO TO 14                                       1340
      IIT=IIT-1                                                        1350
   14 CONTINUE                                                         1360
C     ENDE DER SCHLEIFE UEBER DIE TYPEN                                1370
C                                                                      1380
      IF(MEX.EQ.1) GO TO 28                                            1390
   12 CONTINUE                                                         1400
C     ENDE DER SCHLEIFE UEBER DIE MATERIALIEN                          1410
C                                                                      1420
```

```
   28 IF(IST.EQ.1) GO TO 29                                              1430
      I1=M+1                                                             1440
      GO TO 30                                                           1450

   29 REWIND NKE                                                         1460
      I1=1                                                               1470
   30 IF(LP.EQ.0) GO TO 31                                               1480
      REWIND NP                                                          1490
      READ (NP) NN,(AW(I),I=1,NN)                                        1500
C                                                                        1510
C     SUCHEN DER STANDARDDATEN                                           1520
C                                                                        1530
   31 KDAT=0                                                             1540
      LPP=1                                                              1550
      J=2                                                                1560
      IF(IST.EQ.1) J=1                                                   1570
C                                                                        1580
      DO 32 M=I1,KK                                                      1590
      IF(M.GT.1)  GO TO 99                                               1600
      READ (NKE) KSA,KSA,KSA                                             1610
      READ (NKE) (MNAME(I),I=1,KSA)                                      1620
   99 READ (NKE) MA,NTY                                                  1630
      WRITE (NKA) MA,NTY                                                 1640
      READ (NKE) (NDTYP(I),I=1,NTY)                                      1650
      WRITE (NKA) (NDTYP(I),I=1,NTY)                                     1660
      IIT=1                                                              1670
      IDW=1                                                              1680
      JW=0                                                               1690
C                                                                        1700
      DO 33 IT=1,NTY                                                     1710
      READ (NKE) MATN,NTYPN,NWN,NA,NW,NNK                                1720
      NN=NNK                                                             1730
      IDRU=1                                                             1740
      IND=1                                                              1750
      IF(MATN.NE.NMAT(J)) GO TO 34                                       1760
      IF(NTYPN.NE.NTYP(IIT)) GO TO 34                                    1770
      IDRU=2                                                             1780
      IF(NN.EQ.0) GO TO 34                                               1790
      NN=NN+KO(IIT)-KOALT(IIT)                                           1800
   34 WRITE (NKA) MATN,NTYPN,NWN,NA,NW,NN                                1810
      IF(IDRU.EQ.1) GO TO 35                                             1820
      WRITE (NOUT,936)                                                   1830
  936 FORMAT(1H )                                                        1840
      WRITE (NOUT,36) MATN,NTYPN,NWN,NA,NW,NN                            1850
   36 FORMAT(10I10)                                                      1860
   35 ND=NA+NW                                                           1870
      IF(NWN)37,37,38                                                    1880
   37 NNK1=1                                                             1890
      GO TO 39                                                           1900
   38 NNK1=NNK                                                           1910
C                                                                        1920
   39 DO 40 INK=1,NNK1                                                   1930
      IF(NWN)41,41,42                                                    1940
   42 READ (NKE) (XNAM(I),I=1,NWN)                                       1950
      IF(IDRU.EQ.1)  GO TO 56                                            1960
      DO 44 I=1,NWN                                                      1970
      IF(XNAM(I)*1.000005.LT.WN(I+JW)) GO TO 45                          1980
   44 CONTINUE                                                           1990
      GO TO 54                                                           2000
   45 WRITE(NKA) (XNAM(I),I=1,NWN)                                       2010
      WRITE (NOUT,68) (XNAM(I),I=1,NWN)                                  2020
      READ(NKE)NDAT                                                      2030
      WRITE (NOUT,36) NDAT                                               2040
      WRITE(NKA)NDAT                                                     2050
      I2=NDAT*ND                                                         2060
      READ(NKE)(DAT(I),I=1,I2)                                           2070
      WRITE(NKA)(DAT(I),I=1,I2)                                          2080
      GO TO 40                                                           2090
   56 BACKSPACE NKE                                                      2100
      GO TO 43                                                           2110
C                                                                        2120
C     UEBERSPEICHERN DER DATEN NWN>0                                     2130
C                                                                        2140
   54 K=KO(IIT)                                                          2150
      DO 46 L=1,K                                                        2160
      WRITE (NKA) (WN(I+JW),I=1,NWN)                                     2170
      WRITE (NOUT,68)(WN(I+JW),I=1,NWN)                                  2180
      JW=JW+NWN                                                          2190
      WRITE (NKA) NAW(IDW)                                               2200
      WRITE (NOUT,36) NAW(IDW)                                           2210
      I2=NAW(IDW)*ND                                                     2220
      IDW=IDW+1                                                          2230
      IF(KDAT+I2.LE.ITTTT) GO TO 47                                      2240
      IF(LPP.LE.LP) GO TO 48                                             2250
   49 WRITE (NOUT,50) LPP,LP                                             2260
   50 FORMAT(' AUF DER EXTERNEN EINHEIT NP WERDEN',I3,' SAETZE GESUCHT ,' 2270
     1 ES SIND NUR',I3,' SAETZE VORHANDEN')                              2280
      STOP                                                               2290
   48 READ (NP) IND,(AW(I),I=1,IND)                                      2300
      LPP=LPP+1                                                          2310
      KDAT=0                                                             2320
   47 WRITE (NKA) (AW(KDAT+I),I=1,I2)                                    2330
      WRITE (NOUT,68)(AW(KDAT+I),I=1,I2)                                 2340
      KDAT=KDAT+I2                                                       2350
   46 CONTINUE                                                           2360
      BACKSPACE NKE                                                      2370
      K=KOALT(IIT)                                                       2380
      IF(K.EQ.0) GO TO 52                                                2390
      DO 51 L=1,K                                                        2400
      READ (NKE) (XNAM(I),I=1,NWN)                                       2410
      READ (NKE) NDAT                                                    2420
      I2=NDAT*ND                                                         2430
      READ (NKE) (DAT(I),I=1,I2)                                         2440
   51 CONTINUE                                                           2450
   52 IND=INK+K                                                          2460
      IF(IND.GT.NNK1)  GO TO 55                                          2470
   43 DO 53 INK=IND,NNK1                                                 2480
      READ (NKE) (XNAM(I),I=1,NWN)                                       2490
      IF(IDRU.EQ.2) WRITE (NOUT,68)(XNAM(I),I=1,NWN)                     2500
      WRITE (NKA) (XNAM(I),I=1,NWN)                                      2510
      READ (NKE) NDAT                                                    2520
```

```
      IF(IDRU.EQ.2) WRITE (NOUT,36)NDAT
      WRITE (NKA) NDAT
      I2=NDAT*ND
      READ (NKE) (DAT(I),I=1,I2)
      WRITE (NKA) (DAT(I),I=1,I2)
   53 CONTINUE
      GO TO 55
C
C     UEBERSPEICHERN DER DATEN NWN=0
C
   41 IF(IDRU.EQ.1)  GO TO 57
      READ (NKE) NDAT
      I2=NDAT*ND
      READ (NKE)(DAT(I),I=1,I2)
      II2=NAW(IDW)*ND
      IDW=IDW+1
      IF(KDAT+II2.LE.ITTTT) GO TO 58
      IF(LPP.LE.LP) GO TO 59
      GO TO 49
   59 READ (NP) IND,(AW(I),I=1,IND)
      LPP=LPP+1
      KDAT=0
   58 IF(NA.GT.0)  GO TO 158
      DO 159 I=1,NW
  159 DAT(I)=AW(KDAT+I)
      KDAT=KDAT+NW
      GO TO 160
  158 DO 60 I=1,NDAT
      DO 61 L=1,NA
      K=ND*(I-1)+L
      IF(NTYPN.NE.21520) GO TO 64
      IF(DAT(K)*1.000005.LT.AW(KDAT+1)) GO TO 60
      GO TO 62
   64 IF(DAT(K)*1.000005.LT.AW(KDAT+L)) GO TO 60
      IF(DAT(K)*0.999995.GT.AW(KDAT+L)) GO TO 62
   61 CONTINUE
      GO TO 62
   60 CONTINUE
      NDAT=NDAT+NAW(IDW-1)
      GO TO 77
C
   62 KI=(NAW(IDW-1)-1)*ND+KDAT
      DO 69 II=I,NDAT
      DO 70 L=1,NA
      K=ND*(II-1)+L
      IF(NTYPN.NE.21520) GO TO 71
      IF(DAT(K)*0.999995.LT.AW(KI+L)) GO TO 69
      GO TO 72
   71 IF(DAT(K)*1.000005.LT.AW(KI+L)) GO TO 69
      IF(DAT(K)*0.999995.GT.AW(KI+L)) GO TO 72
   70 CONTINUE
      IF(II.EQ.NDAT)  GO TO 69
      II=II+1
      GO TO 72
   69 CONTINUE
      NDAT=NAW(IDW-1)+I-1
      GO TO 77
   72 IF(NAW(IDW-1)-(II-I))73,77,75
C
C     I : ERSTES WERTEPAAR , DAS UEBERSPEICHERT WIRD
C     II: ERSTES WERTEPAAR , DAS NICHT MEHR UEBERSPEICHERT WIRD
C
C     LUECKE ZU GROSS
   73 IP=II-I-NAW(IDW-1)
      IIP=IP*ND
      L=(II-1)*ND+1
      DO 76 IJ=L,I2

   76 DAT(IJ-IIP)=DAT(IJ)
      NDAT=NDAT-IP
      GO TO 77
C     LUECKE ZU KLEIN
   75 IP=NAW(IDW-1)-(II-I)
      IIP=IP*ND
      L=(II-1)*ND+1
      DO 78 IJ=L,I2
   78 DAT(I2-IJ+L+IIP)=DAT(I2-IJ+L)
      NDAT=NDAT+IP
C     AUFFUELLEN DER ANGEPASSTEN LUECKE
   77 L=(I-1)*ND
      DO 66 K=1,II2
   66 DAT(L+K)=AW(KDAT+K)
      KDAT=KDAT+II2
  160 WRITE(NKA) NDAT
      WRITE (NOUT,67) NDAT
   67 FORMAT(I12)
      IP=NDAT*ND
      WRITE (NKA) (DAT(I),I=1,IP)
      WRITE (NOUT,68) (DAT(I),I=1,IP)
   68 FORMAT(8E16.8)
      GO TO 40
   57 READ(NKE) NDAT
      WRITE(NKA) NDAT
      I2=NDAT*ND
      READ(NKE)(DAT(I),I=1,I2)
      WRITE(NKA)(DAT(I),I=1,I2)
   40 CONTINUE
C     ENDE SCHLEIFE UEBER DIE NAMENSKOMBINATIONEN
C
   55 IF(IDRU.EQ.1) GO TO 33
      IIT=IIT+1
      IF(IIT.GT.N) IIT=IIT-1
   33 CONTINUE
C     ENDE DER SCHLEIFE UEBER DIE TYPEN
C
   32 CONTINUE
C     ENDE DER SCHLEIFE UEBER DIE MATERIALIEN
C
      ENDFILE NKA
      RETURN
      END
```

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      SUBROUTINE P01703                                                 10
C                                                                       20
C     PROGRAMM ZUM AUSDRUCKEN DER SEQUENTIELLEN KERNDATENBIBLIOTHEK     30
C                                                                       40
      REAL*8 MAN(100),TYP(100),MATNA(200),TYPN(100)                     50
      DIMENSION DAT(40000),NUNA(200),                                   60
     1NUTY(100),          MNAME(100),NDTYP(100),XNAM(10),NMAT(100),     70
     2NTYP(100)                                                         80
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUT,NE                       90
      WRITE (NOUT,2000)                                                100
 2000 FORMAT(1H1/' PROGRAMM 01703'//)                                  110
      NKE=2                                                            120
      REWIND NKE                                                       130
      READ (NE) N,(MAN(I),TYP(I),I=1,N)                                140
      READ (NKE) KSI,KSI,KK                                            150
      READ (NKE) (MNAME(L),L=1,KK)                                     160
      DO 4 K=1,N                                                       170
      DO 3 I=1,NZM                                                     180
      IF (MAN(K).EQ.MATNA(I)) GO TO 5                                  190
    3 CONTINUE                                                         200
      WRITE (NOUT,6) MAN(K)                                            210
    6 FORMAT(' DAS MATERIAL',A9,' IST NICHT IN DER KEDAKUMRECHNUNGSTABEL 220
     1LE ENTHALTEN')                                                   230
      STOP5                                                            240
    5 NMAT(K)=NUNA(I)                                                  250
      DO 7 I=1,NZT                                                     260
      IF(TYP(K).EQ.TYPN(I)) GO TO 8                                    270
    7 CONTINUE                                                         280
      WRITE (NOUT,9) TYP(K)                                            290
    9 FORMAT(' DER TYP',A6,' IST NICHT IN DER KEDAKUMRECHNUNGSTABELLE EN 300
     1THALTEN')                                                        310
      STOP5                                                            320
    8 NTYP(K)=NUTY(I)                                                  330
    4 CONTINUE                                                         340
      K=1                                                              350
C                                                                      360
C     SCHLEIFE UEBER DIE MATERIALIEN                                   370
C                                                                      380
      DO 16 M=1,KK                                                     390
   30 DO 10 L=1,KK                                                     400
      IF (NMAT(K).EQ.MNAME(L)) GO TO 11                                410
   10 CONTINUE                                                         420
      WRITE (NOUT,12) NMAT(K)                                          430
   12 FORMAT(' DER MATERIALNAME',I8,' STEHT NICHT IN DER SEQUENTIELLEN K 440
     1ERNDATENBIBLIOTHEK')                                            450
      K=K+1                                                            460
      IF(K-N)30,30,31                                                  470
   11 READ (NKE) MA,NTY                                                480
      READ (NKE) (NDTYP(I),I=1,NTY)                                    490
C                                                                      500
C     SCHLEIFE UEBER DIE TYPEN                                         510
C                                                                      520
      DO 16 IT=1,NTY                                                   530
      IKS=0                                                            540
      READ (NKE) MATN,NTYPN,NWN,NA,NW,NNK                              550
      ND=NA+NW                                                         560
      IF (NWN) 13,13,14                                                570
   13 NNK1=1                                                           580
      GO TO 15                                                         590
   14 NNK1=NNK                                                         600
C                                                                      610
C     SCHLEIFE UEBER DIE NAMENSKOMBINATIONEN                           620
C                                                                      630
   15 DO 36 INK=1,NNK1                                                 640
      IF(NWN)17,17,18                                                  650
   18 READ (NKE) (XNAM(I),I=1,NWN)                                     660
   17 READ (NKE) NDAT                                                  670
      I2=NDAT*ND                                                       680
      READ (NKE) (DAT(I),I=1,I2)                                       690
      IF(MATN.NE.NMAT(K)) GO TO 36                                     700
      IF (NTYPN.NE.NTYP(K)) GO TO 36                                   710
      WRITE (NOUT,19) MAN(K),TYP(K)                                    720
   19 FORMAT(1X,2A9)                                                   730
      IKS=1                                                            740
      IF(NWN)20,20,21                                                  750
   21 WRITE (NOUT,22) (XNAM(I),I=1,NWN)                                760
   22 FORMAT(1X,8E16.8)                                                770
   20 WRITE (NOUT,23) NDAT                                             780
   23 FORMAT(I10)                                                      790
      IF(NTYPN.EQ.14510)  GO TO 33                                     800
      IF(ND-3)24,25,26                                                 810
   24 NDAT1=(NDAT+2)/3                                                 820
      ND1=6                                                            830
      GO TO 27                                                         840
   25 NDAT1=(NDAT+1)/2                                                 850
      ND1=6                                                            860
      GO TO 27                                                         870
   26 NDAT1=NDAT                                                       880
      ND1=ND                                                           890
   27 I2=0                                                             900
      DO 28 IDAT=1,NDAT1                                               910
      I1=I2+1                                                          920
      I2=I2+ND1                                                        930
      IF (IDAT-NDAT1) 29,32,32                                         940
   32 I2=ND*NDAT                                                       950
   29 WRITE (NOUT,22) (DAT(I),I=I1,I2)                                 960
   28 CONTINUE                                                         970
      GO TO 36                                                         980
   33 WRITE (NOUT,34) (DAT(I),I=1,I2)                                  990
   34 FORMAT(1X,20A4)                                                 1000
   36 CONTINUE                                                        1010
      IF(IKS.EQ.0)  GO TO 16                                          1020
      K=K+1                                                           1030
      IF(K-N) 16,16,31                                                1040
   16 CONTINUE                                                        1050
   31 RETURN                                                          1060
      END                                                             1070
```

```
      SUBROUTINE P01704                                                 10
C                                                                       20
C     PROGRAMM ZUM AUSDRUCKEN DER KEDAK-INHALTSLISTE                    30
C                                                                       40
      REAL*8 MATNA(200),TYPN(100),WQ(100)                               50
      DIMENSION IFELD(880),ITYP(880),NT(3),IWQ(100)                     60
      COMMON MATNA,TYPN,NUNA(200),NUTY(100),NZM,NZT,NOUT                70
      WRITE (NOUT,1)                                                    80
    1 FORMAT(1H1/' PROGRAMM 01704'//)                                   90
      LBN=18                                                           100
      DEFINE FILE 18(3950,880,U,K8)                                    110
      NSZ=880                                                          120
      READ (LBN'1) (IFELD(I),I=1,NSZ)                                  130
      IS=IFELD(12)                                                     140
      IW=IFELD(13)                                                     150
      IT=IFELD(11)                                                     160
      L=1                                                              170
      IF(IS.EQ.1)  GO TO 2                                             180
      READ (LBN'IS) (IFELD(I),I=1,NSZ)                                 190
    2 NAME=IFELD(IW)                                                   200
      J=0                                                              210
    5 IF(IW+1-NSZ)3,3,4                                                220
    4 IS=IS+1                                                          230
      READ (LBN'IS) (IFELD(I),I=1,NSZ)                                 240
      IW=IW-NSZ                                                        250
    3 IW=IW+1                                                          260
      J=J+1                                                            270
      NT(J)=IFELD(IW)                                                  280
      IF(J.LT.3)  GO TO 5                                              290
      ITN=NT(1)                                                        300
      ITNS=NT(2)                                                       310
      ITNW=NT(3)                                                       320
      IF(ITNS.EQ.IS)  GO TO 6                                          330
      READ (LBN'ITNS) (ITYP(I),I=1,NSZ)                                340
      GO TO 7                                                          350
    6 DO 8 I=1,NSZ                                                     360
    8 ITYP(I)=IFELD(I)                                                 370
    7 DO 9 I=1,ITN                                                     380
      IWQ(I)=ITYP(ITNW)                                                390
      ITNW=ITNW+7                                                      400
      IF(ITNW-NSZ)9,9,10                                               410
   10 ITNS=ITNS+1                                                      420
      READ (LBN'ITNS) (ITYP(K),K=1,NSZ)                                430
      ITNW=ITNW-NSZ                                                    440
    9 CONTINUE                                                         450
      DO 11 I=1,NZM                                                    460
      IF(NAME.EQ.NUNA(I))  GO TO 12                                    470
   11 CONTINUE                                                         480
      WRITE (NOUT,13) NAME                                             490
   13 FORMAT(' DAS MATERIAL',I8,' IST NICHT IN DER NAMENSZUORDNUNGSTABEL 500
     1LE DER EINGABE ENTHALTEN')                                       510
      STOP5                                                            520
   12 DO 14 J=1,ITN                                                    530
      DO 15 K=1,NZT                                                    540
      IF(IWQ(J).EQ.NUTY(K))  GO TO 16                                  550
   15 CONTINUE                                                         560
      WRITE (NOUT,17) IWQ(J)                                           570
   17 FORMAT(' DER TYP',I8,' IST NICHT IN DER NAMENSZUORDNUNGSTABELLE DE 580
     1R EINGABE ENTHALTEN')                                            590
      STOP5                                                            600
   16 WQ(J)=TYPN(K)                                                    610
   14 CONTINUE                                                         620
      WRITE (NOUT,18) MATNA(I),(WQ(J),J=1,ITN)                         630
   18 FORMAT(1H ,A10/(12X,7A10))                                       640
      L=L+1                                                            650
      IF(L.GT.IT)  GO TO 20                                            660
      IW=IW+1                                                          670
      IF(IW-NSZ)2,2,19                                                 680
   19 IS=IS+1                                                          690
      READ (LBN'IS) (IFELD(I),I=1,NSZ)                                 700
      IW=IW-NSZ                                                        710
      GO TO 2                                                          720
   20 RETURN                                                           730
      END                                                              740
```



```
      SUBROUTINE P01720 (MNAME,MTYP)                                    10
C                                                                       20
C     PROGRAMM ZUR ERZEUGUNG EINES KERNDATENFILES IN CARD IMAGE FORMAT  30
C                                                                       40
      INTEGER*2 MN(2),IZ(11),FM,FMT(10),FME(12),FMA(10),FX,FZ           50
      REAL*8 Z(300)                                                     60
      DIMENSION FELD(880),IFELD(880),DAT(40000),IDAT(40000),MAT(4,100), 70
     1ITYP(7,100),NWN(9,400),XWN(9,400),IFMT(5),IFME(6),IFMA(5)         80
     2,MNAME(400),MTYP(200)                                             90
      COMMON Z,NUNA(200),NUTY(100),NZM,NZT,NOUT                        100
      EQUIVALENCE (FELD(1),IFELD(1)),(DAT(1),IDAT(1))                  110
     1,(NWN(1,1),XWN(1,1)),(MN(1),KK)                                  120
     2,(FMT(1),IFMT(1)),(FME(1),IFME(1)),(FMA(1),IFMA(1))              130
      DATA IZ/'  ','1 ','2 ','3 ','4 ','5 ','6 ','7 ','8 ','9 ','0 '/ 140
      DATA FM/'00'/,IFMT/'(    ','I12,','  X,','2I2,','I4) '/,         150
     1IFME/'(1  ','E12.','5,  ','X,2I','2,I4',')   '/,                 160
     2IFMA/'(   ','A4, ','  X,','2I2,','I4) '/,FX/'X,'/,FZ/'P0'/       170
      CALL FSPIE                                                       180
      IS=1                                                             190
      WRITE (NOUT,2000)                                                200
 2000 FORMAT(1H1/' PROGRAMM 01720'//)                                  210
      ITTTT=40000                                                      220
      NSZ=880                                                          230
      LBN=17                                                           240
      DEFINE FILE 17(3950,880,U,K8)                                    250
      IMA=16                                                           260
      READ (LBN'1) (FELD(I),I=1,NSZ)                                   270
      IDAT(1)=1                                                        280
```

```
      IDAT(2)=IFELD(4)                                                  290
      L=IFELD(11)                                                       300
      IS=IFELD(12)                                                      310
      IW=IFELD(13)                                                      320
      IF(IS-1) 1,2,1                                                    330
    1 READ (LBN'IS) (FELD(I),I=1,NSZ)                                   340
    2 K=1                                                               350
      DO 5 N=1,L                                                        360
      ID=IW                                                             370
      DO 89 M=1,NZM                                                     380
      IF(IFELD(ID).EQ.NUNA(M))  GO TO 90                                390
   89 CONTINUE                                                          400
   90 KK=MNAME(2*M)                                                     410
      DO 91 M=1,11                                                      420
      IF(MN(1).EQ.IZ(M))  GO TO 92                                      430
   91 CCNTINUE                                                          440
      GO TO 45                                                          450
   92 IF(MN(2).NE.IZ(1))  GO TO 45                                      460
      MAT(1,K)=IFELD(ID)                                                470
      IF(ID+1-NSZ)9,9,10                                                480
   10 IS=IS+1                                                           490
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   500
      ID=0                                                              510
    9 ID=ID+1                                                           520
      MAT(2,K)=IFELD(ID)                                                530
      IF(ID+1-NSZ)11,11,12                                              540
   12 IS=IS+1                                                           550
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   560
      ID=0                                                              570
   11 ID=ID+1                                                           580
      MAT(3,K)=IFELD(ID)                                                590
      IF(ID+1-NSZ)15,15,16                                              600
   16 IS=IS+1                                                           610
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   620
      ID=0                                                              630
   15 ID=ID+1                                                           640
      MAT(4,K)=IFELD(ID)                                                650
      IF(ID+1-NSZ)13,13,14                                              660
   14 IS=IS+1                                                           670
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   680
      ID=0                                                              690
   13 IW=ID+1                                                           700
      K=K+1                                                             710
      GO TO 5                                                           720
   45 IW=ID+4                                                           730
      IF(IW-NSZ)5,5,46                                                  740
   46 IS=IS+1                                                           750
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   760
      IW=IW-NSZ                                                         770
    5 CONTINUE                                                          780
      K=K-1                                                             790
      IDAT(3)=K                                                         800
      KKK=K                                                             810
      IMI=0                                                             820
      WRITE (IMA,6) (IDAT(I),I=1,3),IMI,IMI,IMI                         830
    6 FORMAT(3I12,36X,2I2,I4)                                           840
      WRITE (NOUT,6) (IDAT(I),I=1,3),IMI,IMI,IMI                        850
      I=0                                                               860
      M=K/6                                                             870
      IF(M.EQ.0)  GO TO 80                                              880
      DO 81 KI=1,M                                                      890
      L=I+1                                                             900
      I=I+6                                                             910
      WRITE (IMA,7) (MAT(1,KK),KK=L,I),IMI,IMI,KI                       920
    7 FORMAT(6I12,2I2,I4)                                               930
   81 WRITE (NOUT,7) (MAT(1,KK),KK=L,I),IMI,IMI,KI                      940
      IF(K.EQ.I)  GO TO 8                                               950
   80 I=I+1                                                             960
      LO=M+1                                                            970
      FMT(2)=FM+K-I+1                                                   980
      KI=72-(K-I+1)*12                                                  990
      M=KI/10*256+KI-KI/10*10                                          1000
      FMT(5)=FM+M                                                      1010
      WRITE(IMA,IFMT) (MAT(1,KK),KK=I,K),IMI,IMI,LO                    1020
      WRITE(NOUT,IFMT)(MAT(1,KK),KK=I,K),IMI,IMI,LO                    1030
C                                                                      1040
C     SCHLEIFE UEBER DIE MATERIALZAHL                                  1050
C                                                                      1060
    8 DO 101 I=1,KKK                                                   1070
      IMI=0                                                            1080
      FMT(2)=FM+2                                                      1090
      FMT(5)=FM+4*256+8                                                1100
      WRITE( IMA,IFMT) MAT(1,I),MAT(2,I),I,IMI,IMI                     1110
      WRITE(NOUT,IFMT) MAT(1,I),MAT(2,I),I,IMI,IMI                     1120
      J=MAT(2,I)                                                       1130
      IF(MAT(3,I)-IS)17,18,17                                          1140
   17 IS=MAT(3,I)                                                      1150
      READ(LBN'IS) (FELD(K),K=1,NSZ)                                   1160
   18 IW=MAT(4,I)                                                      1170
      ID=IW                                                            1180
      DO 21 K=1,J                                                      1190
      ITYP(1,K)=IFELD(ID)                                              1200
      JK=1                                                             1210
   26 JK=JK+1                                                          1220
      IF(ID+1-NSZ)22,22,25                                             1230
   25 IS=IS+1                                                          1240
      READ(LBN'IS) (FELD(KK),KK=1,NSZ)                                 1250
      ID=0                                                             1260
   22 ID=ID+1                                                          1270
      IF(JK-7)23,23,21                                                 1280
   23 ITYP(JK,K)=IFELD(ID)                                             1290
      GO TO 26                                                         1300
   21 CONTINUE                                                         1310
      NK=0                                                             1320
      M=J/6                                                            1330
      IF(M.EQ.0)  GO TO 82                                             1340
      DO 83 KI=1,M                                                     1350
      N=NK+1                                                           1360
      NK=NK+6                                                          1370
      WRITE (IMA,7) (ITYP(1,KK),KK=N,NK),I,IMI,KI                      1380
```

```
   93 WRITE (NOUT,7) (ITYP(1,KK),KK=N,NK),I,IMI,KI                    1390
      IF(J.EQ.NK)  GO TO 32                                           1400
   82 NK=NK+1                                                         1410
      LO=M+1                                                          1420
      FMT(2)=FM+J-NK+1                                                1430
      KI=72-(J-NK+1)*12                                               1440
      M=KI/10*256+KI-KI/10*10                                         1450
      FMT(5)=FM+M                                                     1460
      WRITE( IMA,IFMT) (ITYP(1,KK),KK=NK,J),I,IMI,LO                  1470
      WRITE(NOUT,IFMT) (ITYP(1,KK),KK=NK,J),I,IMI,LO                  1480
C                                                                     1490
C     SCHLEIFE UEBER DIE TYPENZAHL                                    1500
C                                                                     1510
   32 DO 101 K=1,J                                                    1520
      IMI=0                                                           1530
      IARFU=ITYP(3,K)+ITYP(4,K)                                       1540
      IF(ITYP(2,K))27,28,27                                           1550
   28 IWP=ITYP(5,K)                                                   1560
      ITYP(5,K)=0                                                     1570
   27 WRITE (IMA,7) MAT(1,I),(ITYP(KK,K),KK=1,5),I,K,IMI              1580
      IF(ITYP(2,K))30,31,30                                           1590
C                                                                     1600
C     ES SIND WEITERE NAMEN VORHANDEN                                 1610
C                                                                     1620
   30 ID=ITYP(6,K)                                                    1630
      IF(ID-IS)34,35,34                                               1640
   34 IS=ID                                                           1650
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                               1660
   35 IW=ITYP(7,K)                                                    1670
      NK=ITYP(5,K)                                                    1680
      DO 102IK=1,NK                                                   1690
      NWN(1,IK)=IFELD(IW)                                             1700
      JK=1                                                            1710
   36 JK=JK+1                                                         1720
      IF(IW+1-NSZ)39,39,40                                            1730
   40 IS=IS+1                                                         1740
      READ(LBN'IS) (FELD(KK),KK=1,NSZ)                                1750
      IW=0                                                            1760
   39 IW=IW+1                                                         1770
      IF(JK-ITYP(2,K)-3)37,37,102                                     1780
   37 NWN(JK,IK)=IFELD(IW)                                            1790
      GO TO 36                                                        1800
  102 CONTINUE                                                        1810
      IN=ITYP(2,K)                                                    1820
C                                                                     1830
C     SCHLEIFE UEBER DIE NAMENSKOMBINATIONEN                          1840
C                                                                     1850
      IMI=1                                                           1860
      DO 103 IK=1,NK                                                  1870
      N=0                                                             1880
      M=IN/6                                                          1890
      IF(M.EQ.0)  GO TO 84                                            1900
      DO 85 KI=1,M                                                    1910
      NN=N+1                                                          1920
      N=N+6                                                           1930
      WRITE (IMA,4) (XWN(KK,IK),KK=NN,N),I,K,IMI                      1940
      IMI=IMI+1                                                       1950
      IF(IMI.EQ.10000)  IMI=0                                         1960
   85 CONTINUE                                                        1970
    4 FORMAT(1P6E12.5,2I2,I4)                                         1980
      IF(IN.EQ.N)  GO TO 86                                           1990
   84 N=N+1                                                           2000
      FME(2)=FZ+IN-N+1                                                2010
      KI=72-(IN-N+1)*12                                               2020
      LO=KI/10*256+KI-KI/10*10                                        2030
      FME(6)=FM+LO                                                    2040
      WRITE(IMA,IFME) (XWN(KK,IK),KK=N,IN),I,K,IMI                    2050
      IMI=IMI+1                                                       2060
      IF(IMI.EQ.10000)  IMI=0                                         2070
   86 FMT(2)=FM+1                                                     2080
      FMT(5)=FM+6*256                                                 2090
      WRITE(IMA,IFMT) NWN(IN+1,IK),I,K,IMI                            2100
      IMI=IMI+1                                                       2110
      IF(IMI.EQ.10000)  IMI=0                                         2120
      ID=NWN(IN+2,IK)                                                 2130
      IW=NWN(IN+3,IK)                                                 2140
      IF(ID-IS)41,42,41                                               2150
   41 IS=ID                                                           2160
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                               2170
   42 IP=NWN(IN+1,IK)*IARFU                                           2180
      IF(IP-ITTTT)47,47,57                                            2190
   57 WRITE (NOUT,58) MAT(1,I),MAT(2,I)                               2200
   58 FORMAT(' ZAHL DER ARGUMENTE + WERTE GROESSER 40000 FUER',2I10)  2210
      STOP5                                                           2220
   47 DO 54 N=1,IP                                                    2230
      DAT(N)=FELD(IW)                                                 2240
      IF(IW+1-NSZ)52,52,53                                            2250
   53 IS=IS+1                                                         2260
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                               2270
      IW=0                                                            2280
   52 IW=IW+1                                                         2290
   54 CONTINUE                                                        2300
      IF(IARFU-3)93,94,95                                             2310
   93 NDAT1=(NWN(IN+1,IK)+2)/3                                        2320
      ND1=6                                                           2330
      GO TO 88                                                        2340
   94 NDAT1=(NWN(IN+1,IK)+1)/2                                        2350
      ND1=6                                                           2360
      GO TO 88                                                        2370
   95 NDAT1=NWN(IN+1,IK)                                              2380
      ND1=IARFU                                                       2390
   88 I2=0                                                            2400
      DO 87 KI=1,NDAT1                                                2410
      I1=I2+1                                                         2420
      I2=I2+ND1                                                       2430
      IF(KI-NDAT1)96,97,97                                            2440
   97 I2=IP                                                           2450
   96 FME(2)=FZ+I2-I1+1                                               2460
      LO=72-(I2-I1+1)*12                                              2470
      ILI=LO/10*256+LO-LO/10*10                                       2480
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      IF(ILI.NE.0)  GO TO 132                                          2490
      FME(6)=IZ(1)                                                     2500
      FME(7)=IZ(1)                                                     2510
      GO TO 133                                                        2520
  132 FME(6)=FM+ILI                                                    2530
  133 WRITE(IMA,IFME) (DAT(KK),KK=I1,I2),I,K,IMI                       2540
      IMI=IMI+1                                                        2550
      IF(IMI.EQ.10000)  IMI=0                                          2560
      FME(7)=FX                                                        2570
   87 CONTINUE                                                         2580
  103 CONTINUE                                                         2590
      GO TO 101                                                        2600
C                                                                      2610
C     ES SIND KEINE WEITEREN NAMEN VORHANDEN                           2620
C                                                                      2630
   31 IMI=1                                                            2640
      FMT(2)=FM+1                                                      2650
      FMT(5)=FM+6*256                                                  2660
      WRITE(IMA,IFMT) IWP,I,K,IMI                                      2670
      ID=ITYP(6,K)                                                     2680
      IW=ITYP(7,K)                                                     2690
      IF(ID-IS)64,65,64                                                2700
   64 IS=ID                                                            2710
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                                2720
   65 IP=IWP*IAREU                                                     2730
      IF(IP-ITTTT) 66,66,67                                            2740
   67 WRITE (NOUT,58) MAT(1,I),MAT(2,I)                                2750
      STOP5                                                            2760
   66 DO 68 N=1,IP                                                     2770
      DAT(N)=FELD(IW)                                                  2780
      IF(IW+1-NSZ)75,75,76                                             2790
   76 IS=IS+1                                                          2800
      READ(LBN'IS)(FELD(KK),KK=1,NSZ)                                  2810
      IW=0                                                             2820
   75 IW=IW+1                                                          2830
   68 CONTINUE                                                         2840
      IF(ITYP(1,K).NE.14510)  GO TO 123                                2850
      ND1=18                                                           2860
      NDAT1=(IP+16)/18                                                 2870
      GO TO 116                                                        2880
  123 IF(IAREU-3)113,114,115                                           2890
  113 NDAT1=(IWP+2)/3                                                  2900
      ND1=6                                                            2910
      GO TO 116                                                        2920
  114 NDAT1=(IWP+1)/2                                                  2930
      ND1=6                                                            2940
      GO TO 116                                                        2950
  115 NDAT1=IWP                                                        2960
      ND1=IAREU                                                        2970
  116 I2=0                                                             2980
      KII=2                                                            2990
      DO 117 KI=1,NDAT1                                                3000
      I1=I2+1                                                          3010
      I2=I2+ND1                                                        3020
      IF(KI-NDAT1)118,119,119                                          3030
  119 I2=IP                                                            3040
  118 IF(ITYP(1,K).NE.14510)  GO TO 120                                3050
      LO=I2-I1+1                                                       3060
      IMI=LO/10*256+LO-LO/10*10                                        3070
      FMA(2)=FM+IMI                                                    3080
      LO=72-(I2-I1+1)*4                                                3090
      IMI=LO/10*256+LO-LO/10*10                                        3100
      IF(IMI.NE.0)  GO TO 134                                          3110
      FMA(5)=IZ(1)                                                     3120
      FMA(6)=IZ(1)                                                     3130
      GO TO 135                                                        3140
  134 FMA(5)=FM+IMI                                                    3150
  135 WRITE(IMA,IFMA) (DAT(KK),KK=I1,I2),I,K,KII                       3160
      KII=KII+1                                                        3170
      FMA(6)=FX                                                        3180
      GO TO 117                                                        3190
  120 KEZ=0                                                            3200
      IF(I2-I1+1.LE.6)  GO TO 136                                      3210
      KEZ=1                                                            3220
      IO=I2                                                            3230
      I2=I1+5                                                          3240
  136 FME(2)=FZ+I2-I1+1                                                3250
      LO=72-(I2-I1+1)*12                                               3260
      IMI=LO/10*256+LO-LO/10*10                                        3270
      IF(IMI.NE.0)  GO TO 130                                          3280
      FME(6)=IZ(1)                                                     3290
      FME(7)=IZ(1)                                                     3300
      GO TO 131                                                        3310
  130 FME(6)=FM+IMI                                                    3320
  131 IF(KII.EQ.10000)  KII=0                                          3330
      WRITE(IMA,IFME) (DAT(KK),KK=I1,I2),I,K,KII                       3340
      KII=KII+1                                                        3350
      FME(7)=FX                                                        3360
      IF(KEZ.EQ.0)  GO TO 117                                          3370
      I1=I2+1                                                          3380
      I2=IO                                                            3390
      GO TO 120                                                        3400
  117 CONTINUE                                                         3410
  101 CONTINUE                                                         3420
      REWIND IMA                                                       3430
      RETURN                                                           3440
      END                                                              3450
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      SUBROUTINE P01721 (MNA)                                          10
C                                                                      20
C     PROGRAMM ZUR ERZEUGUNG EINES TEILES DER KERNDATENBIBLIOTHEK      30
C     IN CARD-IMAGE - FORMAT                                           40
C                                                                      50
      INTEGER*2 IZ,          FM,FMT(10),FME(12),FMA(10),FX,FZ          60
      REAL*8 Z(300),TMAT(200),MNA(200)                                 70
      DIMENSION FELD(880),IFELD(880),DAT(40000),IDAT(40000),MAT(4,100),80
     1ITYP(7,100),NWN(9,400),XWN(9,400),IFMT(5),IFME(6),IFMA(5)        90
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      COMMON Z,NUNA(200),NUTY(100),NZM,NZT,NOUT,NF6                     100
      EQUIVALENCE (FELD(1),IFELD(1)),(DAT(1),IDAT(1))                   110
     1,(NWN(1,1),XWN(1,1))                                              120
     2,(FMT(1),IFMT(1)),(FME(1),IFME(1)),(FMA(1),IFMA(1))               130
      DATA IZ/'  '/                                                     140
      DATA FM/'00'/,IFMT/'(    ','I12,',',  X,','2I2,','I4) '/,         150
     1IFME/'(1   ','E12.','5,  ','X,2I','2,I4',')    '/,               160
     2IFMA/'(    ','A4, ',',  X,','2I2,','I4) '/,FX/'X','/,FZ/'P0'/     170
      CALL FSPIE                                                        180
      IS=1                                                              190
      WRITE (NOUT,2000)                                                 200
 2000 FORMAT(1H1/' PROGRAMM 01721'//)                                   210
      NSZ=880                                                           220
      ITTTT=40000                                                       230
      LBN=17                                                            240
      DEFINE FILE 17(3950,880,U,K8)                                     250
      IMA=16                                                            260
      READ(NF6) NNM,(TMAT(I),I=1,NNM)                                   270
      READ (LBN'1) (FELD(I),I=1,NSZ)                                    280
      IDAT(1)=1                                                         290
      IDAT(2)=IFELD(4)                                                  300
      L=IFELD(11)                                                       310
      IS=IFELD(12)                                                      320
      IW=IFELD(13)                                                      330
      IF(IS-1) 1,2,1                                                    340
    1 READ (LBN'IS) (FELD(I),I=1,NSZ)                                   350
    2 K=1                                                               360
      DO 5 N=1,L                                                        370
      ID=IW                                                             380
      DO 89 M=1,NZM                                                     390
      IF(IFELD(ID).EQ.NUNA(M))  GO TO 90                                400
   89 CONTINUE                                                          410
   90 IF(MNA(M).NE.TMAT(K ))  GO TO 45                                  420
      MAT(1,K)=IFELD(ID)                                                430
      IF(ID+1-NSZ)9,9,10                                                440
   10 IS=IS+1                                                           450
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   460
      ID=0                                                              470
    9 ID=ID+1                                                           480
      MAT(2,K)=IFELD(ID)                                                490
      IF(ID+1-NSZ)11,11,12                                              500
   12 IS=IS+1                                                           510
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   520
      ID=0                                                              530
   11 ID=ID+1                                                           540
      MAT(3,K)=IFELD(ID)                                                550
      IF(ID+1-NSZ)15,15,16                                              560
   16 IS=IS+1                                                           570
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   580
      ID=0                                                              590
   15 ID=ID+1                                                           600
      MAT(4,K)=IFELD(ID)                                                610
      IF(ID+1-NSZ)13,13,14                                              620
   14 IS=IS+1                                                           630
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   640
      ID=0                                                              650
   13 IW=ID+1                                                           660
      K=K+1                                                             670
      IF(K.GT.NNM)  GO TO 137                                           680
      GO TO 5                                                           690
   45 IW=ID+4                                                           700
      IF(IW-NSZ)5,5,46                                                  710
   46 IS=IS+1                                                           720
      READ (LBN'IS) (FELD(I),I=1,NSZ)                                   730
      IW=IW-NSZ                                                         740
    5 CONTINUE                                                          750
  137 K=K-1                                                             760
      IDAT(3)=K                                                         770
      KKK=K                                                             780
      IMI=0                                                             790
      WRITE (IMA,6) (IDAT(I),I=1,3),IMI,IMI,IMI                         800
    6 FORMAT(3I12,36X,2I2,I4)                                           810
      WRITE (NOUT,6) (IDAT(I),I=1,3),IMI,IMI,IMI                        820
      I=0                                                               830
      M=K/6                                                             840
      IF(M.EQ.0)  GO TO 80                                              850
      DO 81 KI=1,M                                                      860
      L=I+1                                                             870
      I=I+6                                                             880
      WRITE (IMA,7) (MAT(1,KK),KK=L,I),IMI,IMI,KI                       890
    7 FORMAT(6I12,2I2,I4)                                               900
   81 WRITE (NOUT,7) (MAT(1,KK),KK=L,I),IMI,IMI,KI                      910
      IF(K.EQ.I)  GO TO 8                                               920
   80 I=I+1                                                             930
      LO=M+1                                                            940
      FMT(2)=FM+K-I+1                                                   950
      KI=72-(K-I+1)*12                                                  960
      M=KI/10*256+KI-KI/10*10                                           970
      FMT(5)=FM+M                                                       980
      WRITE(IMA,IFMT) (MAT(1,KK),KK=I,K),IMI,IMI,LO                     990
      WRITE(NOUT,IFMT)(MAT(1,KK),KK=I,K),IMI,IMI,LO                    1000
C                                                                      1010
C     SCHLEIFE UEBER DIE MATERIALZAHL                                  1020
C                                                                      1030
    8 DO 101 I=1,KKK                                                   1040
      IMI=0                                                            1050
      FMT(2)=FM+2                                                      1060
      FMT(5)=FM+4*256+8                                                1070
      WRITE( IMA,IFMT) MAT(1,I),MAT(2,I),I,IMI,IMI                     1080
      WRITE(NOUT,IFMT) MAT(1,I),MAT(2,I),I,IMI,IMI                     1090
      J=MAT(2,I)                                                       1100
      IF(MAT(3,I)-IS)17,18,17                                          1110
   17 IS=MAT(3,I)                                                      1120
      READ(LBN'IS) (FELD(K),K=1,NSZ)                                   1130
   18 IW=MAT(4,I)                                                      1140
      ID=IW                                                            1150
      DO 21 K=1,J                                                      1160
      ITYP(1,K)=IFELD(ID)                                              1170
      JK=1                                                             1180
   26 JK=JK+1                                                          1190
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      IF(ID+1-NSZ)22,22,25                                              1200
   25 IS=IS+1                                                           1210
      READ(LBN'IS) (FELD(KK),KK=1,NSZ)                                  1220
      ID=0                                                              1230
   22 ID=ID+1                                                           1240
      IF(JK-7)23,23,21                                                  1250
   23 ITYP(JK,K)=IFELD(ID)                                              1260
      GO TO 26                                                          1270
   21 CONTINUE                                                          1280

      NK=0                                                              1290
      M=J/6                                                             1300
      IF(M.EQ.0)  GO TO 82                                              1310
      DO 83 KI=1,M                                                      1320
      N=NK+1                                                            1330
      NK=NK+6                                                           1340
      WRITE (IMA,7) (ITYP(1,KK),KK=N,NK),I,IMI,KI                       1350
   83 WRITE (NOUT,7) (ITYP(1,KK),KK=N,NK),I,IMI,KI                      1360
      IF(J.EQ.NK)  GO TO 32                                             1370
   82 NK=NK+1                                                           1380
      LO=M+1                                                            1390
      FMT(2)=FM+J-NK+1                                                  1400
      KI=72-(J-NK+1)*12                                                 1410
      M=KI/10*256+KI-KI/10*10                                           1420
      FMT(5)=FM+M                                                       1430
      WRITE( IMA,IFMT) (ITYP(1,KK),KK=NK,J),I,IMI,LO                    1440
      WRITE(NOUT,IFMT) (ITYP(1,KK),KK=NK,J),I,IMI,LO                    1450
C                                                                       1460
C     SCHLEIFE UEBER DIE TYPENZAHL                                      1470
C                                                                       1480
   32 DO 101 K=1,J                                                      1490
      IMI=0                                                             1500
      IARFU=ITYP(3,K)+ITYP(4,K)                                         1510
      IF(ITYP(2,K))27,28,27                                             1520
   28 IWP=ITYP(5,K)                                                     1530
      ITYP(5,K)=0                                                       1540
   27 WRITE (IMA,7) MAT(1,I),(ITYP(KK,K),KK=1,5),I,K,IMI                1550
      IF(ITYP(2,K))30,31,30                                             1560
C                                                                       1570
C     ES SIND WEITERE NAMEN VORHANDEN                                   1580
C                                                                       1590
   30 ID=ITYP(6,K)                                                      1600
      IF(ID-IS)34,35,34                                                 1610
   34 IS=ID                                                             1620
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                                 1630
   35 IW=ITYP(7,K)                                                      1640
      NK=ITYP(5,K)                                                      1650
      DO 102IK=1,NK                                                     1660
      NWN(1,IK)=IFELD(IW)                                               1670
      JK=1                                                              1680
   36 JK=JK+1                                                           1690
      IF(IW+1-NSZ)39,39,40                                              1700
   40 IS=IS+1                                                           1710
      READ(LBN'IS) (FELD(KK),KK=1,NSZ)                                  1720
      IW=0                                                              1730
   39 IW=IW+1                                                           1740
      IF(JK-ITYP(2,K)-3)37,37,102                                       1750
   37 NWN(JK,IK)=IFELD(IW)                                              1760
      GO TO 36                                                          1770
  102 CONTINUE                                                          1780
      IN=ITYP(2,K)                                                      1790
C                                                                       1800
C     SCHLEIFE UEBER DIE NAMENSKOMBINATIONEN                            1810
C                                                                       1820
      IMI=1                                                             1830
      DO 103 IK=1,NK                                                    1840
      N=0                                                               1850
      M=IN/6                                                            1860
      IF(M.EQ.0)  GO TO 84                                              1870
      DO 85 KI=1,M                                                      1880
      NN=N+1                                                            1890
      N=N+6                                                             1900
      WRITE (IMA,4) (XWN(KK,IK),KK=NN,N),I,K,IMI                        1910
      IMI=IMI+1                                                         1920
      IF(IMI.EQ.10000)  IMI=0                                           1930
   85 CONTINUE                                                          1940
    4 FORMAT(1P6E12.5,2I2,I4)                                           1950
      IF(IN.EQ.N)  GO TO 86                                             1960
   84 N=N+1                                                             1970
      FME(2)=FZ+IN-N+1                                                  1980
      KI=72-(IN-N+1)*12                                                 1990
      LO=KI/10*256+KI-KI/10*10                                          2000
      FME(6)=FM+LO                                                      2010
      WRITE(IMA,IFME) (XWN(KK,IK),KK=N,IN),I,K,IMI                      2020
      IMI=IMI+1                                                         2030
      IF(IMI.EQ.10000)  IMI=0                                           2040
   86 FMT(2)=FM+1                                                       2050
      FMT(5)=FM+6*256                                                   2060
      WRITE(IMA,IFMT) NWN(IN+1,IK),I,K,IMI                              2070
      IMI=IMI+1                                                         2080
      IF(IMI.EQ.10000)  IMI=0                                           2090
      ID=NWN(IN+2,IK)                                                   2100
      IW=NWN(IN+3,IK)                                                   2110
      IF(ID-IS)41,42,41                                                 2120
   41 IS=ID                                                             2130
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                                 2140
   42 IP=NWN(IN+1,IK)*IARFU                                             2150
      IF(IP-ITTTT)47,47,57                                              2160
   57 WRITE (NOUT,58) MAT(1,I),MAT(2,I)                                 2170
   58 FORMAT(' ZAHL DER ARGUMENTE + WERTE GROESSER 40000 FUER',2I10)    2180
      STOP5                                                             2190
   47 DO 54 N=1,IP                                                      2200
      DAT(N)=FELD(IW)                                                   2210
      IF(IW+1-NSZ)52,52,53                                              2220
   53 IS=IS+1                                                           2230
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                                 2240
      IW=0                                                              2250
   52 IW=IW+1                                                           2260
   54 CONTINUE                                                          2270
      IF(IARFU-3)93,94,95                                               2280
   93 NDAT1=(NWN(IN+1,IK)+2)/3                                          2290
```

```
      ND1=6                                                              2300
      GO TO 88                                                           2310
   94 NDAT1=(NWN(IN+1,IK)+1)/2                                           2320
      ND1=6                                                              2330
      GO TO 89                                                           2340
   95 NDAT1=NWN(IN+1,IK)                                                 2350
      ND1=IARFU                                                          2360
   88 I2=0                                                               2370
      DO 87 KI=1,NDAT1                                                   2380
      I1=I2+1                                                            2390
      I2=I2+ND1                                                          2400
      IF(KI-NDAT1)96,97,97                                               2410
   97 I2=IP                                                              2420
   96 FME(2)=FZ+I2-I1+1                                                  2430
      LO=72-(I2-I1+1)*12                                                 2440
      ILI=LO/10*256+LO-LO/10*10                                          2450
      IF(ILI.NE.0)  GO TO 132                                            2460
      FME(6)=IZ                                                          2470
      FME(7)=IZ                                                          2480
      GO TO 133                                                          2490
  132 FME(6)=FM+ILI                                                      2500
  133 WRITE(IMA,IFME) (DAT(KK),KK=I1,I2),I,K,IMI                         2510
      IMI=IMI+1                                                          2520
      IF(IMI.EQ.10000)  IMI=0                                            2530
      FME(7)=FX                                                          2540
   87 CONTINUE                                                           2550
  103 CONTINUE                                                           2560
      GO TO 101                                                          2570
C                                                                        2580
C     ES SIND KEINE WEITEREN NAMEN VORHANDEN                             2590
C                                                                        2600
   31 IMI=1                                                              2610
      FMT(2)=FM+1                                                        2620
      FMT(5)=FM+6*256                                                    2630
      WRITE(IMA,IFMT) IWP,I,K,IMI                                        2640
      ID=ITYP(6,K)                                                       2650
      IW=ITYP(7,K)                                                       2660
      IF(ID-IS)64,65,64                                                  2670
   64 IS=ID                                                              2680
      READ (LBN'IS) (FELD(KK),KK=1,NSZ)                                  2690
   65 IP=IWP*IARFU                                                       2700
      IF(IP-ITTTT) 66,66,67                                              2710
   67 WRITE (NOUT,58) MAT(1,I),MAT(2,I)                                  2720
      STOP5                                                              2730
   66 DO 68 N=1,IP                                                       2740
      DAT(N)=FELD(IW)                                                    2750
      IF(IW+1-NSZ)75,75,76                                               2760
   76 IS=IS+1                                                            2770
      READ(LBN'IS)(FELD(KK),KK=1,NSZ)                                    2780
      IW=0                                                               2790
   75 IW=IW+1                                                            2800
   68 CONTINUE                                                           2810
      IF(ITYP(1,K).NE.14510)  GO TO 123                                  2820
      ND1=18                                                             2830
      NDAT1=(IP+16)/18                                                   2840
      GO TO 116                                                          2850
  123 IF(IARFU-3)113,114,115                                             2860
  113 NDAT1=(IWP+2)/3                                                    2870
      ND1=6                                                              2880
      GO TO 116                                                          2890
  114 NDAT1=(IWP+1)/2                                                    2900
      ND1=6                                                              2910
      GO TO 116                                                          2920
  115 NDAT1=IWP                                                          2930
      ND1=IARFU                                                          2940
  116 I2=0                                                               2950
      KII=2                                                              2960
      DO 117 KI=1,NDAT1                                                  2970
      I1=I2+1                                                            2980
      I2=I2+ND1                                                          2990
      IF(KI-NDAT1)118,119,119                                            3000
  119 I2=IP                                                              3010
  118 IF(ITYP(1,K).NE.14510)  GO TO 120                                  3020
      LO=I2-I1+1                                                         3030
      IMI=LO/10*256+LO-LO/10*10                                          3040
      FMA(2)=FM+IMI                                                      3050
      LO=72-(I2-I1+1)*4                                                  3060
      IMI=LO/10*256+LO-LO/10*10                                          3070
      IF(IMI.NE.0)  GO TO 134                                            3080
      FMA(5)=IZ                                                          3090
      FMA(6)=IZ                                                          3100
      GO TO 135                                                          3110
  134 FMA(5)=FM+IMI                                                      3120
  135 WRITE(IMA,IFMA) (DAT(KK),KK=I1,I2),I,K,KII                         3130
      KII=KII+1                                                          3140
      FMA(6)=FX                                                          3150
      GO TO 117                                                          3160
  120 KEZ=0                                                              3170
      IF(I2-I1+1.LE.6)  GO TO 136                                        3180
      KEZ=1                                                              3190
      IO=I2                                                              3200
      I2=I1+5                                                            3210
  136 FME(2)=FZ+I2-I1+1                                                  3220
      LO=72-(I2-I1+1)*12                                                 3230
      IMI=LO/10*256+LO-LO/10*10                                          3240
      IF(IMI.NE.0)  GO TO 130                                            3250
      FME(6)=IZ                                                          3260
      FME(7)=IZ                                                          3270
      GO TO 131                                                          3280
  130 FME(6)=FM+IMI                                                      3290
  131 IF(KII.EQ.10000)  KII=0                                            3300
      WRITE(IMA,IFME) (DAT(KK),KK=I1,I2),I,K,KII                         3310
      KII=KII+1                                                          3320
      FME(7)=FX                                                          3330
      IF(KEZ.EQ.0)  GO TO 117                                            3340
      I1=I2+1                                                            3350
      I2=IO                                                              3360
      GO TO 120                                                          3370
  117 CONTINUE                                                           3380
  101 CONTINUE                                                           3390
```

```
      REWIND IMA                                                        3400
      RETURN                                                            3410
      END                                                               3420
```

```
      SUBROUTINE P01722                                                   10
C                                                                         20
C     PROGRAMM ZUR ERSTELLUNG DER KERNDATENBIBLIOTHEK                     30
C     AUS CARD-IMAGE - FORMAT IN DIRECT-ACCESS FORM                       40
C                                                                         50
      REAL*8 FELD(10),MATNA(200),TYPN(100),MAA                            60
      DIMENSION SATZ(40000),ISATZ(40000),MAT(880),NDTYP(880),             70
     1XNAM(10),X(40000),ISUM(880),NUNA(200),NUTY(100),MA4(2)              80
      COMMON MATNA,TYPN,NUNA,NUTY,NZM,NZT,NOUTP,NF6                       90
      EQUIVALENCE (SATZ(1),ISATZ(1)),(MAA,MA4(1))                        100
      CALL FSPIE                                                         110
      WRITE(NOUTP,2000)                                                  120
 2000 FORMAT(1H1/' PROGRAMM 01722'//)                                    130
      ITTTT=40000                                                        140
      NSZ=880                                                            150
      NUM=NSZ+1                                                          160
      KNDT=21                                                            170
      IFILE=1                                                            180
      DEFINE FILE 1(3950,880,U,K8)                                       190
      KLZ=0                                                              200
      IS=1                                                               210
      DO 701 I=1,NSZ                                                     220
  701 SATZ(I)=0.                                                         230
      DO 750 I=1,3950                                                    240
      K=I                                                                250
  750 WRITE (IFILE'K) (SATZ(J),J=1,NSZ)                                  260
C                                                                        270
C     EINLESEN DER ERKLAERUNGSSAETZE                                     280
C                                                                        290
    1 FORMAT(6I12)                                                       300
      READ (NF6) (ISATZ(I),I=1,3),NMAT,IBND                              310
      CALL ZEIT(ISATZ(4))                                                320
      ISATZ(5)=NZM                                                       330
      ISATZ(6)=1                                                         340
      ISATZ(7)=14                                                        350
      ISATZ(8)=NZT                                                       360
      ISATZ(11)=NMAT                                                     370
      N=ISATZ(5)*3                                                       380
      M=ISATZ(8)*3                                                       390
      M=N+M+13                                                           400
      J=M/NSZ                                                            410
      ISATZ(12)=J+1                                                      420
      ISATZ(13)=M-J*NSZ+1                                                430
      I=N+13                                                             440
      J=I/NSZ                                                            450
      ISATZ(9)=J+1                                                       460
      ISATZ(10)=I-J*NSZ+1                                                470
      K=14                                                               480
```

```
   28 DO 500 J=1,NZM                                                     490
      MAA=MATNA(J)                                                       500
      ISATZ(K)=MA4(1)                                                    510
      ISATZ(K+1)=MA4(2)                                                  520
      ISATZ(K+2)=NUNA(J)                                                 530
  500 K=K+3                                                              540
      DO 501 J=1,NZT                                                     550
      MAA=TYPN(J)                                                        560
      ISATZ(K)=MA4(1)                                                    570
      ISATZ(K+1)=MA4(2)                                                  580
      ISATZ(K+2)=NUTY(J)                                                 590
  501 K=K+3                                                              600
      I=K-1                                                              610
      ND=0                                                               620
   27 IF(I-NSZ)5,6,7                                                     630
    6 N=1                                                               640
      GO TO 8                                                           650
    7 N=2                                                               660
    8 WRITE(IFILE'IS) (ISATZ(J),J=1,NSZ)                                670
      WRITE (NOUTP,800)IS                                               680
  800 FORMAT(3I8)                                                       690
      ND=ND+1                                                           700
      IS=IS+1                                                           710
      K=1                                                               720
      GO TO (404,25),N                                                  730
   25 DO 26 J=NUM,I                                                     740
      KW=J-NSZ                                                          750
   26 ISATZ(KW)=ISATZ(J)                                                760
      I=I-NSZ                                                           770
      GO TO 27                                                          780
    5 K=I+1                                                             790
  404 IBR=K-1                                                           800
      MIK=K                                                             810
      IF(IBR)4,4,405                                                    820
  405 WRITE (IFILE'IS) (ISATZ(J),J=1,IBR)                               830
      J=1                                                               840
      WRITE (NOUTP,800) IS,J,IBR                                        850
C                                                                       860
C     LESEN DER BAENDER KNDT                                            870
C                                                                       880
    4 IBR=0                                                             890
      IPS=0                                                             900
      IRS=0                                                             910
      II=KNDT-1                                                         920
      KK=0                                                              930
      DO 105 JJ=1,IBND                                                  940
      II=II+1                                                           950
      REWIND II                                                         960
      MR=KK+1                                                           970
      READ (II,1,ERR=300) KSI,KSI,KK                                    980
      KLZ=KLZ+1                                                         990
      READ (II,1,ERR=300) (MAT(L),L=1,KK)                              1000
      KLZ=KLZ+1                                                        1010
      KK=MR-1+KK                                                       1020
      DO 10 KMAT=MR,KK                                                 1030
```

```
      READ (II,1,ERR=300) MATN,NTYP                                          1040
      KLZ=KLZ+1                                                              1050
      READ (II,1,ERR=300)(NDTYP(I),I=1,NTYP)                                 1060
      KLZ=KLZ+1                                                              1070
      DO 15 ITYP=1,NTYP                                                      1080
      READ (II,1,ERR=300) MATN,NTYPN,NWN,NA,NW,NNK                           1090
      KLZ=KLZ+1                                                              1100
      ND=NA+NW                                                               1110
      IF(NWN)12,12,13                                                        1120
   12 NNK1=1                                                                 1130
      GO TO 14                                                               1140
   13 NNK1=NNK                                                               1150
   14 DO 15 INK=1,NNK1                                                       1160
      IF(NWN)16,16,17                                                        1170
   17 READ (II,2,ERR=300) (XNAM(I),I=1,NWN)                                  1180
      KLZ=KLZ+1                                                              1190
    2 FORMAT(6E12.6)                                                         1200
   16 READ (II,1,ERR=300) NDAT                                               1210
      IF(ND*NDAT.GT.ITTTT)  GO TO 806                                        1220
      KLZ=KLZ+1                                                              1230
      IF(NTYPN.EQ.14510)  GO TO 801                                          1240
      IF(ND-3)18,19,20                                                       1250
   18 NDAT1=(NDAT+2)/3                                                       1260
      ND1=6                                                                  1270
      GO TO 21                                                               1280
   19 NDAT1=(NDAT+1)/2                                                       1290
      ND1=6                                                                  1300
      GO TO 21                                                               1310
   20 NDAT1=NDAT                                                             1320
      ND1=ND                                                                 1330
   21 I2=0                                                                   1340
      DO 22 IDAT=1,NDAT1                                                     1350
      I1=I2+1                                                                1360
      I2=I2+ND1                                                              1370
      IF(IDAT-NDAT1)23,24,24                                                 1380
   24 I2=ND*NDAT                                                             1390
   23 READ (II,2,ERR=300) (X(I),I=I1,I2)                                     1400
      KLZ=KLZ+1                                                              1410
   22 CONTINUE                                                               1420
      GO TO 808                                                              1430
  801 NDAT1=(NDAT+16)/18                                                     1440
      ND1=18                                                                 1450
      I2=0                                                                   1460
      DO 802 IDAT=1,NDAT1                                                    1470
      I1=I2+1                                                                1480
      I2=I2+ND1                                                              1490
      IF(IDAT-NDAT1)803,804,804                                              1500
  804 I2=ND*NDAT                                                             1510
  803 READ(II,805,ERR=300) (X(I),I=I1,I2)                                    1520
  805 FORMAT(18A4)                                                           1530
      KLZ=KLZ+1                                                              1540
  802 CONTINUE                                                               1550
      GO TO 808                                                              1560
  806 WRITE(NOUTP,807) MATN,NTYPN                                            1570
  807 FORMAT(' DIE ANZAHL DER ARGUMENTE + WERTE IST GROESSER 40000 FUER '    1580
     1,2I10)                                                                 1590
      STOP5                                                                  1600
C                                                                            1610
C     EINSPEICHERN DER KNOT-DATEN                                            1620
C     SCHREIBEN DES BLOCKES DER ISOTOPENNAMEN                                1630
C                                                                            1640
  808 KV=1                                                                   1650
      WRITE (NOUTP,302) KV,INK,ITYP,KMAT,JJ                                  1660
  302 FORMAT (1H ,4HKV =I3,2X,5HINK =I3,2X,6HITYP =I3,2X,6HKMAT =I3,         1670
     12X,4HJJ =I3)                                                           1680
      IF(INK-1)69,69,73                                                      1690
   69 IF(ITYP-1)38,38,41                                                     1700
   38 K=MIK                                                                  1710
      ISATZ(K)=MATN                                                          1720
      ISATZ(K+1)=NTYP                                                        1730
      IF(KMAT*JJ-1)30,30,31                                                  1740
   31 IR=ITR                                                                 1750
      IK=ITK                                                                 1760
      GO TO 115                                                              1770
   30 J=NMAT*4                                                               1780
      I=K+J                                                                  1790
      J=I/NSZ                                                                1800
      IR=IS+J                                                                1810
      ITS=IR                                                                 1820
      IK=I-J*NSZ                                                             1830
  115 ISATZ(K+2)=IR                                                          1840
      ISATZ(K+3)=IK                                                          1850
      NR=0                                                                   1860
      LR=IR                                                                  1870
      M=K                                                                    1880
      K=K+4                                                                  1890
      MIK=K                                                                  1900
      L=K-1                                                                  1910
      IF(L-NSZ)34,35,36                                                      1920
   35 N=1                                                                    1930
      GO TO 37                                                               1940
   36 N=2                                                                    1950
   37 IF(KMAT*JJ-1)120,120,121                                               1960
  121 READ(IFILE'IS) (ISUM(I),I=1,NSZ)                                      1970
      JA=M-1                                                                 1980
      WRITE(IFILE'IS) (ISUM(I),I=1,JA),(ISATZ(I),I=M,NSZ)                    1990
      I=NSZ                                                                  2000
      WRITE (NOUTP,800)IS,M,I                                                2010
      M=1                                                                    2020
      GO TO 122                                                              2030
  120 WRITE(IFILE'IS) (ISATZ(I),I=1,NSZ)                                     2040
      WRITE (NOUTP,800)IS                                                    2050
  122 IS=IS+1                                                                2060
      K=K-NSZ                                                                2070
      GO TO (141,39),N                                                       2080
   39 DO 40 J=NUM,L                                                          2090
      KW=J-NSZ                                                               2100
   40 ISATZ(KW)=ISATZ(J)                                                     2110
      L=L-NSZ                                                                2120
   34 IF(IS-ITS)116,116,117                                                  2130
```

```
  116 READ(IFILE'IS) (ISUM(I),I=1,NSZ)                                  2140
      IF(M-1)118,118,119                                                2150
  118 WRITE(IFILE'IS) (ISATZ(I),I=1,L),(ISUM(I),I=K,NSZ)                2160
      I=1                                                               2170
      WRITE (NOUTP,800)IS,I,L                                           2180
      GO TO 141                                                         2190
  119 N=M-1                                                             2200
      WRITE(IFILE'IS) (ISUM(I),I=1,N),(ISATZ(I),I=M,L),(ISUM(I),I=K,NSZ 2210
     1)                                                                 2220

      WRITE (NOUTP,800)IS,M,L                                           2230
      GO TO 141                                                         2240
  117 IF(M-1)123,123,116                                                2250
  123 WRITE(IFILE'IS) (ISATZ(I),I=1,L)                                  2260
      I=1                                                               2270
      WRITE (NOUTP,800)IS,I,L                                           2280
  141 IF(KMAT*JJ-1)124,124,125                                          2290
  124 IRA=IS                                                            2300
      GO TO 41                                                          2310
  125 IRA=ITR                                                           2320
C                                                                       2330
C     SCHREIBEN DES BLOCKES DER TYPNAMEN                                2340
C                                                                       2350
   41 KV=2                                                              2360
      WRITE (NOUTP,303) KV                                              2370
  303 FORMAT (1H ,4HKV =I3)                                             2380
      ISATZ(IK)=NTYPN                                                   2390
      ISATZ(IK+1)=NWN                                                   2400
      ISATZ(IK+2)=NA                                                    2410
      ISATZ(IK+3)=NW                                                    2420
      IF(NWN)42,42,43                                                   2430
   42 ISATZ(IK+4)=NDAT                                                  2440
      GO TO 44                                                          2450
   43 ISATZ(IK+4)=NNK                                                   2460
   44 IF(ITYP-1)45,45,46                                                2470
   45 J=NTYP*7                                                          2480
      I=IK+J                                                            2490
      J=I/NSZ                                                           2500
      ITR=IR+J                                                          2510
      ITK=I-J*NSZ                                                       2520
      ITN=ITR                                                           2530
   46 ISATZ(IK+5)=ITR                                                   2540
      ISATZ(IK+6)=ITK                                                   2550
      J=IK                                                              2560
      IK=IK+7                                                           2570
      L=IK-1                                                            2580
      IF(IR-IRA)98,99,98                                                2590
   99 NR=IR                                                             2600
   98 IF(L-NSZ)47,48,49                                                 2610
   48 N=1                                                               2620
      GO TO 50                                                          2630
   49 N=2                                                               2640
   50 IF(IR-NR)74,173,74                                                2650
  173 READ(IFILE'IR) (ISUM(I),I=1,NSZ)                                  2660
      K=J-1                                                             2670
      WRITE(IFILE'IR) (ISUM(I),I=1,K),(ISATZ(I),I=J,NSZ)                2680
      I=NSZ                                                             2690
      WRITE (NOUTP,800)IR,J,I                                           2700
      GO TO 76                                                          2710
   74 WRITE(IFILE'IR) (ISATZ(I),I=1,NSZ)                                2720
      WRITE (NOUTP,800)IR                                               2730
   76 IR=IR+1                                                           2740
      IK=IK-NSZ                                                         2750
      GO TO (51,52),N                                                   2760
   52 DO 11 N=NUM,L                                                     2770
      KW=N-NSZ                                                          2780
   11 ISATZ(KW)=ISATZ(N)                                                2790
      L=L-NSZ                                                           2800
      J=1                                                               2810
   47 IF(IR-NR)95,78,95                                                 2820
   95 IF(IR-ITN)96,78,96                                                2830
   78 READ(IFILE'IR) (ISUM(I),I=1,NSZ)                                  2840
      K=J-1                                                             2850
      M=L+1                                                             2860
      IF(K)32,32,33                                                     2870
   32 WRITE (IFILE'IR) (ISATZ(I),I=J,L),(ISUM(I),I=M,NSZ)               2880
      WRITE (NOUTP,800)IR,J,L                                           2890
      NR=IR                                                             2900
      GO TO 51                                                          2910
   33 WRITE(IFILE'IR)(ISUM(I),I=1,K),(ISATZ(I),I=J,L),(ISUM(I),I=M,NSZ) 2920
      WRITE (NOUTP,800)IR,J,L                                           2930
      GO TO 51                                                          2940
   96 WRITE(IFILE'IR)(ISATZ(I),I=1,L)                                   2950
      I=1                                                               2960
      WRITE (NOUTP,800)IR,I,L                                           2970
      NR=IR                                                             2980
   51 IF(NWN)82,82,53                                                   2990
C                                                                       3000
C     SCHREIBEN DES BLOCKES DER WEITEREN NAMEN                          3010
C                                                                       3020
   53 IWNK=ITK                                                          3030
      IWNR=ITR                                                          3040
   73 ITW=IWNK                                                          3050
      DO 54 J=1,NWN                                                     3060
      SATZ(IWNK)=XNAM(J)                                                3070
   54 IWNK=IWNK+1                                                       3080
      ISATZ(IWNK)=NDAT                                                  3090
      IF(INK-1)55,55,56                                                 3100
   55 J=(NWN+3)*NNK                                                     3110
      I=J+ITW                                                           3120
      J=I/NSZ                                                           3130
      ITK=I-J*NSZ                                                       3140
      ITR#IWNR&J                                                        3150
   56 ISATZ(IWNK+1)=ITR                                                 3160
      ISATZ(IWNK+2)=ITK                                                 3170
      IWNK=IWNK+3                                                       3180
      L=IWNK-1                                                          3190
      IF(IWNR-NR)85,86,85                                               3200
   86 IRS=IWNR                                                          3210
   85 IF(L-NSZ)84,58,59                                                 3220
   58 N=1                                                               3230
```

```
      GO TO 60                                                          3240
   59 N=2                                                               3250
   60 IF (ITW-1)80,79,80                                                3260
   80 READ(IFILE'IWNR) (ISUM(I),I=1,NSZ)                                3270
      J=ITW-1                                                           3280
      WRITE(IFILE'IWNR)(ISUM(I),I=1,J),(ISATZ(I),I=ITW,NSZ)             3290
      GO TO 81                                                          3300
   79 WRITE (IFILE'IWNR) (ISATZ(I),I=1,NSZ)                             3310
   81 IWNR=IWNR+1                                                       3320
      IWNK=IWNK-NSZ                                                     3330
      ITW=1                                                             3340
      GO TO (82,62),N                                                   3350
   62 DO 63 N=NUM,L                                                     3360
      KW=N-NSZ                                                          3370
   63 ISATZ(KW)=ISATZ(N)                                                3380
      L=L-NSZ                                                           3390
   84 IF(IWNR-IRS)57,83,57                                              3400
   57 IF(IWNR-IBR)397,83,397                                            3410
  397 IF(IWNR-IPS)97,83,97                                              3420
   83 READ(IFILE'IWNR) (ISUM(I),I=1,NSZ)                                3430
      J=ITW-1                                                           3440
      K=L+1                                                             3450
      IF(J)102,102,101                                                  3460
  101 WRITE(IFILE'IWNR) (ISUM(I),I=1,J),(ISATZ(I),I=ITW ,L),(ISUM(I),   3470
     1I=K,NSZ)                                                          3480
      GO TO182                                                          3490
  102 WRITE(IFILE'IWNR) (ISATZ(I),I=ITW ,L),(ISUM(I),I=K,NSZ)           3500
      GO TO182                                                          3510
   97 WRITE(IFILE'IWNR) (ISATZ(I),I=1,L)                                3520
  182 IRS=IWNR                                                          3530
C                                                                       3540
C     SCHREIBEN DES BLOCKES DER DATEN                                   3550
C                                                                       3560
   82 J=NDAT*ND                                                         3570
      IF(INK-1)61,61,64                                                 3580
   61 IBR=ITR                                                           3590
      IMK=0                                                             3600
   64 IB=ITK                                                            3610
      DO 65 I=1,J                                                       3620
      SATZ(ITK)=X(I)                                                    3630
   65 ITK=ITK+1                                                         3640
      L=ITK-1                                                           3650
      IF(ITR-IPS)87,88,87                                               3660
   87 IF (ITR-IRS)287,88,287                                            3670
   88 IMK=ITR                                                           3680
  287 IF(L-NSZ)66,67,68                                                 3690
   67 N=1                                                               3700
      GO TO 70                                                          3710
   68 N=2                                                               3720
   70 IF(ITR-IMK)126,90,126                                             3730
   90 IF(IB-1)126,126,127                                               3740
  126 WRITE(IFILE'ITR) (SATZ(I),I=1,NSZ)                                3750
      GO TO 91                                                          3760
  127 READ (IFILE'ITR) (ISUM(I),I=1,NSZ)                                3770
      J=IB-1                                                            3780
      WRITE (IFILE'ITR) (ISUM(I),I=1,J),(SATZ(I),I=IB,NSZ)              3790
   91 ITR=ITR+1                                                         3800
      ITK=ITK-NSZ                                                       3810
      IB=1                                                              3820
      GO TO (15,71),N                                                   3830
   71 DO 72 N=NUM,L                                                     3840
      KW=N-NSZ                                                          3850
   72 SATZ(KW)=SATZ(N)                                                  3860
      L=L-NSZ                                                           3870
      GO TO287                                                          3880
   66 IF(ITR-IMK)92,93,92                                               3890
   93 READ (IFILE'ITR)(ISUM(I),I=1,NSZ)                                 3900
      J=IB-1                                                            3910
      K=L+1                                                             3920
      IF(J)103,103,104                                                  3930
  103 WRITE(IFILE'ITR) ( SATZ(I),I=IB,L),(ISUM(I),I=K,NSZ)              3940
      GO TO 114                                                         3950
  104 WRITE(IFILE'ITR) (ISUM(I),I=1,J),(SATZ(I),I=IB,L),(ISUM(I),I=K,   3960
     1NSZ)                                                              3970
  114 IPS=ITR                                                           3980
      GO TO 15                                                          3990
   92 J=IB-1                                                            4000
      READ (IFILE'ITR) (ISUM(I),I=1,NSZ)                                4010
      IF(J)111,111,112                                                  4020
  112 WRITE(IFILE'ITR)(ISUM(I),I=1,J),(SATZ(I),I=IB,L)                  4030
      GO TO 113                                                         4040
  111 WRITE(IFILE'ITR)(SATZ(I),I=1,L)                                   4050
  113 IMK=ITR                                                           4060
      IPS=ITR                                                           4070
   15 CONTINUE                                                          4080
   10 CONTINUE                                                          4090
  105 REWIND II                                                         4100
C                                                                       4110
      KV=5                                                              4120
      WRITE (NOUTP,303) KV                                              4130
      GO TO 305                                                         4140
C                                                                       4150
  300 KLZ=KLZ+1                                                         4160
      WRITE (NOUTP,301) KLZ                                             4170
  301 FORMAT (1HO,5HKLZ =I6,16H  ERROR IN 01722)                        4180
  305 RETURN                                                            4190
      END                                                               4200
```

3. Input preparation for the program system KEMA (REFORM)

3.1 The purpose of the program REFORM

The purpose of the program REFORM is to facilitate the preparation of the input for the program system KEMA. For example if sets of data for a material are to be cancelled on KEDAK it would be cumbersome to specify each and every data point in the data alteration block DROPS in the program 01750 or 01751 of KEMA /see 2.3/. The program REFORM traces these energy points on KEDAK within a specified energy interval and generates the data alteration blocks as required by programs 01750 or 01751. REFORM also generates if desired DROPA and ADD blocks. The data to be inserted in KEDAK may be stored on cards or any external storage unit and in any specified format.

REFORM is written in FORTRAN IV and uses the ASSEMBLER routine DEFI and the FORTRAN IV routine LDFPAC /see III. 2/.

3.2 The input for REFORM

The input for REFORM is divided into two parts. The first part contains the information about the desired data alteration block and is read from the standard input unit using a NAMELIST list. Therefore it is not necessary to repeat input data which were already specified in the previous NAMELIST group. The second part of the input is only necessary if a data alteration block ADD is to be produced. This part contains the arguments and respected functional values which are to be inserted or changed on KEDAK. These data pairs are read from unit IN with format FORMT as explained below. Both the first and the second part of the input must be ordered as the materials and data types appear on KEDAK, in detail: the materials have the order as given on KEDAK, the data types have an alphabetic order and the arguments in part two of the input must be given with increasing arguments.

For each data alteration block to be produced a separate NAMELIST group is specified.

Description of the NAMELIST groups:

a) Production of the data alteration block DROPS

   b&DROPb-options:

NAMZ = number of names, default: NAMZ = 2

NAMEN = 'materialname', 'data type name', eventually further names

EMIN = lower } limit of the energy region to be cancelled

EMAX = upper } on KEDAK in eV. EMIN ≤ E < EMAX

TST = T Print output of the data alteration block is desired.

F Print output of the data alteration block is not desired. Default: TST = F.

&END

b) Production of the data alteration block ADD

b&ADDb - options:

NAMZ = }

NAMEN = } see a)

TST = }

IN = external storage unit on which the sets of data to be inserted or changed on KEDAK are stored.

FORMT = '(format of the sets of data stored on unit IN)'

ANZAHL = number of the sets of data to be inserted or changed on KEDAK

COMT = T the first record on unit IN is a record containing comments

F no comment precedes the sets of data. Default: COMT = T

&END

c) Production of the data alteration block DROPA

b&DROPAb - options:

NAMZ = }

NAMEN = } see a)

TST = }

&END

3.3 The output of REFORM

REFORM writes the desired data alteration blocks on the external storage unit 2. They can be directly used by the program system KEMA.
In cases TST is set equal to T the data alteration blocks are also printed on paper.
The error messages are self explaining

3.4 Needed external storage units

5 Standard input unit.

6 Standard unit for the print output.

2 Storage unit on which the data alteration blocks are written.

9 External storage unit which is used to take up the NAMELIST groups from unit 5. This is done to enable a BACKSPACE statement for this part of the input.

1 Storage unit containing the KEDAK library which is to be modified.

IN Storage unit (units) containing the data pairs used for the data alteration block (blocks) ADD. Because it is possible to read the data pairs of each material and each data type from another storage unit, for all specified units IN in the NAMELIST groups b&ADD a special DD-card is necessary.

3.5 Input example

```
//INR017KE  JOB  (0017,101,P6M1A),KRIEG,MSGLEVEL=(1,1),CLASS=A
/*SETUP DEVICE=2314,ID=GFK050
/*SETUP DEVICE=2314,ID=GFK029
// EXEC FFLG
//L.LIB DD UNIT=2314,VOL=SER=GFK029,DSN=INR.STEIN.LOAD,DISP=SHR
//L.SYSIN DD *
 INCLUDE LIB(REFORM,LDFPAC)
 ENTRY MAIN
//G.FT01F001 DD UNIT=2314,VOL=SER=GFK050,DISP=SHR,DSN=KEDAK3
//G.FT09F001 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(80,15000),
//    DCB=(RECFM=F,BLKSIZE=80,LRECL=80)
//G.FT02F001 DD UNIT=SYSDA,SPACE=(TRK,50),DSN=&REFORM,DISP=(NEW,PASS)
//G.FT15F001  DD *
 U 238  SGG
2.500000E+00  3.750000E+01
3.000000E+00  4.125000E+02
1.000000E+01  2.015000E+02
 U 238  SGN
6.025000E+01  2.030000E+00
2.000000E+02  6.500000E+01
5.500000E+02  4.200000E+00
8.200000E+02  1.950000E+00
```

```
//G.SYSIN  DD *
 &DROP NAMZ=2,NAMEN='U 238','SGG',EMIN=1.,EMAX=1.0E1,TST=T,&END
 &ADD NAMZ=2,NAMEN='U 238','SGG', IN=15,ANZAHL=3,COMT=T,
   FORMT='(2E14.6)',&END
 &DROP NAMZ=2,NAMEN='U 238','SGN',EMIN=3.8E3,EMAX=3.9E3,&END
 &ADD NAMZ=2,NAMEN='U 238','SGN',IN=15,ANZAHL=4,COMT=T,
   FORMT='(2E14.6)',&END
```

3.6 The output for the example

```
DIE KARTENEINGABE WURDE AUF ET 9 ABGELEGT.ES WURDEN     7 KARTEN GELESEN


                    DROP_REQUESTED.

 BETWEEN    0.100000E+01EV  AND    0.1000000E+02EV FOR: NAMZ= 2
                    NAMEN=U 238      SGG

 TEST PRINTOUT.WRITTEN RECORD READS:
        49 DROPS       2 U 238     SGG
          1
  1.00000E+00  3.19335E+00  3.93401E+00  4.20959E+00  4.29632E+00  4.33681E+00  4.35852E+00  4.37184E+00  4.38464E+00  4.38939E+00
  4.39300E+00  4.39661E+00  4.40136E+00  4.41416E+00  4.42748E+00  4.44919E+00  4.48967E+00  4.57641E+00  4.80199E+00  5.43892E+00
  6.18861E+00  6.45413E+00  6.55621E+00  6.60386E+00  6.62941E+00  6.64509E+00  6.66016E+00  6.66575E+00  6.67000E+00  6.67425E+00
  6.67984E+00  6.69491E+00  6.71059E+00  6.73614E+00  6.78379E+00  6.88587E+00  7.15139E+00  8.08201E+00  8.58820E+00  9.01828E+00
  9.80899E+00


                    ADD_REQUESTED.

NAMZ= 2 NAMEN=U 238      SGG

IN=15   ANZAHL=        3    COMT= T   FORMT=(2E14.6)

  *COMMENTCARD*    U 238   SGG


 TEST PRINTOUT.WRITTEN RECORD READS:
        15 ADD         2 U 238     SGG
          1         1
  2.50000E+00  3.75000E+01  3.00000E+00  4.12500E+02  1.00000E+01  2.01500E+02


                    DROP_REQUESTED.

 BETWEEN    0.380000E+04EV  AND    0.390000E+04EV FOR: NAMZ= 2
                    NAMEN=U 238      SGN

 TEST PRINTOUT.WRITTEN RECORD READS:
        89 DROPS       2 U 238     SGN
          1
  3.80001E+03  3.80026E+03  3.80115E+03  3.80659E+03  3.81430E+03  3.82297E+03  3.82908E+03  3.83008E+03  3.83037E+03  3.83048E+03
  3.83053E+03  3.83056E+03  3.83057E+03  3.83059E+03  3.83060E+03  3.83061E+03  3.83063E+03  3.83064E+03  3.83067E+03  3.83072E+03
  3.83083E+03  3.83112E+03  3.83212E+03  3.83223E+03  3.83392E+03  3.84893E+03  3.85322E+03  3.85486E+03  3.85563E+03  3.85605E+03
  3.85630E+03  3.85654E+03  3.85663E+03  3.85670E+03  3.85677E+03  3.85686E+03  3.85710E+03  3.85735E+03  3.85777E+03  3.85854E+03
  3.86018E+03  3.86447E+03  3.86717E+03  3.86842E+03  3.87039E+03  3.87115E+03  3.87151E+03  3.87170E+03  3.87181E+03  3.87193E+03
  3.87197E+03  3.87200E+03  3.87203E+03  3.87207E+03  3.87219E+03  3.87230E+03  3.87249E+03  3.87285E+03  3.87361E+03  3.87558E+03
  3.88251E+03  3.89230E+03  3.89365E+03  3.89461E+03  3.89488E+03  3.89498E+03  3.89503E+03  3.89506E+03  3.89507E+03  3.89509E+03
  3.89510E+03  3.89511E+03  3.89513E+03  3.89514E+03  3.89517E+03  3.89522E+03  3.89532E+03  3.89559E+03  3.89573E+03  3.89702E+03
  3.89966E+03
```

```
                    ADD_REQUESTED.

NAMZ= 2 NAMEN=U 238      SGN

IN=15  ANZAHL=        4    COMT= T  FORMT=(2E14.6)

  *COMMENTCARD*   U 238  SGN


 TEST PRINTOUT.WRITTEN RECORD READS:
        17 ADD         2 U 238     SGN
         1          1
 6.02500E+01  2.03000E+00  2.00000E+02  6.50000E+01  5.50000E+02  4.20000E+00  8.20000E+02  1.95000E+00

 TESTPRINTOUT: WRITTEN RECORD READS:
    2ENDE


***** NORMAL END OF JOB
```

3.7 List of REFORM

```
C                                                                       10
C          AUF BAND FUER KRIEGSCHES AUFNAHMEPROGRAMM KEMA               20
C                                                                       30
      DIMENSION Z(1000),FORMT(20),TEXT(20),NARGU(3),FMT(20)             40
      REAL NAMDAT(20)                                                   50
      INTEGER ANZAHL,ANZ,A                                              60
      REAL*8 NAMEN(10),ADX/'ADD'/,DROPS/'DROPS'/,ENDE/'ENDE'/,TYP,MAT,  70
     1EXC,DROPX/'DROPA'/                                                80
      LOGICAL TST/F/,COMT/T/                                            90
      DATA AD/' &AD'/,DR/' &DR'/,D2/'OPA '/                             100
      DATA FORMT/20*'    '/,BLANK/'    '/,N1/1/,N2/2/                   110
      DATA EMIN/0./,EMAX/1.E+10/,ARG/'ARG '/                            120
      NAMELIST/DROP/NAMZ,NAMEN,EMIN,EMAX,TST,MAT,TYP,EXC                130
      EQUIVALENCE (ANZAHL,ANZ,A),(FORMT(1),FMT(1)),(IN,KARTEN),(NAMEN(1) 140
     1,MAT),(NAMEN(2),TYP),(NAMEN(3),EXC)                               150
      NAMELIST/ADD  /NAMZ,ANZAHL,NAMEN,FORMT,IN,NARG,NWERT,TST,COMT,    160
     1 ANZ,A,FMT,KARTEN,TYP,MAT,EXC                                     170
      NAMELIST/DROPA/NAMZ,NAMEN,TST,MAT,TYP,EXC                         180
      COMMON/INOUT/KIN,KOUT                                             190
      CALL ESPIE                                                        200
      NARG=N1                                                           210
      NWERT=N1                                                          220
      NOUT=2                                                            230
      MAXZ=1000                                                         240
      KIN=9                                                             250
      KOUT=6                                                            260
      IN=KIN                                                            270
      NERR=0                                                            280
      NAMZ=2                                                            290
      ANZAHL=0                                                          300
      KEKONT=0                                                          310
      NNERR=0                                                           320
      CALL CDINPT                                                       330
   10 READ(KIN,617,END=50) TEXT                                         340
  617 FORMAT(20A4)                                                      350
      IF(TEXT(1).EQ.AD) GOTO 11                                         360
      IF(TEXT(1).EQ.DR.AND.TEXT(2).EQ.D2)  GO TO 700                    370
      IF(TEXT(1).EQ.DR) GOTO 120                                        380
      WRITE(KOUT,607) TEXT                                              390
  607 FORMAT(////20X,'ERRORMESSAGE'/'+',19X,12('_')/                    400
     1       '     *',20A4,'* NOT IDENTIFIED AS CONTROL CARD.'//)       410
    9 NNERR=NNERR+1                                                     420
      GOTO 10                                                           430
   11 BACKSPACE KIN                                                     440
      READ(KIN,ADD  ,END=50)                                            450
      WRITE(KOUT,609)                                                   460
  609 FORMAT(////20X,'ADD REQUESTED.'/'+',19X,14('_')/)                 470
      WRITE(KOUT,605) NAMZ,(NAMEN(I),I=1,NAMZ)                          480
  605 FORMAT(  ' NAMZ=',I2,' NAMEN=',2(A8,2X),1P5E13.5)                 490
      WRITE(KOUT,606) IN,ANZAHL,COMT,FORMT                              500
  606 FORMAT(/' IN=',I2,'  ANZAHL=',I8,'   COMT=',L2,'  FORMT=',20A4)   510
      IF(NAMZ.NE.0) GOTO 12                                             520
      WRITE(KOUT,600)                                                   530
  600 FORMAT(//' ***** NAMZ NOT GIVEN'//)                               540
      NERR=1                                                            550
   12 IF(ANZAHL.GT.0) GOTO 14                                           560
      WRITE(KOUT,601)                                                   570
  601 FORMAT(//' ***** ERROR IN PARAMETER ANZAHL'//)                    580
      NERR=1                                                            590
   14 IF(FORMT(1).NE.BLANK) GOTO 16                                     600
      WRITE(KOUT,602)                                                   610
  602 FORMAT(//' ***** ERROR IN FORMT'//)                               620
      NERR=1                                                            630
   16 IF(NERR.NE.0) STOP                                                640
   17 IF(.NOT.COMT) GOTO 21                                             650
      READ(IN,617) TEXT                                                 660
      WRITE(KOUT,618) TEXT                                              670
  618 FORMAT(//'   *COMMENTCARD*',20A4/)                                680
   21 IF(ANZAHL*(NARG+NWERT).LE.MAXZ)  GO TO 18                         690
      MAX=MAXZ/(NARG+NWERT)                                             700
      GOTO 20                                                           710
   18 MAX=ANZAHL                                                        720
   20 M=MAX*(NARG+NWERT)                                                730
      READ(IN,FORMT,END=90) (Z(I),I=1,M)                                740
      NWORD=NAMZ+7+M                                                    750
      IF(NARG.EQ.0) NWORD=NWORD+1                                       760
      NMD=2                                                             770
      CALL STRING(NAMDAT(1),NAMEN(1),8)                                 780
      IF(NAMZ.LT.2) GOTO 25                                             790
      NMD=NMD+2                                                         800
      CALL STRING(NAMDAT(3),NAMEN(2),8)                                 810
      IF(NAMZ.LT.3) GOTO 25                                             820
      DO 22 I=3,NAMZ                                                    830
      NMD=NMD+1                                                         840
   22 NAMDAT(I+2)=NAMEN(I)                                              850
   25 CONTINUE                                                          860
      IF(NARG.GT.0)  GO TO 705                                          870
      WRITE (NOUT) NWORD,ADX,NAMZ,(NAMDAT(I),I=1,NMD),NARG,NWERT,ARG,   880
     1(Z(I),I=1,M)                                                      890
      GO TO 706                                                         900
  705 WRITE(NOUT) NWORD,ADX,NAMZ,(NAMDAT(I),I=1,NMD),NARG,NWERT,        910
     1 (Z(I),I=1,M)                                                     920
  706 IF(TST) WRITE(KOUT,611) NWORD,ADX,NAMZ,(NAMDAT(I),I=1,NMD)        930
      IF(NARG.GT.0)  GO TO 707                                          940
      IF(TST) WRITE (KOUT,708) NARG,NWERT,ARG,(Z(I),I=1,M)              950
  708 FORMAT(1X,2I10,A5/(1X,1P10E13.5))                                 960
      GO TO 709                                                         970
  707 IF(TST) WRITE(KOUT,615) NARG,NWERT,(Z(I),I=1,M)                   980
  615 FORMAT(1X,2I10/(1X,1P10E13.5))                                    990
  709 ANZAHL=ANZAHL-MAX                                                1000
      IF(ANZAHL.GT.0) GOTO 21                                          1010
      GOTO 10                                                          1020
   50 WRITE(NOUT) N2,ENDE                                              1030
      IF(TST) WRITE(KOUT,619) N2,ENDE                                  1040
  619 FORMAT(/'  TESTPRINTOUT: WRITTEN RECORD READS:'/1X,I5,A8/)        1050
      IF(NNERR.NE.0) GOTO 52                                           1060
      WRITE(KOUT,603)                                                  1070
  603 FORMAT(//' ***** NORMAL END OF JOB')                             1080
      GOTO 54                                                          1090
   52 WRITE(KOUT,620) NNERR                                            1100
```

```
620 FORMAT(//' ***** ',I3,' ERRORMESSAGES WERE GENERATED.')                1110
 54 STOP                                                                  1120
 90 WRITE(KOUT,604) IN                                                    1130
604 FORMAT(//' ***** END OF DATA ON UNIT',I3,',BEFORE SPECIFIED NUMBER    1140
   X OF DATAPOINTS HAVE BEEN READ.STOP')                                  1150
    STOP                                                                  1160
120 BACKSPACE KIN                                                         1170
    READ(KIN,DROP,END=50)                                                 1180
    WRITE(KOUT,610)                                                       1190
    WRITE(KOUT,608) EMIN,EMAX,NAMZ,(NAMEN(I),I=1,NAMZ)                    1200
610 FORMAT(////20X,'DROP REQUESTED.'/'+',19X,15('_')/)                    1210
608 FORMAT('  BETWEEN ',E14.6,'EV  AND ',E14.6,'EV FOR: NAMZ=',I2/        1220
   1 20X,'NAMEN=',2(A8,2X),1P5E13.5)                                      1230
    NARGU(1)=NAMZ                                                         1240
    IF(KEKONT.NE.0) GOTO 121                                              1250
    CALL LOFOPN(1,IDATUM,&140)                                            1260
    KEKONT=1                                                              1270
121 CALL RETXS(NARGU,NAMEN,EMIN,EMAX,Z(1),MAX,MAXZ,NR)                    1280
    IF(NR.GT.2) GOTO 130                                                  1290
    NARGX=NARGU(2)                                                        1300
    NWORD=6+NAMZ+MAX*NARGX                                                1310
    NMD=2                                                                 1320
    CALL STRING(NAMDAT(1),NAMEN(1),8)                                     1330
    IF(NAMZ.LT.2) GOTO 125                                                1340
    NMD=NMD+2                                                             1350
    CALL STRING(NAMDAT(3),NAMEN(2),8)                                     1360
    IF(NAMZ.LT.3) GOTO 125                                                1370
    DO 122 I=3,NAMZ                                                       1380
    NMD=NMD+1                                                             1390
122 NAMDAT(NMD)=NAMEN(I)                                                  1400
    GOTO 125                                                              1410
125 WRITE(NOUT) NWORD,DROPS,NAMZ,(NAMDAT(I),I=1,NMD),NARGX,(Z(I),I=1,M    1420
   1AX)                                                                   1430
    IF(TST) WRITE(KOUT,611) NWORD,DROPS,NAMZ,(NAMDAT(I),I=1,NMD)          1440
611 FORMAT(/'  TEST PRINTOUT.WRITTEN RECORD READS:'/                      1450
   1 1X,I10,1X,A8,1X,I3,2(1X,2A4),1P5E13.5)                               1460
    IF(TST) WRITE(KOUT,612) NARGX,(Z(I),I=1,MAX)                          1470
612 FORMAT(1X,I10/(1X,1P10E13.5))                                         1480
    IF(NR.NE.2) GOTO 10                                                   1490
    CALL REPXS(NR,MAX)                                                    1500
    NWORD=6+NAMZ+MAX                                                      1510
    GOTO 125                                                              1520
130 WRITE(KOUT,613)                                                       1530
613 FORMAT(/'  NO DATA FOR THESE SPECIFICATIONS WERE FOUND.NO DROP REC    1540
   1ORDS ARE WRITTEN.'/)                                                  1550
    GOTO 9                                                                1560
140 WRITE(KOUT,616)                                                       1570
616 FORMAT(//'   KEDAK-LIBRARY NOT MOUNTED.NO DROP RECORDS ARE WRITTEN    1580
   1'//)                                                                  1590
    GOTO 9                                                                1600
700 BACKSPACE KIN                                                         1610
    READ (KIN,DROPA,END=50)                                               1620
    WRITE (KOUT,701)                                                      1630
    WRITE (KOUT,702) NAMZ,(NAMEN(I),I=1,NAMZ)                             1640
701 FORMAT(////20X,'DROPA REQUESTED.'/'+',19X,16('_')/)                   1650
```

```
702 FORMAT(20X,'NAMZ=',I2,' NAMEN=',2(A8,2X),1P5E13.5)                    1660
    NMD=2                                                                 1670
    CALL STRING(NAMDAT(1),NAMEN(1),3)                                     1680
    IF(NAMZ.EQ.1)  GO TO 703                                              1690
    NMD=NMD+2                                                             1700
    CALL STRING(NAMDAT(3),NAMEN(2),8)                                     1710
    IF(NAMZ.LT.3)  GO TO 715                                              1720
    DO 716 I=3,NAMZ                                                       1730
    NMD=NMD+1                                                             1740
716 NAMDAT(NMD)=NAMEN(I)                                                  1750
715 NWORD=5+NAMZ                                                          1760
    GO TO 704                                                             1770
703 NWORD=5                                                               1780
704 WRITE (NOUT) NWORD,DROPX,NAMZ,(NAMDAT(I),I=1,NMD)                     1790
    IF(TST) WRITE (KOUT,611) NWORD,DROPX,NAMZ,(NAMDAT(I),I=1,NMD)         1800
    GO TO 10                                                              1810
    END                                                                   1820
```

```
    SUBROUTINE CDINPT                                                      10
    COMMON/INOUT/KIN,KOUT,KPUN                                             20
    REAL*8 A(10)                                                           30
    INPT=5                                                                 40
    N=1                                                                    50
C                                                                          60
C CDINPT LIEST DIE KARTEN-EINGABE VON INPT UND LEGT SIE NACH KIN           70
C                                                                          80
  5 READ(INPT,900,END=99,ERR=9) A                                          90
    WRITE(KIN,900) A                                                      100
900 FORMAT(10A8)                                                          110
    N=N+1                                                                 120
    GOTO 5                                                                130
  9 WRITE(KOUT,601) N                                                     140
601 FORMAT(/' FEHLER BEIM LESEN DER',I5,'-TEN KARTE'/)                    150
    GOTO 5                                                                160
 99 WRITE(KOUT,602) KIN,N                                                 170
602 FORMAT(/' DIE KARTENEINGABE WURDE AUF FT',I2,' ABGELEGT.ES WURDEN'    180
   1,I5,' KARTEN GELESEN'/)                                               190
    REWIND KIN                                                            200
    RETURN                                                                210
    END                                                                   220
```

```
    SUBROUTINE RETXS(NARG,NAMES,EMIN,EMAX,X,NUMX,MAXNUM,NR)                10
    DIMENSION X(1),    Z(20),NARG(1)                                       20
    COMMON/INOUT/ KOUT                                                     30
    REAL*8 NAMES(1),NAM(20)                                                40
C                                                                          50
C       RETXS RETRIEVES KEDAK-DATA.                                        60
C                                                                          70
    N=NARG(1)                                                              80
```

```
      DO 2 I=1,N                                                        90
    2 NAM(I)=NAMES(I)                                                   100
      I=0                                                               110
      CALL LDFLOC(NERR,NARG,NAM,Z)                                      120
      IF(NERR.EQ.0) GOTO 30                                             130
      K=NARG(2)                                                         140
      IF(Z(1).LT.EMIN) GOTO 20                                          150
      IF(Z(1).GT.EMAX) GOTO 32                                          160
      GOTO 21                                                           170
   20 CALL LDFNXT(NERR,NARG,NAM,Z)                                      180
      IF(NERR.EQ.0) GOTO 22                                             190
      IF(Z(1).LT.EMIN) GOTO 20                                          200
      IF(Z(1).GT.EMAX) GOTO 24                                          210
   21 I=I+1                                                             220
      IF(I*K.GT.MAXNUM)  GO TO 34                                       230
      DO 1 J=1,K                                                        240
      L=(I-1)*K+J                                                       250
    1 X(L)=Z(J)                                                         260
      GOTO 20                                                           270
C                                                                       280
      ENTRY REPXS(NR,NUMX)                                              290
      I=0                                                               300
      GOTO 21                                                           310
C                                                                       320
   22 IF(I.LT.1) GOTO 23                                                330
      NR=1                                                              340
      GOTO 200                                                          350
   23 NR=5                                                              360
      GOTO 200                                                          370
C                                                                       380
   24 IF(I.LT.1) GOTO 25                                                390
      NR=0                                                              400
      GOTO 200                                                          410
   25 NR=6                                                              420
      GOTO 200                                                          430
C                                                                       440
   30 NR=3                                                              450
      GOTO 200                                                          460
C                                                                       470
   32 NR=4                                                              480
      GOTO 200                                                          490
C                                                                       500
   34 NR=2                                                              510
      I=I-1                                                             520
      GOTO 200                                                          530
  200 NUMX=I                                                            540
      RETURN                                                            550
      END                                                               560
```