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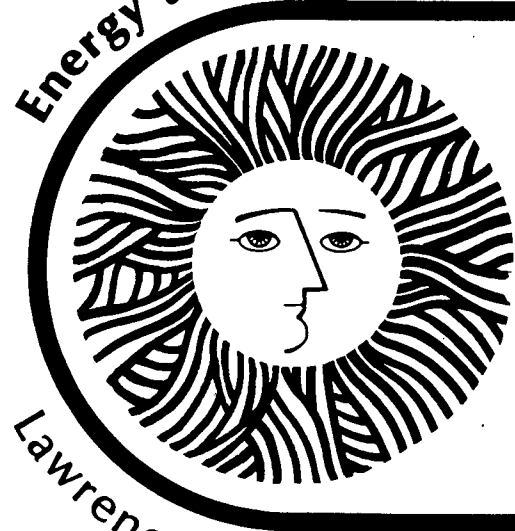
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A Manual for Cataloging and Indexing
Documents for Database Acquisition

*S.R. Schwartz, S.L. Phillips,
and J.J. Perra*

July 1978

Lawrence Berkeley Laboratory University of California/Berkeley

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**A Manual for Cataloging and Indexing Documents
for Database Acquisition**

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INTRODUCTION

The National Geothermal Information Resource (GRID) of the Lawrence Berkeley Laboratory is sponsored by the U.S. Department of Energy to provide critically evaluated data designed to assist in the research and utilization of geothermal energy. Conjointly, a computerized database containing bibliographic and numerical data pertaining to the study of geothermal energy is maintained for retrieval and updating of information. The intent of this report is to document the descriptive cataloging and subject indexing rules and methodology needed to process bibliographic information for database storage.

DESCRIPTIVE CATALOGING

Descriptive cataloging describes the task of encoding document-type data for a computerized database utilizing very specific rules and procedures. The descriptive cataloging rules and techniques are based on standards (Ref. 1) developed by the International Nuclear Information System (INIS) of the International Atomic Energy Agency (IAEA), thereby facilitating bibliographic-data exchange with other INIS-styled data centers. (Appendix I)

All bibliographic information is entered and stored in the geothermal database by way of the Berkeley database management system (BDMS), a general-purpose database management and information retrieval system (Ref. 2). The BDMS database is structured into unit records with each record corresponding to one bibliographic reference. Individual items within a record are called data elements. A description of the data elements and the procedures used for the encoding of bibliographic references will be discussed in the following section. Data elements which may appear in a bibliographic record are listed in Table A. Examples of coded data entry forms may be found in Appendix I.

HEADERS

Short Code (SC)

The short code is a unique tag or identifier of the document. It consists of the senior author's last name, the last two digits of the year of publication and, if necessary, an alphabetic character to differentiate the reference from other references with the same author's name and publication date. In the case of two authors both with the name of Adams, and both with a publication in 1977, the short

code would be entered as follows:

SC=Adams 77;

SC=Adams 77B;

Record Type (TY)

The record type indicates the following identification for each document: type of document, bibliographic levels and literary indicators.

The type of document is chosen from one of the following categories:

- B - Books or part of a book
- C - A collection which is defined as an assemblage of various documents gathered together and cataloged as a single unit
- D - Drawing or photographs (Do not use for maps and atlases)
- F - Films, slides
- G - Maps or atlases
- H - Sound recordings
- J - Journal articles
- P - Patents
- R - Reports or parts of reports
- T - Computer medium

The bibliographic level (BL) consists of one letter or a combination of the letters A, M, S and C defined as follows:

- A - Analytical literature not published separately, but as a part of a larger bibliographic entity
- M - Monograph non-serial publications
- S - Serial publications issued in successive parts and intended to be continued indefinitely for publication

C - Collective. Various documents or other types of information gathered together and cataloged as a single unit

Conventional uses of the bibliographic levels A, M, S, C are

listed below:

M - Book, patent, pre-conference paper, report, encyclopedia, handbook

C - Collection of individually titled drawings

AM - Article in an encyclopedia, chapter of a book or report, conference paper in a bound set of proceedings

AS - Article in a journal

MC - Report or brochure

MS - Book in a series

AMC - Chapter of a report in a collection

AMS - Chapter of a book in a series, conference paper from a proceedings book which is part of a proceedings series.

The literary indicators are chosen from the following categories:

K - Conferences

L - Dictionary, encyclopedia

N - Numerical data

U - Thesis

W - Specification

Z - Bibliography

Y - Progress report

E - Abstract or short communication

Examples of encoded record types are as follows:

TY = J/AS; (Example: article published in a journal)

TY=R/AM/K; (Example: report in a conference proceedings).

Example: Appendix II Record 7.

DESCRIPTIVE CATALOGING NODE

The Des-cat node serves to link together information within one bibliographic level. It is called a pure node data element because it does not contain any information; rather, bibliographic information is coded in the data elements subordinate to it. This node contains the data elements required for one level of descriptive cataloging. The BDMS computer program enters one Des-cat node for each bibliographic level which is coded in the "TY" data element. The Des-cat nodes are displayed on output in the order of increasing bibliographic levels. For example, a paper published as a report from a conference proceeding would have the following Des-cat nodes:

TY=R/AM/K;

DES-CAT.1;

BL=A;

PT=Title of a chapter in conference proceedings;

DES-CAT.2;

BL=M;

PT=Title of the conference proceedings;

Bibliographic Level Indicator (BL)

The bibliographic level has one or a combination of the four possible values: A, M, S or C, as defined for the record type (TY) data element. For example, the chapter of a book would be assigned to the A level and the book title would be assigned to the M level.

BL=A;

BL=M;

Example: Appendix II Record 9.

Primary Title (PT)

This data element tags the title of a publication written in English. If the publication is in a foreign language, enter the English translation of the title. If the document is a chapter in a book with a chapter title and chapter number, enter the title in the PT data element and the chapter number below in the primary subtitle data element. The same principles apply to "Part 3", "Section 5", or any other such associated information. If necessary, translate to English and convert any Roman numerals to Arabic, e.g., "Second Chapter" becomes "Chapter 2".

Primary Subtitle (PS)

This data element contains the subtitle in English, and it is used when two titles appear on the title page. Usually one of these is the actual title, while the other is a description such as "Chapter 2", "Final Report", "Technical Report", or "Progress Report".

If the document is one volume of a non-serial set, e.g., a four-volume encyclopedia, then the subtitle frequently contains the volume number, as well as specific subtitle. In this case, the volume number is included in the subtitle, abbreviated "Vol." followed by a space, Arabic numerals and a period, as shown in the following example:

GEOHERMAL ENERGY

In Two Volumes

Volume II: TECHNOLOGY

Exploration and Geophysical Techniques

The document information is entered as follows:

PT=Geothermal Energy

PS=Vol. 2. Exploration and Geophysical Techniques

If a volume number is listed without an accompanying subtitle, the volume number is entered in the collation together with the page numbers.

Example: Appendix II Record 70.

Title Augmentation (TA)

In some instances, the descriptive cataloger may augment the PT to provide the user additional information of the document's contents. This may be desirable when the PT conveys insufficient or misleading information concerning the subject matter of the document. In other cases, certain types of documents such as institutional progress reports may have brief standardized titles that do not adequately reflect the actual subject substance of the report. In these cases, title augmentation is used to provide essential subject information lacking in the original title. Title augmentation may take the form of natural language text, single words, phrases, sentences, formulas, chemical reactions, etc.

Language (L)

If the document is entirely in English, omit this data element. For languages other than English, enter the preposition "In" followed by a space, and the language (or languages separated by commas).

L=In Russian;

L=In English, French, German;

Original Title (OT)

The title of non-English documents is entered in this data element. Transliterate, if necessary, using INIS transliteration rules for selected non-Roman characters. Rules for the transliteration of Slavic Cyrillic characters are listed in Table I. Rules for the transliteration of Greek characters are listed in Table II. Do not attempt to transliterate other non-Roman alphabets.

Journal or Series Title (OT, level S)

Journal and Series Title are entered in abbreviated form from a controlled vocabulary. (Ref. 3 Ref. 7)

Journal CODEN (CODEN)

The CODEN alpha-numeric character code is entered from a controlled vocabulary. (Ref. 3 Ref. 7)

Author's Name (AU)

The author name is entered in the following sequence:

- a. Surname of author
- b. A comma and a blank followed by the initials of the author. Initials are followed by periods and are not separated by blanks.
- c. A blank and other name fragments which are not forenames and which would be transposed to the end of the name according to the Anglo-American Cataloging Rules. (Ref. 4)

Transliterate the names, if necessary, using the INIS Rules for selected non-Roman characters, using Table A and Table B and refer to the

Anglo-American Cataloging Rules (Ref. 4) for more details on name fragments. Examples:

Morris, A.C.

Koester, L.J., Jr.

Aizawa, Y.

Chen, S.-H.

Lopez-Garcia, A.

Da Fonseca, V.L.

La Fontaine, J. de

McCarthy, G.L.

Lopez M. del C., A.

If there are two or more authors of the document, do not use separate data elements. Rather, enter the second author's name behind the first author's name separated by a semicolon.

Au=Jones, B.G.; Smith, F.; Franklin, W.J.;

The BDMS database management system responds automatically to the input from the above example by assigning the author's data element sequential pointers as follows:

authors;

AU.1=Jones, B.G.;

AU.2=Smith, F.;

AU.3=Franklin, W.J., Jr.;

Author Note (AN)

This data element may have one of the following values:

AN=ed.; for "editor"

AN=eds; for "editors"

AN=comp.; for "compiler"

AN=comps.; for "compilers"

If authors, editors and compilers are in the same author's node, transpose the authors to the end. Multiple editors (or compilers) should be grouped together and the note "eds." (or comps.) should follow the last author to which it applies.

Author Affiliation (AA)

The Author Affiliation is entered from the controlled vocabulary documented in INIS Authority List for Corporate Entries and Report Number Prefixes. (Ref. 5)

The author's affiliation are two data elements linked within the author's node.

AUTHORS

AU AA

If multiple values of the "AU" data element are immediately followed by an "AA" data element, the "AA" data element will be linked to all the values in the above "AU" data element. Consider the following input example:

AU=Smith, J.B.; Adams, A.G.;

AA=Washington Univ., Seattle (USA). Nuclear Physics Lab.;

This example is interpreted by the input processor in BDMS format as follows:

authors;

AU.1=Smith, J.B.;

AU.2=Adams, A.G.;

AA=Washington Univ., Seattle (USA). Nuclear Physics Lab.;

The order in which the descriptive cataloger enters the data elements is crucial to the way the input processor will interpret the meaning of the information. Consider this input example:

AU=Smith, J.B.; Adams, A.G.;

AA=Washington Univ., Seattle (USA). Nuclear Physics Lab.;

AU=Jenkins, L.L.;

This example is interpreted by the input processor in BDMS format as follows:

authors.1;

AU.1=Smith, J.B.;

AU.2=Adams, A.G.;

AA=Washington Univ., Seattle (USA). Nuclear Physics Lab.;

authors.2;

AU=Jenkins, L.L.;

Clearly, in the above example, the AA is linked to AU.1 and AU.2 but not to AU.3.

Additionally, the "AN" data element and the "AC" data elements are linked in the author's node.

AUTHORS

AU—AA

| |

AN—AC

Consider this input example:

AU=Smith, J.B.; Adams, A.G.;

AN=eds;

AA=Washington Univ., Seattle (USA). Nuclear Physics Lab.;

AC=6817000;

AU=Monroe, O.B.; Lincoln, J.F.;

AA=Case Western Reserve Univ., Cleveland, Ohio (USA). Dept.
of Chemistry;

AC=1231000;

The example is interpreted by the input processor in BDMS format as follows:

authors.1

AU.1=Smith, J.B.;

AU.2=Adams, A.G.

AN=eds;

AA=Washington Univ., Seattle (USA). Nuclear Physics Lab.;

AC=6817000;

authors.2

AU.1=Monroe, O.B.;

AU.2=Lincoln, J.F.;

AA=Case Western Reserve Univ., Cleveland, Ohio (USA). Dept.
of Chemistry;

AC=1231000;

Affiliation Code (AC)

This is the seven-digit code entered from the controlled vocabulary documented in INIS Authority List for Corporate Entries and Report Number Prefixes (Ref. 5). It immediately follows the affiliation data element which it represents and should not contain imbedded blanks.

Example: AC=9100234;

Corporate Entry (CE)

All reports must have a corporate entry. This is standardized as is the author affiliation (AA) (Ref. 5). It is defined as follows:

Corporate Author: The organization(s) identified as responsible for intellectual content of the document (in the absence of a personal author), or

Issuing Body/Assignee: The organization(s) identified as technically, editorially, or contractually responsible for its contents (in conjunction with a personal author), or the assignee(s) of a patent, or the academic institution granting a degree.

Corporate Code (CC)

This is the seven-digit code corresponding to the corporate entry (CE) referenced from the INIS Authority List for Corporate Entries and Report Number Prefixes (Ref. 5).

Academic Degree (DG)

The academic degree data element consists of the designation of the academic dissertation (e.g., Thesis, Habilitationsschrift), which is entered according to the Anglo-American Cataloging Rules (Ref. 4), followed by a space, and the academic degree abbreviated according to Webster's New Collegiate Dictionary (Ref. 6) in parentheses.

Example: DG=Thesis (PhD)

Sponsor (SPO)

The organization designated as the sponsor of the document, or of the work described in it, is entered in this data element. The information is standardized and handled as described above for author

affiliation (AA) and corporate entry (CE) using the INIS Authority List for Corporate Entries and Report Number Prefixes (Ref. 5).

Example: Appendix II Record 275.

Sponsor Code (SPC)

This is the seven-digit code as taken from INIS Authority List for Corporate Entries and Report Number Prefixes (Ref. 5).

Sponsor's Contract Number (SCN)

This is the contract number of the sponsoring organization and it is entered as listed on the document.

Edition (ED)

This data element is entered only when an edition statement other than first edition appears on the document. Abbreviate the word "edition" to "ed." and convert numbers to Arabic numerals.

"Second edition" becomes "ED=2. ed.;"

"Third enlarged edition" becomes "ED=3. enlarged ed.;"

Report or Patent Number (RN)

Most organizations assign an alphanumeric identification number to their reports. These report numbers (RN) usually begin with an alphabetic part and end with a serial number. For example, a Lawrence Berkeley Laboratory publication is entered as follows:

RN=LBL--2506;

Report number prefixes are separated from sequence numbers by double hyphens and semicolons; spaces are replaced by hyphens. The prefix letters must represent the responsible corporate body given in the corporate entry (CE). If they do not, write them as given on the report, preceded by the acronym or letter prefix identifying the largest

organization unit. E.g., "International Atomic Energy Agency, Vienna (Austria) STI/PUB/129" should be entered as:

RN=IAEA-STI/PUB--129;

Edition, revision, or part numbers should be placed in parentheses after the report number, not in the edition tag (ED). Example:

RN=TID--22361 (pt. 1);

RN=IAEA-INIS--6(rev. 7);

RN=TID--11295 (ed. 4);

Occasionally a report is issued in several parts or editions, for example, LBL--8911 (ed. 4). For purposes such as these, use the following abbreviations:

Addendum	add.
Amendment	amend.
Appendix	app.
Book	bk.
Chapter	ch.
Edition	ed.
Number	no.
Part	pt.
Revised, Revision	rev.
Section	sect.
Series	ser.
Summary	summ.
Supplement	suppl.
Volume	vol.

Many report numbers include descriptive words within the number; these may be ignored or abbreviated. Abbreviations frequently used are:

Bulletin	Bull-
Circular	Circ-
Contribution	Contrib-
Memo	M-
Memo Report	MR-
Publication	Pub-
Reference	Ref-
Report	Omitted unless issuing organization has already abbreviated to "R"; thus NRL Report 5414 becomes NRL--5414, but the "R" in ARD-R-2117 is retained.
Research Memo	RM-
Research Paper	RP-
Special Report	SR-
Technical Memo	TM-
Technical Note	TN-
Technical Publication	TP-
Technical Report	TR-
Technical translation	TT-
Translation	Trans-

If the document references a patent, enter the name of the country issuing the patent and the patent number. Example:

RN=UK patent document 1226276/B1;

Publisher (PUB)

The publisher statement appearing on a work is abridged as much as possible without loss of intelligibility or identification of the publisher. Unnecessary parts of the statement are omitted and names known to be forenames are represented by initials or in the case of well-knowing publishers, omitted. (Ref. 4)

PUB=McGraw-Hill;

Place of Publication (PUP)

The place of publication includes either the city and state, or the city and country. It is entered as cited in the piece of literature according to the Anglo-American Cataloging Rules (Ref. 4), transliterated if necessary. If several places of publication are given, enter only the one which corresponds to the name given in (PUB).

Example:

PUP=Berkeley, CA.;

PUP=Paris, France;

Publication Date (PUD)

The date of publication is entered as a four digit year:

PUD=1977;

Collation (COL)

This data element records the volume or page number(s) or both, or the number of pages or volumes for the piece of literature being recorded. Use English equivalents for non-English designations (e.g., v. for Band or Tome; suppl. for Ergänzungsband). Use only the following abbreviations:

v.	for volume(s)
p.	for page(s)
vp.	for various pages
no.	for issue number(s)
pt.	for part(s)
suppl.	for supplement(s)

These abbreviations are separated from preceding and trailing numbers by a blank, except within parentheses, where abbreviations and their associated numbers are not separated.

Parentheses are placed around information other than volume and page (e.g. issue, part, or supplement) in journal references. Issue number is placed first, and is followed by a comma and a blank if other information follows inside the parentheses. If a volume number and an issue number are both present, the abbreviation "no." is omitted. Parentheses are also used in some non-journal references whenever page numbering is also present.

A range of numbers is indicated by a dash. Two (or more) ranges may be entered, separated by a comma and a blank.

Examples for most types of documents are shown on the following table. The collation is to be entered on the level indicated by "Entry Level".

<u>Bibliographic Levels</u>	<u>Entry Level</u>	<u>Example of Collation</u>	<u>Comments</u>
M	M	148 P.	book with 148 p.
AM	M	P. 277-285	section of book
AM	M	(suppl.) P. 665-668	supplement to encyclopedia

AS	S	V. 5(5), P. 527-536	standard journal ref.
"	"	V. 1, P. 137-156	no issue no.
"	"	No. 3, P. 36-38	no volume no.
"	"	V. 7 (2, pt. 1), P. 2-7	issue in several parts
"	"	V. 14 (3-4), P. 245-248	issues 3 and 4 together
"	"	V. 10 (suppl.), P. 9-24	
"	"	V. 2, P. 10-12, 20-28	continued on p. 20
"	"	V. 89 (3), VP	various pages
MC	M	20 P.	
MS	M	80 P.	
AMS	M	V. 2, P. 193-207	proceedings in series
AMC	M	P. 16-17	

Page numbers are converted to arabic numerals, and, if possible, all ordinal numbers should be converted to cardinal numbers, e.g., "Second supplement" would be converted to "suppl. 2."

Chapter number is never entered here; it is always entered as part of the title or subtitle, discussed in the primary title (PT) section. Volume number is usually entered in the collation, except for monographic entries, whereby the volume number is included in the subtitle, as discussed in the primary subtitle section.

Note (N)

The following entries are mandatory for the list record types:

Type of RecordMandatory Entry

D-drawings
G-maps

Enter the scale as a decimal number,
e.g., "Scale 0.00035"

F-films

Enter the running time, indicate whether
film has soundtrack or color, and
show the nominal width. Example:
"19 min. sd. color. 35mm" (note sd.=sound)

H-phonorecordings

Enter the running time, e.g. "28 min"
If appropriate, indicate the rotation
speed for disks and the width for
phonotapes.

T-computer media

Enter sufficient data to indicate
the requirements necessary to read it.
For example, for a 9-track magnetic
tape recorded at 800 binary digits
per inch, your entry would read "9
track, 800 bits/in., NRZI."

When reporting a short communication, enter one of the following
notes in the note (N) data element; for example:

N=Published in summary form only;

N=Letter to the editor;

If a review article contains an extensive bibliography, the number
of references may be expressed as a note.

N=322 refs;

or

N=contains a bibliography of 322 references, classified by subject;

Similarly, one may indicate other notable features of the document
by notes of the form "3 drawings", "6 maps", etc. Such notes are
not intended to be exhaustive and are entered at the discretion of
the cataloger.

Conference Title (COT)

Enter the conference title in its "official" and most complete form, i.e., as assigned by the organizers of the meeting. Translate into English if necessary.

Conference Place (COP)

The entry must show both the city and country of the conference. Consult Webster's New Collegiate Dictionary (Ref 6) for correct spelling of the conference place. Places that are not listed in the dictionary are to be entered in the original language, transliterated if necessary.

Conference Data (COD)

The conference date is entered as a four digit year. If a range of dates is given, enter only the beginning date.

Example:

COD=1977;

Availability and Price (AV)

If the availability of a document is known, enter the source of availability.

Example:

AV=Available from Univeristy Microfilms, Inc., Ann Arbor, Mich.,

AV=Free on application to the U.S. Geological Survey, Washington,

D.C. 20244;

RELATED REFERENCE NODE (REL-REF)

The Related Reference data element is a pure node that is used to link non-English publications with English translations, as well as to represent other document relationships.

Relation (RL)

If the document is a translation, enter the letter T in the relator data element. Example:

RL=T;

If the document refers to a secondary reference, enter the letter SR in the relator data element. Example:

RL=SR;

RL is subordinate to REL-REF.

Relationship and/or Reference (RLR)

For a translation (RL=T) the reference of the original citation is entered in the data element RLR in the following examples:

RLR=Translated from Nippon Genshiryoku Gakkai-Shi, V. 13(4)
P. 19-20 (APR 1970);

RLR=Translation of "Material e Antimateria", Milano, Mondadori,
1961, Translated from Russian;

For secondary references, the reference of the secondary source is entered in the RLR data element.

RLR=Reference. Chem. Abst., 1974, V. 81, Abstr. no. 140453x;

CONTROL NODE (Control)

The data elements contained in the control pure node are for internal bookkeeping and general control of the GRID data files and are not normally displayed to the users. The data elements available at the discretion of the descriptive cataloger are as follows:

Identifier (ID)

Descriptive Cataloging (DCSO)

SUBJECT INDEXING

Subject indexing is the task of selecting a set of key words (descriptors) from a controlled thesaurus to represent the concepts discussed in a piece of literature (Ref. 8). Subject indexing for citations entered into the GRID databases is performed by subject specialists with technical knowledge of the field of geothermal energy. The descriptors will be access points to the citation and will facilitate retrieval by subject content.

INDEX NODE

The index data element is a pure node that links subject information from the Geothermal Thesaurus (Ref 9).

Category/Qualifier (CQ)

This data element is comprised of two descriptors, chosen from the Geothermal Thesaurus. The CATEGORY data element is used to index the literature by broad classification, whereas, the QUALIFIER represents some specific qualification to the CATEGORY. The two terms are presented together in the following format: CQ=category/qualifier; Example:

CQ=Hydrogen Sulfides/Monitoring Methods;

Descriptor (DE)

This data element contains descriptors chosen from the Geothermal Thesaurus to reflect the subject content of the document. The proper level of specificity of descriptors is attained by selecting terms that are specific enough that unwanted items will not be retrieved, but are not so specific that a searcher must use many terms to express a concept. The number of descriptors per citation does not necessarily

reflect the quality of indexing. Although it is rare, some items may be properly indexed with as few as one entry, whereas other items may require as many as one hundred. The indexer must not sacrifice quality of subject indexing either by assigning too few terms, or by adding superfluous information, which will allow retrieval of items of little value to the user.

There is no single method of arriving at the "right" set of descriptors for a given piece of literature. Each indexer will develop his or her own technique after trying different approaches. However, the following suggestions are made by experienced GRID indexers.

- 1) Read the title, abstract, introduction and summary, identifying one, two or three ideas that give the reason for publishing the material.

- 2) After grasping the basic subject of the material, scan the full text for additional concepts that should be indexed, as well as for data content that should be indicated.

- 3) After listing concepts to be indexed, consult the Geothermal Thesaurus for the appropriate term or terms which represent the concepts.

- 4) Always check the "word block" (the list of linked terms, codes, and text associated with a main term entry) of the chosen term to see whether a narrower, broader, or related term is more appropriate than that selected, or whether the scope note or definition rules out the term for your use.

- 5) If a descriptor cannot be found in the Geothermal Thesaurus, there may be a need for representation of that concept. See the following section.

Proposed Descriptor (PD)

In the course of indexing, you may be unable to find the appropriate term in the Geothermal Thesaurus to represent a concept. If you can formulate a term and judge it to be significant in the field, the term should be designated a Proposed Descriptor and brought to the attention of the thesaurus manager.

A proposed descriptor form, Table D, should be filled out by the indexer and sent to the thesaurus manager. The top half of the PD form should be completed by the indexer. The indexer may also include notes about the context in which the term appeared in the document, or comments about the significance of the term to geothermal energy. Any suggestions regarding Related Terms or Subject Categories may be recorded on the form. Phone conversations or personal meetings may be required for further discussion of the merits of certain terms.

If an agreement is reached between the indexer and the thesaurus manager, the recommendation section of the PD form will be coded so that keypunchers can generate data for the next update run of the Geothermal Thesaurus.

The Geothermal Thesaurus

The Information Methodology Research Project at LBL has developed a Geothermal Thesaurus in collaboration with the National Geothermal Information Resource (GRID). Currently, a draft form of the Thesaurus is being used for indexing the GRID databases (Ref. 9).

The primary rule of an information-retrieval thesaurus is that it be an interface between users and an information storage and retrieval system. In retrieval, the thesaurus assists the user in the translation of a query from natural language to the vocabulary actually used in the system; during indexing, the thesaurus is used to translate the terminology of each document into the regularized vocabulary used by the system.

The Geothermal Thesaurus has two components -- 1) a controlled vocabulary for both describing the subject contents and capturing numerical and fact data, and 2) information about the relationships between the terms, which is designed to assist the thesaurus user in finding the most appropriate term(s) for a specific concept. All geothermal subjects are represented by terms of sufficient specificity for general subject indexing. More detailed terminology is available for those subjects on which GRID has focused its indexing efforts to date.

Controlled vocabularies are used in information, data, and fact retrieval systems to spare the searcher the effort of imagining and searching on all possible forms of a word (e.g., singular, plural, various suffixes, or terms which represent a single concept). In

addition, controlled vocabularies provide the proper level of specificity of descriptors.

The vocabulary displayed in the Geothermal Thesaurus is a descriptor vocabulary; it is designed for use with a retrieval system that features searching by coordination of indexing terms to represent complex concepts. In this type of retrieval system, descriptors are combined using the Boolean operators AND (intersection), OR (union), and NOT (negation) to more accurately delimit the topic.

The Geothermal Thesaurus contains information about the relationships between descriptors (terms used in the database) and between descriptors and forbidden terms (terms not used in the database). This information is designed to lead the thesaurus user in the most appropriate term(s) for expressing a particular concept. Although similar in function to nontechnical thesauri such as Roget's, the Geothermal Thesaurus (and most technical thesauri), has a more regularized structure than Roget's Thesaurus to facilitate updating and to help ensure completeness and consistency. An example of this is the reciprocation of all term-term relationships.

Relationships Used in the Geothermal Thesaurus

The term-term relationships that have been used in the Geothermal Thesaurus are the following:

- 1) USE references lead the Thesaurus user from a term that is not acceptable in the system to one that is. The USE reference is reciprocated by UF (Used For). Occasionally a term is designated as unacceptable and the concept is represented by a combination of terms. The reciprocal,

UF+, is used to indicate that the term is used in combination with other terms as a replacement for an unacceptable term.

2) The SEE reference refers the user from an acceptable term to one or more than one alternative terms, any one of which is acceptable.

Seen From (SF) is the reciprocal of the SEE reference.

3) The Broader Term (BT) and the Narrower Term (NT) relationships show class membership. A Broader Term is one that is more specific than the term to which it is linked.

4) The Geographically Broader Term (GB) and the Geographically Narrower Term (GN) indicate the relationship of geographic inclusion.

5) The Related Term (RT) relationship links terms that are not related by class-membership or geographic inclusion, but might be useful to the user in the search for the right term.

The relationships BT, NT, GB, and GN are hierarchical. If Term B is broader than Term A (Term A BT Term B) and Term C is broader than Term B (Term B BT Term C), then Term C is broader than Term A at level 2 (Term A BT² Term C). This information can be used to expand a search. For instance, if one wishes to find items on metamorphic rocks and the thesaurus lists the specific types of metamorphic rocks that have been included in the system, the search could be expanded from METAMORPHIC ROCKS to METAMORPHIC ROCKS or AMPHIBOLITE or MARBLE or In the GEODOC system, the searcher does the expansion manually; in some retrieval systems it is done semiautomatically.

Relationship of GRID and DOE Thesauri

The Geothermal Thesaurus was designed to be compatible with the DOE Information Data Base Subject Thesaurus. Whenever it was possible, terms used in the DOE Thesaurus were chosen to represent the equivalent concept in the Geothermal Thesaurus. The DOE Thesaurus, however, is broader in scope and its vocabulary is in many cases too general for use with such specialized databases as those compiled by GRID. In addition, the users of GRID's databases are more interested in data content of documents. Accordingly, the terminology of the Geothermal Thesaurus has the specificity required to index and search highly technical databases, and includes descriptors necessary for indicating data content of the documents. The Goes To (GT) and Comes From (CF) relationships link GRID and DOE descriptors which represent the same concept in the GRID and DOE thesauri, respectively, or link a specific GRID descriptor to a more general DOE descriptor. That is, GRID Term A GT DOE Term B. The reciprocal of GT is CF.

Subject Category Index

Each term in the Thesaurus has been assigned to one or more subject categories, which are represented by four-character codes (listed after each term). An alphabetical display of terms grouped by subject category follows the Thesaurus proper. The user is thereby provided with a listing of available terms in general subject areas. The Subject Category Index may suggest additional pathways to the most appropriate term.

TABLE A

LBL Tag	INIS Tag	m*	n*	Data Element Definition
SC	008			document short code: unique identifier for document
TY				type of document/bibliographic levels/literary indicator
DES-CAT		m	n	delineates information for one bibliographic level
BL	009			bibliographic level indicator
PT	200			primary title (translated into English if necessary)
PS	201			primary subtitle (translated into English if necessary)
TA	620			title augmentation
L	600			language (for non-English document)
OT	230			original title (non-English) or journal/series title
OS	231			original subtitle (non-English) or journal/series subtitle
ED	250			edition
CODEN				journal CODEN
AUTHORS		m	n	delineates author-affiliation group
AU	100	m		author's name
AN	100			author note (ed., comp., eds., comps.)
AA	100	m		author's affiliation
AC	700			affiliation code
CE	110	m		corporate entry
CC	710			corporate code
DG	111			academic degree
SPO		m		sponsor
SPC				sponsor code
SCN		m		sponsor contract number
RN	300			report or patent number
PUB	402			publisher
PUP	401			place of publication
PUD	403			publication date
COL	500			collation (volume, issue, page)
N	610			note
COT	210			conference title
COP	211			conference place
COD	213			conference date
AV				availability and price
REL-REF		m	n	delineates information for one related reference
RL				relator

*m-This data element may have multiple entries

*n-This data element contains no value and need not be entered on input. It serves to delineate a group of data elements.

LBL Tag	INIS Tag	m*	n*	Data Element Definition
RLR				relationship and reference
CQ		m		category/qualifier
TICC		m		TIC category
DE	800	m		descriptor from thesaurus
PD	810	m		proposed descriptor
CONTROL			n	internal LBL data elements
DCSO		m		

*m-This data element may have multiple entries

*n-This data element contains no value and need not be entered on input. It serves to delineate a group of data elements.

Transliteration of Slavic Cyrillic Characters

printed	Transliteration from				
	Rus- sian	Ukrai- nian	Byelo- russian	Ser- bian	Bulga- rian
а А	a	a	a	a	a
б Б	b	b	b	b	b
в В	v	v	v	v	v
г Г	g	g	g	g	g
д Д	d	d	d	d	d
Ѣ ѣ				dj	
е(ѣ) Е(Ѣ)	e	e	e	e	e
є Є		je			
ж Ж	zh	zh	zh	zh	zh
з З	z	z	z	z	z
и И	i	i	i	i	i
і І		yi	yi		
ї Ї		yi			
ј Ј				j	
й Й	j	j	j		j
к К	k	k	k	k	k
л Л	l	l	l	l	l
љ Љ				lj	
м М	m	m	m	m	m
н Н	n	n	n	n	n
њ Њ				nj	

printed	Transliteration from				
	Rus- sian	Ukrai- nian	Byelo- russian	Ser- bian	Bulga- rian
о О	o	o	o	o	o
п П	p	p	p	p	p
р Р	r	r	r	r	r
с С	s	s	s	s	s
т Т	t	t	t	t	t
ћ Ћ				cj	
у У	u	u	u	u	u
ў Ў			w		
ф Ф	f	f	f	f	f
х Х	kh	kh	kh	kh	kh
ц Ц	ts	ts	ts	ts	ts
ч Ч	ch	ch	ch	ch	ch
џ Џ				dzh	
ш Ш	sh	sh	sh	sh	sh
щ Щ	shch	shch			sht
ъ Ъ	”	”	”		y
ы Ы	y		y		
ь Ь	,	,	,		,
э Э	eh		eh		
ю Ю	yu	yu	yu		yu
я Я	ya	ya	ya		ya

Transliteration of Greek Characters

No.	Greek to Latin		No.	Greek to Latin		
1	A	α	A, a	13	N ν	N, n
2	B	β	B, b	14	Ξ ξ	X, x
3	Γ	γ	G, g	15	Ο ο	O, o
4	Δ	δ	D, d	16	Π π	P, p
5	E	ε	E, e	17	Ρ ρ	R, r
6	Z	ζ	Z, z	18	Σ σ ς (final)	S, s
7	H	η	E, e	19	Τ τ	T, t
8	Θ	θ	Th, th	20	Υ υ	U, u
9	I	ι	I, i	21	Φ φ	F, f
10	K	κ	K, k	22	Χ χ	X, x
11	Λ	λ	L, l	23	Ψ ψ	Ps, ps
12	M	μ	M, m	24	Ω ω	O, o

Note: two special Greek punctuation marks are always rendered in transliteration as follows:

the · (single point high, alternative to the double ·) by a colon :

the ; (interrogation mark) by the question mark ?

INFORMATION RESEARCH GROUP
Proposed Descriptor Form

Proposed Descriptor	Submitted By	Date
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CONTEXT:

SUGGESTED SUBJECT CATEGORIES

- | | |
|---|---|
| <input type="checkbox"/> 0001 General | <input type="checkbox"/> 0030 Physics |
| <input type="checkbox"/> 0002 General Physical Concepts | <input type="checkbox"/> 0040 Engineering |
| <input type="checkbox"/> 0003 Methods and Equipment | <input type="checkbox"/> 0050 Geology |
| <input type="checkbox"/> 0010 Chemistry | <input type="checkbox"/> 0051 Rocks |
| <input type="checkbox"/> 0011 Elements | <input type="checkbox"/> 0052 Minerals |
| <input type="checkbox"/> 0012 Inorganic Compounds | <input type="checkbox"/> 0059 Geography |
| <input type="checkbox"/> 0013 Organic Compounds | <input type="checkbox"/> 0060 Life Sciences |
| <input type="checkbox"/> 0014 Isotopes | <input type="checkbox"/> 0070 Mathematics |
| <input type="checkbox"/> 0015 Alloys | |

SUGGESTED RELATED TERMS:

- 1500 Geothermal Energy General
- 1501 Geothermal Resources and Availability
- 1502 Geothermal Site Geology, Hydrology, Meteorology
- 1503 Geothermal Exploration Technology
- 1504 Geothermal Energy Regulations
- 1505 Geothermal Energy Economics
- 1506 Geothermal Energy Environmental Aspects
- 1507 Geothermal Energy By-Products
- 1508 Geothermal Power Plants
- 1509 Geothermal Engineering
- 1510 Geothermal Energy Utilization
- 1800 Non-Geothermal Energy

(IRG USE ONLY)

DISPOSITION:

NOTES:

Date Copy Returned	Keypunched	Accept	Reject	Further Research
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0 0 0 0 4 4 0 5 2 8 2

APPENDIX I

BOOK	COLLECT	DRAWING	FILM	MAP	PHONO.	J ART.	PATENT	REPORT	COMPUT
B	C	D	F	G	H	J	P	R	T

Type of Record

ANAL	MONOGR	SERIAL	COLL
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLOG	PR. REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator



NATIONAL GEOTHERMAL
INFORMATION RESOURCE

SHORT FORM

GRID WORKSHEET

OF

SHORT CODE (SC)	SC=KENNEDY 72;
DES. CAT. SOURCE (DCSO)	
DOCUMENT TYPE (TY)	TY=B/M/U;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

BIBLIOGRAPHIC LEVEL (BL)	BL=M;
PRIMARY TITLE (PT)	PT=VOLUMETRIC PROPERTIES OF DEUTERIUM OXIDE SOLUTIONS OF SELECTED ALKALI HALIDES AND OF DEUTERIUM CHLORIDE;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=KENNEDY, J.V.;
AUTHOR NOTE (AN)	AA=PITTSBURGH UNIV., PA. (USA);
AUTHOR AFFILIATION (AA)	AC=5 223 000;
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
CORPORATE CODE (CC)	
ACADEMIC DEGREE (DG)	DG=THESIS;

SPONSOR ORGANIZATION (SPO)	
SPONSOR CODE (SPC)	
SPONSOR CONTRACT NUMBER (SCN)	
REPORT/PATENT NUMBER (RN)	
PUBLISHER (PUB)	
PUBLICATION PLACE (PUP)	
PUBLICATION DATE (PUD)	PUD=1972;
COLLATION (COL)	
NOTE (N)	
CONFERENCE TITLE (COT)	
CONFERENCE PLACE (COP)	
CONFERENCE DATE (COD)	
AVAILABILITY (AV)	
RELATOR (RL)	
RELATIONSHIP AND REF (RLR)	RLR=REFERENCE. CHEM. ABSTR., V. 78, ABSTR. NO.
RELATED SHORT CODE (RSC)	128700F;

PERMITTED BIBLIOGRAPHIC LEVEL: S

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PUBLICATION DATE (PUD)	
COLLATION (COL)	
NOTE (N)	

BOOK	COLLECT	DRAWING	FILM	MAP	PHONO.	J ART.	PATENT	REPORT	COMPUT
B	C	D	F	G	H	J	P	R	T

Type of Record

ANAL	MONOGR	SERIAL	COLL
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLOG	PR. REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator

NATIONAL GEOTHERMAL
INFORMATION RESOURCE**SHORT FORM**

GRID WORKSHEET

 OF

SHORT CODE (SC)	SC=SMITH 70;
DES. CAT. SOURCE (DCSO)	DCSO=COPY ON FILE;
DOCUMENT TYPE (TY)	TY=J/AS/K;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

BIBLIOGRAPHIC LEVEL (BL)	BL=A;
PRIMARY TITLE (PT)	PT=GEOTHERMAL DEVELOPMENT IN NEW ZEALAND;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=SMITH, J.H.;
AUTHOR NOTE (AN)	AA=MINISTRY OF WORKS, WELLINGTON (NEW ZEALAND);
AUTHOR AFFILIATION (AA)	
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
CORPORATE CODE (CC)	
ACADEMIC DEGREE (DG)	

SPONSOR ORGANIZATION (SPO)	
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PUBLISHER (PUB)	
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COLLATION (COL)	
NOTE (N)	
CONFERENCE TITLE (COT)	COT=U.N. SYMPOSIUM ON THE DEVELOPMENT AND
CONFERENCE PLACE (COP)	UTILIZATION OF GEOTHERMAL RESOURCES;
CONFERENCE DATE (COD)	COP=PISA, ITALY;
	COD=SEP 22-Oct 1, 1977;
AVAILABILITY (AV)	
RELATOR (RL)	
RELATIONSHIP AND REF (RLR)	
RELATED SHORT CODE (RSC)	

PERMITTED BIBLIOGRAPHIC LEVEL: S

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PUBLICATION DATE (PUD)	PUD=1970;
COLLATION (COL)	COL=SPECIAL ISSUE 2, V. 2 (1), P. 232-247;
NOTE (N)	N=8 FIGS., 10 TBLS., 6 REFS.;

BOOK	COLLECT	DRAWING	FILM	MAP	PHONO.	J ART.	PATENT	REPORT	COMPUT
B	C	D	F	G	H	J	P	R	T

Type of Record

ANAL	MONOGR	SERIAL	COLL
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLOG	PR. REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator



NATIONAL GEOTHERMAL
INFORMATION RESOURCE

SHORT FORM

GRID WORKSHEET

OF

SHORT CODE (SC)	SC=CHAPMAN 74;
DES. CAT. SOURCE (DCSO)	DCSO=COPY ON FILE;
DOCUMENT TYPE (TY)	TY=G/M;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

BIBLIOGRAPHIC LEVEL (BL)	BL=M;
PRIMARY TITLE (PT)	PT=UKIAH SHEET;
PRIMARY SUBTITLE (PS)	PS=BOUGUER GRAVITY MAP OF CALIFORNIA;
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=CHAPMAN, R.H.; BISHOP, C.C.; CHASE, G.W.;
AUTHOR NOTE (AN)	ASCH, J.W.;
AUTHOR AFFILIATION (AA)	
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
CORPORATE CODE (CC)	
ACADEMIC DEGREE (DG)	

SPONSOR ORGANIZATION (SPO)	
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SPONSOR CONTRACT NUMBER (SCN)	
REPORT/PATENT NUMBER (RN)	
PUBLISHER (PUB)	PUB=DIVISIONS OF MINES AND GEOLOGY;
PUBLICATION PLACE (PUP)	PUP=SACRAMENTO, CALIF.;
PUBLICATION DATE (PUD)	PUD=1974;
COLLATION (COL)	
NOTE (N)	
CONFERENCE TITLE (COT)	
CONFERENCE PLACE (COP)	
CONFERENCE DATE (COD)	
AVAILABILITY (AV)	AV=CALIFORNIA DIVISION OF MINES AND GEOLOGY, JAMES E. SLOSSON, STATE GEOLOGIST, SACRAMENTO, CALIFORNIA, 95814;
RELATOR (RL)	
RELATIONSHIP AND REF (RLR)	
RELATED SHORT CODE (RSC)	

PERMITTED BIBLIOGRAPHIC LEVEL: S

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BOOK	COLLECT	DRAWING	FILM	MAP	PHONO.	J ART.	PATENT	REPORT	COMPUT
B	C	D	F	G	H	J	P	R	T

Type of Record

ANAL	MONOGR	SERIAL	COLL.
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLOG	PR.REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator



NATIONAL GEOTHERMAL
INFORMATION RESOURCE

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OF

SHORT CODE (SC)	SC=CHI 73;
DES. CAT. SOURCE (DCSO)	DCSO=ABSTRACT ON FILE;
DOCUMENT TYPE (TY)	TY=P/M;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

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PRIMARY TITLE (PT)	PT=PURIFYING GAS STREAMS CONTAINING SULFUR COM- POUNDS;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=CHI, C.W.;LEE, H.;MAHER, P.K.;
AUTHOR NOTE (AN)	
AUTHOR AFFILIATION (AA)	
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
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ACADEMIC DEGREE (DG)	

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REPORT/PATENT NUMBER (RN)	RN=FR. DEMANDE 2178 211;
PUBLISHER (PUB)	
PUBLICATION PLACE (PUP)	
PUBLICATION DATE (PUD)	PUD=1973;
COLLATION (COL)	COL=23 P.;
NOTE (N)	
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CONFERENCE PLACE (COP)	
CONFERENCE DATE (COD)	
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RELATIONSHIP AND REF (RLR)	RLR=REFERENCE. CHEM. ABSTR., 1974, V. 81, ABSTR.
RELATED SHORT CODE (RSC)	NO. 66019B;

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BOOK	COLLECT	DRAWING	FILM	MAP	PHONO.	J ART.	PATENT	REPORT	COMPUT
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Type of Record

ANAL	MONOGR	SERIAL	COLL
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLOG	PR. REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator



NATIONAL GEOTHERMAL
INFORMATION RESOURCE

SHORT FORM

GRID WORKSHEET

OF

SHORT CODE (SC)	SC=HARTMANN 71;
DES. CAT. SOURCE (DCSO)	DCSO=COPY ON FILE;
DOCUMENT TYPE (TY)	TY=R/M;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

BIBLIOGRAPHIC LEVEL (BL)	BL=M;
PRIMARY TITLE (PT)	PT=IMPROVED CHROMATOGRAPHIC TECHNIQUES FOR SULFUR POLLUTANTS;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=HARTMANN, C.H.;
AUTHOR NOTE (AN)	AA=VARIAN AEROGRAPH, WALNUT CREEK, CALIF. (USA);
AUTHOR AFFILIATION (AA)	
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
CORPORATE CODE (CC)	
ACADEMIC DEGREE (DG)	

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REPORT/PATENT NUMBER (RN)	RN=AIAA PAPER NO. 71-1046;
PUBLISHER (PUB)	
PUBLICATION PLACE (PUP)	
PUBLICATION DATE (PUD)	PUD=1971;
COLLATION (COL)	COL=6 P.;
NOTE (N)	
CONFERENCE TITLE (COT)	COT=PROC. JOINT CONF. ON SENSING OF ENVIRONMENTAL
CONFERENCE PLACE (COP)	POLLUTANTS;
CONFERENCE DATE (COD)	COP=PALO ALTO, CALIFORNIA;
	COD=NOV 8, 1971;
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RELATED SHORT CODE (RSC)	

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NOTE (N)	

BOOK	COLLECT	DRAWING	FILM	MAP	PHONO.	J ART.	PATENT	REPORT	COMPUT
B	C	D	F	G	H	J	P	R	T

Type of Record

ANAL	MONOGR	SERIAL	COLL
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLIOG	PR. REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator

NATIONAL GEOTHERMAL
INFORMATION RESOURCE**GENERAL FORM**

GRID WORKSHEET

 OF

SHORT CODE (SC)	SC=NENCETTI 64;
DES. CAT. SOURCE (DCSO)	DCSO=COPY ON FILE;
DOCUMENT TYPE (TY)	TY=R/AM;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

BIBLIOGRAPHIC LEVEL (BL)	BL=A;
PRIMARY TITLE (PT)	PT=WATER COLLECTION AND ANALYSIS FROM THERMAL SOURCES AND VAPOUR MANIFESTATIONS;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	L=IN FRENCH (ENGLISH SUMMARY);
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=NENCETTI, R.;
AUTHOR NOTE (AN)	AA=LARDERELLO, S.P.A., PISA (ITALY);
AUTHOR AFFILIATION (AA)	
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
CORPORATE CODE (CC)	
ACADEMIC DEGREE (DG)	

PERMITTED BIBLIOGRAPHIC LEVEL: M

 OF

BIBLIOGRAPHIC LEVEL (BL)	BL=M:
PRIMARY TITLE (PT)	PT=PROCEEDINGS OF THE UNITED NATIONS CONFERENCE
	ON NEW SOURCES OF ENERGY;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	

PERMITTED BIBLIOGRAPHIC LEVEL: C

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PERMITTED BIBLIOGRAPHIC LEVEL: S

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NOTE (N)	

SPONSOR ORGANIZATION (SPO)	SPO=U.S. BUREAU OF MINES;
SPONSOR CODE (SPC)	SCN=GRANT NO. PO 150296;
SPONSOR CONTRACT NUMBER (SCN)	
REPORT/PATENT NUMBER (RN)	
PUBLISHER (PUB)	PUB=GEOTHERMAL RESOURCES COUNCIL;
PUBLICATION PLACE (PUP)	PUP=DAVIS, CALIF.;
PUBLICATION DATE (PUD)	PUD=MAY 1975;
COLLATION (COL)	COL=P. 29-31;
NOTE (N)	
CONFERENCE TITLE (COT)	COT=PRELIMINARY WORKSHOP-MEETING ON MATERIALS
CONFERENCE PLACE (COP)	PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF
CONFERENCE DATE (COD)	GEOTHERMAL ENERGY RESOURCES:
	COP=COLLEGE PARK, MD.;
	COD=DEC 3-4, 1974;
AVAILABILITY (AV)	
RELATOR (RL)	
RELATIONSHIP AND REF (RLR)	
RELATED SHORT CODE (RSC)	

PERMITTED BIBLIOGRAPHIC LEVEL: M

OF

BIBLIOGRAPHIC LEVEL (BL)	BL=M;
PRIMARY TITLE (PT)	PT=MATERIALS PROBLEMS ASSOCIATED WITH THE DEVELOPMENT
	OF GEOTHERMAL ENERGY RESOURCES;
PRIMARY SUBTITLE (PS)	
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LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	

PERMITTED BIBLIOGRAPHIC LEVEL: C

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PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	

PERMITTED BIBLIOGRAPHIC LEVEL: S

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B	C	D	F	G	H	J	P	R	T

Type of Record

ANAL	MONOGR	SERIAL	COLL
A	M	S	C

Biblio.
Level

CONF	DICT	N DATA	THESIS	STAND	BIBLOG	PR.REPT.	ABSTRACT
K	L	N	U	W	Z	Y	E

Literary Indicator



NATIONAL GEOTHERMAL
INFORMATION RESOURCE

SHORT FORM

GRID WORKSHEET

OF

SHORT CODE (SC)	SC=GREKEL 68;
DES. CAT. SOURCE (DCSO)	DCSO=COPY ON FILE;
DOCUMENT TYPE (TY)	TY=J/AS;

PERMITTED BIBLIOGRAPHIC LEVEL: A or M

BIBLIOGRAPHIC LEVEL (BL)	BL=A;
PRIMARY TITLE (PT)	PT=WHY RECOVER SULFUR FROM H2S;
PRIMARY SUBTITLE (PS)	
TITLE AUGMENTATION (TA)	
LANGUAGE (L)	
ORIGINAL TITLE (OT)	
ORIGINAL SUBTITLE (OS)	
EDITION (ED)	
AUTHOR (AU)	AU=GREKEL, H.;PALM, J.W.;KILMER, J.W.;
AUTHOR NOTE (AN)	AA=PAN AMERICAN PETROLEUM CORP., TULSA, OKLA. (USA);
AUTHOR AFFILIATION (AA)	
AFFILIATION CODE (AC)	
CORPORATE ENTRY (CE)	
CORPORATE CODE (CC)	
ACADEMIC DEGREE (DG)	

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PERMITTED BIBLIOGRAPHIC LEVEL: S

BIBLIOGRAPHIC LEVEL (BL)	BL=S;
JOURNAL/SERIES TITLE (OT)	OT=OIL GAS J.;
CODEN (CODEN)	<input type="checkbox"/> 0 <input type="checkbox"/> I <input type="checkbox"/> G <input type="checkbox"/> J <input type="checkbox"/> A <input type="checkbox"/> V ;
PUBLICATION DATE (PUD)	PUD=1968;
COLLATION (COL)	COL=V. 66 (44), P. 88-101;
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Type of Record

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A	M	S	C

Biblio. Level

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Literary Indicator



NATIONAL GEOTHERMAL INFORMATION RESOURCE

GENERAL FORM

GRID WORKSHEET

OF

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DES. CAT. SOURCE (DCSO)	DCSO=COPY ON FILE;
DOCUMENT TYPE (TY)	TY=B/AM;

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AUTHOR (AU)	AU=BOVAY, E.;
AUTHOR NOTE (AN)	
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PUBLISHER (PUB)	PUB=VOGT-SCHILD, S.A.;
PUBLICATION PLACE (PUP)	PUP=SWITZERLAND;
PUBLICATION DATE (PUD)	PUD=1969;
COLLATION (COL)	COL=P . 1-19;
NOTE (N)	N=126 REFS;
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PRIMARY TITLE (PT)	PT=PROBLEME DER LUFTVERUNREINIGUNG DURCH DIE
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REPORT/PATENT NUMBER (RN)	
PUBLISHER (PUB)	PUB=AMERICAN PETROLEUM INSTITUTE, PROD. DIV.;
PUBLICATION PLACE (PUP)	PUP=DALLAS, TEX.;
PUBLICATION DATE (PUD)	PUD=1960;
COLLATION (COL)	COL=101 P.;
NOTE (N)	N=3 TBLS., 24 FIGS., 12 REFS., 7 APPENDS.;
CONFERENCE TITLE (COT)	
CONFERENCE PLACE (COP)	
CONFERENCE DATE (COD)	
AVAILABILITY (AV)	
RELATOR (RL)	
RELATIONSHIP AND REF (RLR)	
RELATED SHORT CODE (RSC)	

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NOTE (N)	

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APPENDIX II

RECORD 9

SC = KENNEDY 72;

TY = B/M/U;

DES-CAT;

BL = M;

PT = VOLUMETRIC PROPERTIES OF DEUTERIUM OXIDE SOLUTIONS OF SELECTED
ALKALI HALIDES AND OF DEUTERIUM CHLORIDE;

AUTHORS;

AU = KENNEDY, J.V.;

AA = PITTSBURGH UNIV., PA. (USA);

AC = 5 223 000;

DG = THESIS;

PUD = 1972;

REL-REF;

RLR = REFERENCE. CHEM. ABSTR., V. 78, ABSTR. NO. 128700F;

INDEX;

PD = CA78-128700;

RECORD 7

SC = CHI 73;

TY = P/M;

DES-CAT;

BL = M;

PT = PURIFYING GAS STREAMS CONTAINING SULFUR COMPOUNDS;

AUTHORS;

AU.1 = CHI, C.W.;

AU.2 = LEE, H.;

AU.3 = MAHER, P.K.;

RN = FR. DEMANDE 2178 211;

PUD = 1973;

COL = 23 P.;

REL-REF;

RLR = REFERENCE. CHEM. ABSTR., 1974, V. 81, ABSTR. NO. 660198;

INDEX;

CQ = HYDROGEN SULFIDE/EMISSION CONTROLS;

CONTROL;

DCSO = ABSTRACT ON FILE;

RECORD 70

SC = API 60;

TY = B/M;

DES-CAT;

BL = M;

PT = SUBSURFACE SALT-WATER DISPOSAL;

PS = BOOK 3 OF THE VOCATIONAL TRAINING SERIES;

CE = AMERICAN PETROLEUM INSTITUTE, DALLAS, TEXAS;

PUB = AMERICAN PETROLEUM INSTITUTE, PROD. DIV.;

PUP = DALLAS, TEXAS;

PUD = 1960;

COL = 101 P.

N = 3 TABLES, 24 FIGS., 12 REFS., 7 APPENDS.;

INDEX;

CQ = BRINE TREATMENT/SPENT FLUID DISPOSAL;

DE.1 = INORGANIC ACIDS;

DE.2 = ORGANIC ACIDS;

DE.3 = BRINE TREATMENT

DE.4 = CASE HISTORIES;

DE.5 = DEEP WELLS;

DE.6 = DISPOSAL FORMATIONS;

DE.7 = ECONOMICS;

DE.8 = FIELD STUDIES;

DE.9 = FILTRATION;

DE.10 = FLOW RATE;

DE.11 = HYDRAULIC FRACTURING;

DE.12 = INJECTION WELLS;

DE.13 = LEGAL ASPECTS;

DE.14 = OILFIELD BRINES;

DE.15 = PERMEABILITY;

DE.16 = PIPELINES;

DE.17 = PLUGGING;

DE.18 = POROSITY;

DE.19 = PRE-INJECTION TREATMENT;

DE.20 = REGULATIONS;

DE.21 = RESERVOIR PROPERTIES;

DE.22 = SEDIMENTATION;

DE.23 = SURFACE EQUIPMENT;

DE.24 = UNDERGROUND DISPOSAL;

DE.25 = WASTE DISPOSAL:

DE.26 = WELL CASINGS;

DE.27 = WELL COMPLETION;

DE.28 = WELL DESIGN;

DE.29 = WELL DRILLING;

DE.30 = WELL STIMULATION;

CONTROL;

DCSO = COPY ON FILE;

RECORD 246

SC = SMITH 70;

TY = J/AS/K;

DES-CAT.1;

BL = A;

PT = GEOTHERMAL DEVELOPMENT IN NEW ZEALAND;

AUTHORS;

AU = SMITH, J.H.;

AA = MINISTRY OF WORKS, WELLINGTON (NEW ZEALAND);

COT = U.N. SYMPOSIUM OF THE DEVELOPMENT AND UTILIZATION OF GEOTHERMAL
RESOURCES;

COP = PISA, ITALY;

COD = SEP 22-OCT 1, 1970;

DES-CAT.2;

BL = S;

OT = GEOTHERMICS;

CODEN = GTMCA;

PUD = 1970;

COL = SPECIAL ISSUE 2, V. 2 (1), P. 232-247;

N = 8 FIGS., 10 TABS., 6 REFS.;

INDEX;

CQ.1 = BRINE TREATMENT/SCALING;

CQ.2 = BRINE TREATMENT/CORROSION;

DE.1 = GEOTHERMAL WELLS;

DE.2 = GEOTHERMAL FIELDS;

DE.3 = GEOLOGY;

DE.4 = DEEP WELLS;

DE.5 = ELEVATED TEMPERATURE;

DE.6 = CASE HISTORIES;

DE.7 = TEMPERATURE LOGGING;

DE.8 = WELL COMPLETION;

DE.9 = WELL HEAD PRESSURE;

DE.10 = SCALING;

DE.11 = DESCALING;

DE.12 = REAMING;

DE.13 = SILICA MINERALS;

DE.14 = CALCITE;

DE.15 = NGAWHA GEOTHERMAL FIELD;

DE.16 = ORAKEIKORATO GEOTHERMAL FIELD;

DE.17 = REPORDA GEOTHERMAL FIELD;

DE.18 = ROTOKAWA GEOTHERMAL FIELD;

DE.19 = TAUHARA GEOTHERMAL FIELD;

DE.20 = TEKOPITA GEOTHERMAL FIELD;

DE.21 = BROADLANDS GEOTHERMAL FIELD;

DE.22 = NEW ZEALAND;

CONTROL;

DCSO = COPY ON FILE;

RECORD 275

SC = BARNES 75;

TY = R/AM/K;

DES-CAT.1;

BL = A;

PT = CORROSION AND SCALING;

AUTHORS.1;

AU = BARNES, H.L.;

AA = PENNSYLVANIA STATE UNIV., UNIVERSITY PARK, PA. (USA). DEPT.
OF GEOSCIENCES;

AUTHORS.2;

AU = HALL, B.A.;

AN = ED.;

SPO = U.S. BUREAU OF MINES;

SCN = GRANT NO. PO 150296;

PUB = GEOTHERMAL RESOURCES COUNCIL;

PUP = DAVIS, CALIF.;

PUD = MAY 1975;

COL = P. 29-31;

COT = PRELIMINARY WORKSHOP-MEETING ON MATERIALS PROBLEMS ASSOCIATED
WITH THE DEVELOPMENT OF GEOTHERMAL ENERGY RESOURCES;

COP = COLLEGE PARK, MD.;

COD = DEC 3-4, 1974;

DES-CAT.2;

BL = M;

PT = MATERIALS PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF GEOTHERMAL
ENERGY RESOURCES;

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CQ.2 = BRINE TREATMENT/CORROSION;

DE.1 = AMORPHOUS SILICA;

DE.2 = CHLORIDES;

DE.3 = CORROSION;

DE.4 = CORROSION RESISTANT ALLOYS;

DE.5 = GEOTHERMAL BRINES;

DE.6 = HIGH PRESSURE;

DE.7 = HIGH TEMPERATURE;

DE.8 = HYDROGEN SULFIDES;

DE.9 = IONIC STRENGTH;

DE.10 = MATERIALS TESTING;

DE.11 = PH ADJUSTMENT;

DE.12 = PH VALUE;

DE.13 = QUARTZ;

DE.14 = SCALING;

DE.15 = SILICA MINERALS;

DE.16 = SOLUBILITY;

DE.17 = STAINLESS STEELS;

DE.18 = STRESS CORROSION;

DE.19 = SULFIDES;

DE.20 = TEMPERATURE DEPENDENCE;

RECORD 356

SC = CHAPMAN 74;

TY = G/M;

DES-CAT;

BL = M;

PT = UKIAH SHEET;

PS = BOUGUER GRAVITY MAP OF CALIFORNIA;

AUTHORS;

AU.1 = CHAPMAN, R.H.;

AU.2 = BISHOP, C.C.;

AU.3 = CHASE, G.W.;

AU.4 = ASCH, J.W.;

PUB = DIVISIONS OF MINES AND GEOLOGY;

PUP = SACRAMENTO, CALIF.;

PUD = 1974;

AV = CALIFORNIA DIVISION OF MINES AND GEOLOGY, JAMES E. SLOSSON,
STATE GEOLOGIST, SACRAMENTO, CALIFORNIA 95814;

INDEX;

CQ = EXPLORATION/GEOPHYSICS;

DE.1 = CALIFORNIA;

DE.2 = UKIAH SHEET;

DE.3 = GRAVITY SURVEYS;

DE.4 = GEOLOGIC SETTING;

DE.5 = FAULTS;

CONTROL;

DCSO = COPY ON FILE;

RECORD 400

SC = GREKEL 68;

TY = J/AS;

DES-CAT.1;

BL = A;

PT = WHY RECOVER SULFUR FROM H₂S;

AUTHORS;

AU.1 = GREKEL, H.;

AU.2 = PALM, J.W.;

AU.3 = KILMER, J.W.;

AA = PAN AMERICAN PETROLEUM CORP., TULSA, OKLA. (USA);

DES-CAT.2;

BL = S;

OT = OIL GAS J.;

CODEN = OIGJAV;

PUD = 1968;

COL = V. 66 (44), P. 88-101;

INDEX;

CQ = HYDROGEN SULFIDE/EMISSION CONTROLS;

DE.1 = DIAGRAMS;

DE.2 = GRAPHS;

DE.3 = WASTE MANAGEMENT;

DE.4 = SULFUR;

DE.5 = HYDROGEN SULFIDES;

ID = MINER 59;

CONTROL;

DCSO = COPY ON FILE;

RECORD 402

SC = HARTMANN 71;

TY = R/M;

DES-CAT;

BL = M;

PT = IMPROVED CHROMATOGRAPHIC TECHNIQUES FOR SULFUR POLLUTANTS;

AUTHORS;

AJ = HARTMANN, C.H.;

AA = VARIAN AEROGRAPH, WALNUT CREEK, CALIF. (USA);

RN = AIAA PAPER NO. 71-1046;

PUD = 1971;

COL = 6 P.;

COT = PROC. JOINT CONF. ON SENSING OF ENVIRONMENTAL POLLUTANTS;

COP = PALO ALTO, CALIFORNIA;

COD = NOV. 8, 1971;

INDEX;

CQ = HYDROGEN SULFIDE/MONITORING METHODS;

DE.1 = DIAGRAMS;

DE.2 = GRAPHS;

DE.3 = AIR ANALYSIS;

DE.4 = GAS CHROMATOGRAPHY;

DE.5 = MEASURING INSTRUMENTS;

DE.6 = MEASURING METHODS;

DE.7 = MODERATE TEMPERATURE;

DE.8 = ELEVATED TEMPERATURE;

DE.9 = PPB CONCENTRATION RANGE;

DE.10 = FLOW RATES;

DE.11 = MONITORING;

DE.12 = TEMPERATURE DEPENDENCE;

DE.13 = URBAN AREAS;

DE.14 = SULFUR INORGANIC COMPOUNDS;

DE.15 = HYDROGEN SULFIDES;

DE.16 = SULFIDES;

DE.17 = SULFUR DIOXIDE;

CONTROL;

DCSO = COPY ON FILE;

RECORD 413

SC = NENCETTI 64;

TY = R/AM;

DES-CAT.1;

BL = A;

PT = WATER COLLECTION AND ANALYSIS FROM THERMAL SOURCES AND VAPOR
MANIFESTATIONS;

L = IN FRENCH (ENGLISH SUMMARY);

AUTHORS;

AJ = NENCETTI, R.;

AA = LARDERELLO, S.P.A., PISA (ITALY);

PUB = UNITED NATIONS;

PUP = NEW YORK;

PUD = 1964;

COL = V. 2, P. 317-325;

COT = UN CONFERENCE ON NEW SOURCES OF ENERGY;

COP = ROME, ITALY;

COD = 1961;

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OF ENERGY;

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DE.1 = DIAGRAMS;

DE.2 = PHOTOGRAPHS;

DE.3 = CHEMICAL COMPOSITION;

DE.4 = ISOTOPE RATIO;

DE.5 = THERMAL SPRINGS;

DE.6 = WASTE MANAGEMENT;

DE.7 = LARDERELLO GEOTHERMAL FIELD;

DE.8 = HYDROGEN SULFIDES;

DE.9 = AMMONIA;

CONTROL;

DCSO = COPY ON FILE;

RECORD 520

SC = BOVAY 69;

TY = B/AM;

DES-CAT.1;

BL = A;

PT = THE EFFECTS OF AIR POLLUTION ON PLANTS;

L = IN GERMAN;

AUTHORS;

AU = BOVAY, E.;

PUB = VOGT-SCHILD, S.A.;

PUP = SWITZERLAND;

PUD = 1969;

COL = P. 1-19;

N = 126 REFS;

DES-CAT.2;

BL = M;

PT = PROBLEME DER LUFTVERUNREINIGUNG DURCH DIE INDUSTRIE;

INDEX;

CQ = HYDROGEN SULFIDE/ENVIRONMENTAL EFFECTS;

DE.1 = BIBLIOGRAPHIES;

DE.2 = TABLES;

DE.3 = PHOTOGRAPHS;

DE.4 = AIR MONITORING;

DE.5 = PPM CONCENTRATION RANGE;

DE.6 = AIR POLLUTION;

DE.7 = BIOLOGICAL EFFECTS;

DE.8 = ENVIRONMENTAL EFFECTS;

DE.9 = PH VALUE;

DE.10 = PHOTOCHEMISTRY;

DE.11 = PLANTS;

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DE.15 = FLUORINE;

DE.16 = HYDROGEN SULFIDES;

DE.17 = SULFUR DIOXIDE;

DE.18 = AMMONIA;

ID = EPA;

CONTROL;

DCSO = COPY ON FILE;

References

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11) International Atomic Energy Agency, Vienna (Austria), INIS:
TERMINOLOGY AND CODES FOR COUNTRIES AND INTERNATIONAL ORGANIZATIONS,
IAEA-INIS-5 (Rev. 2), July 1971.

This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

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BERKELEY, CALIFORNIA 94720