

**CLASSIFICATION AND ATTRIBUTES OF
NON-TEXT-SEARCHABLE DOCUMENTARY MATERIAL**

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Prepared by

Charles Acree

**Center for Nuclear Waste Regulatory Analyses
San Antonio, Texas**

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**CLASSIFICATION AND ATTRIBUTES OF
NON-TEXT-SEARCHABLE DOCUMENTARY MATERIAL**

1 BACKGROUND

The LSS Administrator (LSSA) has requested the Center for Nuclear Waste Regulatory Analyses (CNWRA or the Center) to classify the various types of documentary material which are unsuitable for entry into the Licensing Support System (LSS) in the form of searchable full text and, further, to describe the attributes of each defined category.

The LSSA has also requested the Center to propose a format for a Package Table of Contents, to be used by all LSS participants, which would list these types of material. This work is intended to be preliminary to the preparation of an Access Protocols Report by the Center.

The present report was prepared by the author in collaboration with several technical experts, representing different technical disciplines within the Center, and is based upon their combined experience. It also reflects the considered opinion of the Center's LSS project team.

2 CLASSIFICATION OF NON-TEXT-SEARCHABLE DOCUMENTARY MATERIAL

Some non-text-searchable documentary material, the portion of it that the LSS Rule calls "graphic-oriented," is "imageable." That is to say, it is capable of being converted through digital scanning to electronic images which may be subsequently viewed on LSS computer screens. The rest of the material, which is not only unsuitable for entry into the LSS in the form of searchable full text but is also unsuitable for entry in electronic-image form, has been termed "machine-dependent" by the Center, because its predominant characteristic is its dependency on compatible electronic or optical/mechanical equipment for comprehension.

Ideally, classification of non-text-searchable items would be mutually exclusive, as well as exhaustive. Unfortunately, neither goal is achievable in practice. Classification cannot be exhaustive because, even with the most thorough sampling of this extremely voluminous and varied material (which no one, to the Center's knowledge, has accomplished) and the selection of generalized categories, it is likely that new items may emerge in the future that will suggest additional categories.

Mutual exclusivity is unattainable because, no matter how the categories are derived, they will inevitably overlap. It is useful, for example, to make a distinction between numerical tables, graphs, handwritten notes, and maps -- as the Center has done. However, many of the graphs that have been observed are surrounded by written notes. Numeric data sheets have sometimes appeared as computer printouts and other times as handwritten notes on printed forms. Individual documents often have interleaved pages of notes, figures, maps, and other types of "graphic" material.

To most usefully fulfill its assignment, the Center has considered all of the items it has actually observed - in its everyday work as well as investigations in pursuit of this task. It has also considered the items mentioned in the LSS Rule, the items listed as Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) document-type codes, and the items that it believes could emerge in future years. Essentially, it has expanded upon the model it produced in its report entitled "Alternative Ways of Making Packaged Documentary Material Accessible Within the Licensing Support System" of September 1991 (CNWRA, 1991b). The resulting classification is intended to encompass any materials that may be encountered.

The Center has defined eight categories of "imageable" materials and twelve categories of "non-imageable" materials. Generally speaking, the non-imageable items (computer tapes, disks, etc.) are machine-dependent media types. These items are capable of holding representations of various "imageable" items (maps, photographs, figures, data sheets, etc.), which are usually called document types and most often exist in paper form. (Non-imageable items, of course, may also hold text.) For this reason, as well as the prevalence of overlaps (e.g., handwritten notes upon data sheets), a given item may belong to more than one category.

The categories defined by the Center are shown in Table 2-1.

TABLE 2-1. CATEGORIES OF DOCUMENTARY MATERIAL

Imageable (Graphic-oriented) Documentary Material	Non-imageable (Machine-dependent) Documentary Material
Map	Magnetic Tape
Photograph	Magnetic Disk
Design	Optical Disk
Figure	Videocassette/Videodisk
Data Sheet	Audio Recording
Data Plot	Solid-State Item
Computer Program	Motion Picture Film
Handwritten Notes	Microform
	Photographic Slide
	Photographic Negative
	Develocorder Film
	Radiograph

3 ATTRIBUTES OF CATEGORIES

Appendices A and B provide descriptive sheets that define the attributes of each proposed category, for imageable and non-imageable materials, respectively. They employ essentially the same format as that suggested by the LSSA (LSSA, 1991a), except that in some instances the headings have been renamed and rearranged. One heading, "Examples," has been added for further explication. The heading "Other Characteristics" includes attributes that will not ordinarily be used for retrieval (e.g., "origin" when it is of less consequence), as well as attributes that may not be searchable.

Entries under the heading "Criteria Normally Used For Retrieval Purposes", which are made in order of importance on the attached sheets, are repetitious among the categories, as one would expect, given the prime importance of technical subject matter, date, and origin - as validated to some extent by the LSS Prototype Test Report (SAIC, 1990). Hardware/software dependencies and storage locations are usually important in the case of the non-imageable categories. This repetition among the categories makes overlapping (where more than one sheet will apply) inconsequential. In keeping with the LSSA's instructions (LSSA, 1991b) to avoid any recommendations regarding header fields in this report, the names of specific fields (e.g., title, descriptors, identifiers, author organization, author name, document date, etc.) are avoided here and in entries made under the heading "Other Characteristics."

The precepts under the headings "Unitization Guidelines" and "Related Materials" are also nearly identical for the imageable items and for the non-imageable items -- again as one would expect, there being no reason for differentiation. They are consistent with the Center's earlier recommendations (CNWRA, 1991b).

4 FORMAT FOR PACKAGE TABLE OF CONTENTS

Appendix C provides a proposed format for a "generic" package table of contents, which includes sufficient instructions for its completion and a completed sample. The format is intended for use by all LSS participants that submit documentary material in package form. It must be typewritten.

As detailed elsewhere (CNWRA, 1991b), most non-text-searchable documentary material, including non-imageable as well as imageable items, are currently being stored by the DOE within "packages," which conveniently combine items that relate to a particular investigative activity, as provided by the LSS Rule (NRC, 1989).

The types of material that could be collected within a given package might include any or all of the items described in the Center's classification scheme. These same items, however, have on occasion been stored and indexed individually by the DOE. There are no categories of material that tend, inherently, to be excluded from packages (having no relation to any investigative activity documented by a package). It is possible that practically any item, from any of the categories, could be stored and cataloged apart from a packaged collection, as a result of the complexities and vagaries involved in unpredictable investigative activity that is undertaken by diverse, geographically dispersed contractors.

The attributes that should be made known for a given item listed on a package table of contents should obviously be consistent with the attributes designated as "Criteria Normally Used For Retrieval Purposes" on the descriptive sheet for the category to which the item belongs. However, in most instances, there should be no need to append such attributes to the individual line-item listings in the table of contents. Considering the facts that (a) subject, date and origin are usually the primary attributes, that (b) all of the items within a given package have these attributes in common (which make them a package), and that (c) these same attributes are featured prominently in the top line and title of a table of contents, repetition of these attributes in the line items themselves would be redundant.

For instance, in the sample table of contents provided, there is no need to say anything more about "Borehole Geophysical Log" (see page C-2, Raw Data). The package title indicates that it pertains to a certain test well which was investigated in the 1985 time-frame by the USGS. The fact that no sub-contractor is noted next to it indicates that none was used. There is nothing more that is useful to say about this log in the table of contents.

It is worth pointing out that, in the case of imageable material, an indexer will not necessarily recognize the category to which a line-item may belong purely by the description provided by the originator (e.g., "lithologic log," which was not described by the originator using category terminology). When the indexer examines the item it will be recognized for what it is, (in this case, a set of handwritten notes). That is all that is needed.

The proposed table of contents, it will be noted, is fundamentally the same as the DOE "model," which was originated by the U.S. Geological Survey to encourage consistency in the diverse tables of contents employed by the Yucca Mountain Project (YMP). The YMP's general procedure for preparing a package table of contents (DOE, 1990) contains only an optional format and minimal requirements. The Center's proposed format differs from the YMP/USGS model format in the following respects:

1. The originating organization is shown in the top line, for greater emphasis and improved readability.
2. The subject is identified under a "TITLE" heading. The package completion date should be placed here, in a consistent, prominent location. If there is a finished report, its number should follow the description.
3. The next heading is changed from "Open File Report," which is specific, to "FINISHED PRODUCT," which is general. All of the contributing authors should be identified here using their full names, not merely initials.
4. The next heading is changed from "Published Report Package" to "REVIEW AND APPROVAL DOCUMENTS," which avoids possible confusion about internal "packages" and is more appropriate. The section is divided into two parts for clarity. It should include the full names of all reviewers.
5. The next heading, "RAW DATA," was not changed. Line items should generally be listed as the DOE has done in the past, except that subcontractors should always be named.
6. The "A,B,C's" preceding the headings have been omitted. They are unnecessary.
7. The confusing page-number sub-totals following each heading have also been omitted. A grand total of the number of pages in a package, which provides more useful information and indicates definite table-of-contents completion, has been added. In order to locate line-item materials within a package, it will either be necessary to index the table of contents using hypertext technique, as the Center has suggested (CNWRA, 1991b), or to number the pages of a package consecutively (which the DOE has not done), so that a beginning page number may be indicated on the table of contents for each listed line-item. In proposing this format, the Center assumes the use of hypertext technology.
8. The full name of the originator of the package (the person responsible for it) is included at the end, with the date of transmittal to the archive of the participating organization. A statement that the package is accurate and complete is appended, and the DOE's quality-affecting-designation is moved to this location.

9. Internal DOE control numbers and symbols are, of course, excluded from this generic form.

5 CONCLUSION

The Center believes that the proposed generalized classification of non-text-searchable documentary material will provide a sound, additional basis for the preparation of its Access Protocols Report and any other guidance on this subject.

The descriptive sheets that define the attributes of the categories (Appendices A and B) should assist the handling of these materials when they are entered into the LSS and later, when they are sought by requestors. The inevitable overlapping of categories (especially between the imageable materials and the non-imageable materials on which they are sometimes recorded) merely means that everyone concerned will have to pay heed to more than one set of instructions when overlaps occur. An effort has been made to keep the sheets brief, confining each to a single page, so that they will be readily and conveniently comprehended. Where there is commonality in their instructions, the redundancy is essential so that the person using them does not have to look in more than one place for guidance.

The proposed format for a package table of contents (Appendix C) provides essential features and instructions which will have to fit into the context of the Access Protocols Report when it is written. This format will be discussed with the DOE, NRC, and other participants, to determine its impact, after that Report is drafted, as planned. The Center believes that the impact will not be excessive.

6 REFERENCES

Center for Nuclear Waste and Regulatory Analyses (CNWRA). 1991a. *Definition of Technical Data and Analysis of Infrastructures Within Participant Organizations for Providing LSS Access*. San Antonio, Texas: CNWRA.

CNWRA. 1991b. *Alternative Ways of Making Packaged Documentary Materials Accessible Within the Licensing Support System*. San Antonio, Texas. CNWRA.

LSSA. 1991a. *LSSA Comments on Definition of Technical Data and Analysis of Infrastructures Within Participant Organization for Providing LSS Access*. Washington, D.C.: U. S. Nuclear Regulatory Commission (NRC).

LSSA. 1991b. *Technical Direction on CNWRA Task 1-Access Protocols*. Washington, D.C.: NRC.

Science Application International Corporation (SAIC). 1990. *Licensing Support System Prototype Test Report*. Washington, D.C.

Nuclear Regulatory Commission (NRC). 1989. *10 CFR Part 2, "The LSS Rule"*. Washington, D.C.

Department of Energy (DOE). 1990. *YMPO Quality Management Procedure: Records Management: Record Source Implementation*. Las Vegas, Nevada.

APPENDIX A
IMAGEABLE (GRAPHIC-ORIENTED) DOCUMENTARY MATERIAL

CATEGORY: MAP

DEFINITION: Representation of a geographic area, often highlighting certain natural or constructed features (e.g., topography, geologic structure, physical properties, roads, buildings). Map overlays and sketches are included.

PHYSICAL ATTRIBUTES: A map may be depicted on different types of media -- film, mylar, etc., but is usually on paper.

EXAMPLES: Geologic maps, topographic contour maps, cross-sectional maps, potentiometric surface maps, site surveys, probe locations, population density maps, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject (including type of map and location), date, origin.

OTHER CHARACTERISTICS: Specific extent of geographic area, size, scale, color, quality, and Quality Assurance (QA) designation.

UNITIZATION GUIDELINES: If a map exists as a stand-alone item (apart from a document or package) it should be indexed as an independent unit. If a map exists within a collection of maps on the same subject (outside a document or package) and is best interpreted within the context of that collection, the map and its companions should be indexed as a single unit. If a map occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the map should not be separately indexed. If a map is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone map or a collection of maps. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every map will be scanned to produce an electronic image, if it does not already exist in that form. If it is not printed on paper, it should first be converted to paper for LSS input. An overlay should be converted covering the map it augments.

ASCII TEXT: None. Any embedded text that may exist on the map will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the map or map collection is independently indexed.

CATEGORY: PHOTOGRAPH

DEFINITION: Still picture of an object or scene, obtained through the process of photography.

PHYSICAL ATTRIBUTES: A photograph may be depicted on different types of media, but is usually on paper. It may appear in color or in black-and-white.

EXAMPLES: Aerial photographs, Landsat images, and simple camera shots depicting terrain features, physical samples, structures, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date.

OTHER CHARACTERISTICS: Origin, color, size, quality, and QA designation.

UNITIZATION GUIDELINES: If a photograph exists as a stand-alone item (apart from a document or package), it should be indexed as an independent unit. If a photograph exists within a collection of photographs on the same subject (outside a document or package) and is best interpreted within the context of that collection, the photograph and its companions should be indexed as a single unit. If a photograph occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the photograph should not be separately indexed. If a photograph is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone photograph or a photo collection. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every photograph will be scanned to produce an electronic image, if it does not already exist in that form. If not printed on paper, it should first be converted to paper for LSS input.

ASCII TEXT: None. Any embedded text that may exist on the photograph will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the photograph or photo collection is independently indexed.

CATEGORY: DESIGN

DEFINITION: Depicted schematic arrangement of the features of a plan for an object or facility.

PHYSICAL ATTRIBUTES: A design may be displayed on different types of media -- paper, film, blueprint, etc. It may appear in color or in black-and-white.

EXAMPLES: Engineering project, architectural plan, surface facility design, instrument innovation, waste package container, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, origin, date.

OTHER CHARACTERISTICS: Quality, size, scale, color, and QA designation.

UNITIZATION GUIDELINES: If a design exists as a stand-alone item (apart from a document or package), it should be indexed as an independent unit. If a design exists within a collection of designs on the same subject (outside a document or package) and is best interpreted within the context of that collection, the design and its companions should be indexed as a single unit. If a design occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the design should not be separately indexed. If a design is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone design or a design collection. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every design will be scanned to produce an electronic image, if it does not already exist in that form. If it is not printed on paper, it should first be converted to paper for LSS input.

ASCII TEXT: None. Any embedded text that may exist on the design will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the design or design collection is independently indexed.

CATEGORY: FIGURE

DEFINITION: Graphic representation of a form. The category excludes maps, photographs and designs (which are separate categories), but encompasses all other diagrams, drawings, sketches, etc.

PHYSICAL ATTRIBUTES: A figure may be displayed on different types of media, but is usually on paper. It may appear in color or in black-and-white.

EXAMPLES: Organizational chart, geological diagram, technical drawing, flora/fauna drawing, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, origin, date.

OTHER CHARACTERISTICS: Quality, size, scale, color, and QA designation.

UNITIZATION GUIDELINES: If a figure exists as a stand-alone item (apart from a document or package), it should be indexed as an independent unit. If a figure exists within a collection of figures on the same subject (outside a document or package) and is best interpreted within the context of that collection, the figure and its companions should be indexed as a single unit. If a figure occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the figure should not be separately indexed. If a figure is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone figure or a figure collection. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every figure will be scanned to produce an electronic image, if it does not already exist in that form. If it is not printed on paper, it should first be converted to paper for LSS input.

ASCII TEXT: None. Any embedded text that may exist on the figure will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the figure or figure collection is independently indexed.

CATEGORY: DATA SHEET

DEFINITION: Numeric array in listed or tabular form.

PHYSICAL ATTRIBUTES: A data sheet may be displayed on different types of media, but is usually on paper. It is almost always printed, most often by a computer, but it may be handwritten.

EXAMPLES: Instrument readout, test recording, gauge/meter/computer setting, accuracy check, sampling rate, sensor data, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, origin, date.

OTHER CHARACTERISTICS: Legibility, page-count, and QA designation.

UNITIZATION GUIDELINES: If a data sheet exists as a stand-alone item (apart from a document or package), it should be indexed as an independent unit. If a data sheet exists within a collection of data sheets on the same subject (outside a document or package) and is best interpreted within the context of that collection, the data sheet and its companions should be indexed as a single unit. If a data sheet occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the data sheet should not be separately indexed. If a data sheet is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone data sheet or a data sheet collection. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every data sheet will be scanned to produce an electronic image, if it does not already exist in that form. If it is not printed on paper, it should first be converted to paper for LSS input.

ASCII TEXT: None. Any embedded text that may exist on the data sheet will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the data sheet or data sheet collection is independently indexed.

CATEGORY: DATA PLOT

DEFINITION: Plot or graph of digital numeric or analog data, depicting a comparison, series, progression, equation, measurement, etc., using coordinates. This category includes all "strip charts".

PHYSICAL ATTRIBUTES: A data plot may be displayed on different types of media, but is usually on paper. It is almost always printed, most often by a digital or analog computer, but it may be handwritten. If it exists as a "strip chart", it may be folded or rolled.

EXAMPLES: Instrument readout, test recording, gauge/meter/computer setting, accuracy check, sampling rate, sensor data, helicorder roll, borehole geophysical log, seismic reflection record section, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject (including type of plot), origin, date.

OTHER CHARACTERISTICS: Form, scale, legibility, page-count, and QA designation.

UNITIZATION GUIDELINES: If a data plot exists as a stand-alone item (apart from a document or package), it should be indexed as an independent unit. If a data plot exists within a collection of data plots on the same subject (outside a document or package) and is best interpreted within the context of that collection, the data plot and its companions should be indexed as a single unit. If a data plot occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the data plot should not be separately indexed. If a data plot is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone data plot or a data plot collection. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every data plot will be scanned to produce an electronic image, if it does not already exist in that form. If it is not printed on paper, it should first be converted to paper for LSS input.

ASCII TEXT: None. Any embedded text that may exist on the data plot will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the data plot or data plot collection is independently indexed.

CATEGORY: COMPUTER PROGRAM

DEFINITION: A sequence of coded instructions/algorithms/procedures ("source code") to be loaded and executed on a computer. Computer-program documentation (explanatory comment), whether it accompanies the program or not, is included in this category.

PHYSICAL ATTRIBUTES: A computer program may be displayed on different types of media, but is usually on paper. It is usually computer-generated.

EXAMPLES: Programs (including computer models) to evaluate heat transfer, seismic effects, groundwater flow, engineering simulations, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, origin, date.

OTHER CHARACTERISTICS: Hardware and software dependencies (computer type/model, operating system, programming language), date, legibility, page-count, and QA designation.

UNITIZATION GUIDELINES: If a computer program exists as a stand-alone item (apart from a document or package), it should be indexed as an independent unit. If a computer program exists within a collection of computer programs on the same subject (outside a document or package) and is best interpreted within the context of that collection, the computer program and its companions should be indexed as a single unit. If a computer program occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the computer program should not be separately indexed. If a computer program is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone computer program or a computer program collection. If, however, a collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Every computer program will be scanned to produce an electronic image, if it does not already exist in that form. If it is not printed on paper, it should first be converted to paper for LSS input.

ASCII TEXT: None. Any embedded explanatory text or documentation that may exist adjacent to the computer program itself will not be converted to ASCII form for text search.

BIBLIOGRAPHIC HEADER: A header will be submitted if the computer program or computer program collection is independently indexed.

CATEGORY: HANDWRITTEN NOTES

DEFINITION: Any set of handwritten notes made for any purpose. Mixed handwritten/printed materials are included, as are printed forms that are filled out in handwriting. Marginalia on predominantly printed material is excluded. Data sheets have a category of their own.

PHYSICAL ATTRIBUTES: A set of handwritten notes may be depicted on different types of media, but is usually on paper. Often, the notes will be compiled into notebooks. Some may be practically illegible.

EXAMPLES: Field/laboratory notebooks, drilling reports, lithologic logs, comment sheets, standardization checks, instrument calibrations, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, origin, date(s).

OTHER CHARACTERISTICS: Legibility and QA designation.

UNITIZATION GUIDELINES: If a set of handwritten notes exists as a stand-alone item (apart from a document or package) it should be indexed as an independent unit. If a set of handwritten notes exists within a larger collection of handwritten notes on the same subject (outside a document or package) and is best interpreted within the context of that collection, all of these notes should be indexed as a single unit. If a set of handwritten notes occurs within the pages of a document or is attached to a document as an integral part of it, and is best interpreted within the context of that document, the set of handwritten notes should not be separately indexed. If a set of handwritten notes is part of a package, it should not be separately indexed.

RELATED MATERIALS: Ordinarily, there will be no need for any related materials to be mentioned in the bibliographic header for a stand-alone set or larger collection of handwritten notes. If, however, a set or larger collection is best separated into multiple units for indexing purposes using the above guidelines, the units should be related to each other.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Handwritten notes will be scanned to produce an electronic image. If they are not printed on paper, they should first be converted to paper for LSS input.

ASCII TEXT: Printed text that may accompany handwritten notes should be converted to ASCII for text search, unless it consists merely of headings on a hand-completed form. No effort should be made to transcribe (interpret, clarify, or type) handwritten notes.

BIBLIOGRAPHIC HEADER: A header will be submitted if the set of handwritten notes is independently indexed.

APPENDIX B

NON-IMAGEABLE (MACHINE-DEPENDENT) DOCUMENTARY MATERIAL

CATEGORY: MAGNETIC TAPE

DEFINITION: A flexible strip coated with a magnetic substance, which is used as a storage medium for information recorded by a computer.

PHYSICAL ATTRIBUTES: A magnetic tape may be wound on a reel, or it may be contained in a cartridge or cassette.

EXAMPLES: It may contain programs, data, models, graphics (maps, designs, etc.), or any other information that is retained in electronic form.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, hardware/software dependencies (computer type/model, operating system, application program), storage location.

OTHER CHARACTERISTICS: Origin, date, and detailed specifications including: width, number of tracks, recording density, character code, record length, block size, file description, physical file characteristics, recording mode, record layout (field names, sizes, starting positions, numeric-data forms), series number, and QA designation.

UNITIZATION GUIDELINES: A magnetic tape should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a tape is grouped within a set of tapes having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a tape should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Magnetic tapes will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the tape itself will be retained by the participant. If a tape contains information on more than one subject, a header should be created for each subject.

CATEGORY: MAGNETIC DISK

DEFINITION: A round flat plate coated with a magnetic substance, which is used as a storage medium for information recorded by a computer.

PHYSICAL ATTRIBUTES: A magnetic disk may be in the form of hard disk or a flexible ("floppy") disk. Hard disks are usually housed in a container of some kind and are sometimes combined in a spindled pack. A flexible disk may be held in a rigid or soft jacket, which is usually square in shape.

EXAMPLES: It may contain programs, data, models, graphics (maps, designs, etc.), or any other information that is retained in electronic form.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, hardware/software dependencies (computer type/model, operating system, application program), storage location.

OTHER CHARACTERISTICS: Origin, date, and detailed specifications including: character code, record length, block size, file description, physical file characteristics, record layout (field names, sizes, starting positions, numeric-data forms), series number, and QA designation.

UNITIZATION GUIDELINES: A magnetic disk should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a magnetic disk is grouped within a set of disks having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a magnetic disk should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Magnetic disks will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the disk itself will be retained by the participant. If a magnetic disk contains information on more than one subject, a header should be created for each subject.

CATEGORY: OPTICAL DISK

DEFINITION: A round flat plate having a plastic coating, which is used as a storage medium for information recorded by a computer.

PHYSICAL ATTRIBUTES: An optical disk is read by using a laser device. It may be housed in a spindled pack or in an inseparable container. (Its use as a videodisk, rather than a computer disk, is separately categorized.)

EXAMPLES: It may contain programs, data, models, graphics (maps, designs, etc.), or any other information that is retained in electronic form.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, hardware/software dependencies (computer type/model, operating system, application program), storage location.

OTHER CHARACTERISTICS: Origin, date, and detailed specifications including: character code, record length, block size, file description, physical file characteristics, record layout (field names, sizes, starting positions, numeric-data forms), series number, and QA designation.

UNITIZATION GUIDELINES: An optical disk should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, an optical disk is grouped within a set of disks having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, an optical disk should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Optical disks will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the disk itself will be retained by the participant. If an optical disk contains information on more than one subject, a header should be created for each subject.

CATEGORY: VIDEOCASSETTE/VIDEODISK

DEFINITION: An encased tape or round flat disk, having a plastic coating, upon which images have been recorded for the purpose of playback on a television set. It may contain motion or still pictures.

PHYSICAL ATTRIBUTES: A videocassette is a case containing a video tape, which relates to a television set by means of a videocassette recorder/player. At least three formats have been applied to cassettes, VHS, Beta, and U-Matic, the former being most common. A videodisk is similar in appearance and use to a phonograph record and relates to a television set by means of a videodisk player. Optical disk technology is employed in their recording and playback. (The use of optical disks as computer storage media is separately categorized.)

EXAMPLES: It may depict terrain, structures, weather conditions, physical samples, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date, hardware dependency (VHS, Beta, U-Matic), storage location.

OTHER CHARACTERISTICS: Origin, color, quality, and QA designation.

UNITIZATION GUIDELINES: A videocassette or disk should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a videocassette or disk is grouped within a set of videocassette or disks having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a videocassette or disk should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Videocassette and disks will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the cassette or disk itself will be retained by the participant. If a videocassette or disk contains information on more than one subject, a header should be created for each subject.

CATEGORY: AUDIO RECORDING

DEFINITION: A physical medium upon which sounds have been recorded for the purpose of playback on a suitable device.

PHYSICAL ATTRIBUTES: There are five common types of audio recording media: (1) magnetic tape, which may be stored on a reel or cassette, (2) phonograph record, (3) compact disk, (4) digital audio tape (a relatively new product), and (5) dictation media, which may use various types of dictation devices. (Magnetic tape employed by the computer is separately categorized.)

EXAMPLES: It may document untranscribed speeches, readings, conversations, notes, sounds of nature, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, hardware dependency (audio cassette player, phonograph, compact disk, digital audio tape, dictation device, etc.), storage location.

OTHER CHARACTERISTICS: Origin, date, quality, more detailed specifications of machine dependency, and QA designation.

UNITIZATION GUIDELINES: An audio recording should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, an audio recording is grouped within a set of audio recordings having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, an audio recording should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Audio recordings will not be scanned. Every effort should be made, however, to transcribe the recording to paper suitable for LSS scanning, following normal procedure thereafter and withholding the recording itself from LSS submittal, so that the recording will become more readily available to requestors.

ASCII TEXT: No searchable text will be derived if the recording is untranscribed. If it is transcribed, the item will be classified as text-searchable material, where normal procedures will apply.

BIBLIOGRAPHIC HEADER: A header will normally be submitted, while the audio recording itself will be retained by the participant. If, however, a recording is transcribed, a header will be submitted only if the item or set of items is independently indexed. If an audio recording contains information on more than one subject, a header should be created for each subject.

CATEGORY: SOLID-STATE ITEM

DEFINITION: An assembly of electronic circuitry capable of functioning as a permanent storage medium for information recorded by a computer, which is removable from the computer.

PHYSICAL ATTRIBUTES: Solid-state items exist in many forms: chips, boards, modules, etc. They are known by various names, which continue to evolve as computer technology progresses (e.g., "ROM" -- read-only memory). Although they are not currently in use as removable storage devices for documentary material, it is possible that they will be used in future years.

EXAMPLES: It may contain programs, data, models, graphics (maps, designs, etc.), or any other information that is retained in electronic form.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, hardware/software dependencies (computer type/model, operating system, application program), storage location.

OTHER CHARACTERISTICS: Origin, date, and detailed specifications including: character code, record length, block size, file description, physical file characteristics, record layout (field names, sizes, starting positions, numeric-data forms), series number, and QA designation.

UNITIZATION GUIDELINES: A solid-state item should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a solid-state item is grouped within a set having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a solid-state item should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Solid-state items will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the item itself will be retained by the participant. If a solid-state item contains information on more than one subject, a header should be created for each subject.

CATEGORY: MOTION PICTURE FILM

DEFINITION: Strip of photographic film on which images have been recorded for the purpose of playback on a movie projector.

PHYSICAL ATTRIBUTES: A motion picture film is composed of multiple frames of film connected in a sequence on a strip, which is usually wound on a reel and punched for a sprocket drive.

EXAMPLES: It may depict terrain features, physical samples, structures, weather conditions, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date, hardware dependency (8mm, 16mm, etc.), storage location.

OTHER CHARACTERISTICS: Origin, color, quality, and QA designation.

UNITIZATION GUIDELINES: A motion picture film should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a motion picture film is grouped within a set of films having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a motion picture film should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Motion picture films will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the film itself will be retained by the participant. If a motion picture film contains information on more than one subject, a header should be created for each subject.

CATEGORY: MICROFORM

DEFINITION: Microimage of a document that has been optically reduced onto film to a degree that it cannot be easily read without magnification.

PHYSICAL ATTRIBUTES: There are three common types of microforms: (1) roll microfilm (16mm and 35mm) which may be stored on a reel, cartridge or cassette, (2) microfiche, which is a sheet of film containing multiple images in a grid pattern, and (3) aperture card, which is a paper card (usually an electric accounting machine "punchcard") into which rectangular apertures have been cut to mount film (usually one 35 mm frame). Magnification devices have been specifically designed to read each of these forms.

EXAMPLES: It may depict maps, photographs, designs, figures, plots, notes, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, hardware dependency (reel, cartridge, cassette, microfiche, aperture-card reader, etc.), storage location.

OTHER CHARACTERISTICS: Origin, date, quality, and QA designation.

UNITIZATION GUIDELINES: A microform should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a microform is grouped within a set of microforms having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a microform should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Microforms will not be scanned. Every effort should be made, however, to enter documents into the LSS system in their original paper form instead, governed by normal procedures, so that their images will become more readily available to requestors.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will normally be submitted, while the microform itself will be retained by the participant. If, however, a microform is converted to paper, a header will be submitted only if the item or set of items is independently indexed. If a microform contains information on more than one subject, a header should be created for each subject.

CATEGORY: PHOTOGRAPHIC SLIDE

DEFINITION: A photographic positive-image transparency (usually "35mm") intended for projection on a screen, its image having been optically reduced onto film to a degree that it cannot be easily read without magnification.

PHYSICAL ATTRIBUTES: A photographic slide is ordinarily mounted on a conventional cardboard or plastic holder that is designed to be inserted into a projection device but will also permit viewing by means of a slide or microform reader.

EXAMPLES: It may depict a scene, design, physical sample, structure, etc.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date, storage location.

OTHER CHARACTERISTICS: Origin, color, quality, size, and QA designation.

UNITIZATION GUIDELINES: A photographic slide should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a photographic slide is grouped within a set of slides having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a photographic slide should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Photographic slides will not be scanned. If feasible, however, images on slides should be converted to paper form that will be suitable for LSS scanning, following normal procedure thereafter and withholding the slide itself from LSS submittal, so that the image will become more readily available to requestors.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will normally be submitted, while the slide itself will be retained by the participant. If, however, a slide is converted to paper, a header will be submitted only if the item or set of items is independently indexed. If a photographic slide contains information on more than one subject, a header should be created for each subject.

CATEGORY: PHOTOGRAPHIC NEGATIVE

DEFINITION: A negative photographic image on transparent film used for printing positive pictures, which is reduced to a degree that its reversed light/dark image cannot be easily read without magnification.

PHYSICAL ATTRIBUTES: A photographic negative ordinarily appears on a film strip containing several images, but that may not always be the case. If not printed, it may usually be read in distorted light/dark form through projection or with the help of a microform reader.

EXAMPLES: It may depict the same things that a photograph may depict -- terrain features, physical samples, structures, etc. Aerial photographs and Landsat images are included.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date, storage location.

OTHER CHARACTERISTICS: Origin, color, size, quality, and QA designation.

UNITIZATION GUIDELINES: A photographic negative should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a photographic negative is grouped within a set of negatives having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a photographic negative should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Photographic negatives will not be scanned. Every effort should be made, however, to print from the negative a positive image on paper that will be suitable for LSS scanning, following normal procedure thereafter and withholding the negative itself from LSS submittal, so that the image will become more readily available to requestors.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will normally be submitted, while the negative itself will be retained by the participant. If, however, a negative is converted to paper, a header will be submitted only if the item or set of items is independently indexed. If a set of photographic negatives contains information on more than one subject, a header should be created for each subject.

CATEGORY: DEVELOCORDER FILM

DEFINITION: A photographic film strip similar to a motion picture film reel except that it is not punched for a sprocket drive.

PHYSICAL ATTRIBUTES: Develocorder film is made of plastic and is 16mm in width. It requires a develocorder film reader for viewing.

EXAMPLES: It is most commonly used to record earthquake seismographic data.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date, storage location.

OTHER CHARACTERISTICS: Origin, quality, and QA designation.

UNITIZATION GUIDELINES: Develocorder film should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a develocorder film is grouped within a set of develocorder films having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a develocorder film should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Develocorder films will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the film itself will be retained by the participant. If a develocorder film contains information on more than one subject, a header should be created for each subject.

CATEGORY: RADIOGRAPH

DEFINITION: A photographic image on a radiation-sensitive film, commonly made by X-ray, gamma-ray, or alpha-ray.

PHYSICAL ATTRIBUTES: Similar in appearance to a photographic negative, but usually larger (e.g., 8" by 10"). It requires a light table and sometimes a microscope for viewing.

EXAMPLES: It is most commonly used to record the distribution of radioactive species in both natural and engineered materials.

CRITERIA NORMALLY USED FOR RETRIEVAL PURPOSES: Subject, date, storage location.

OTHER CHARACTERISTICS: Origin, size, quality, radiation type, and QA designation.

UNITIZATION GUIDELINES: A radiograph should always be indexed as an independent unit, regardless of whether it is attached to a document or included within a package. If, however, a radiograph is grouped within a set of radiographs having the same title, the set should be indexed as a single unit.

RELATED MATERIALS: If originally attached to a document or included within a package, a radiograph should be related to that document or package by its bibliographic header.

SUBMISSION REQUIREMENTS:

ELECTRONIC IMAGE: Radiographs will not be scanned.

ASCII TEXT: No searchable text will be derived.

BIBLIOGRAPHIC HEADER: A header will be submitted in all instances, while the radiograph itself will be retained by the participant. If a radiograph contains information on more than one subject, a header should be created for each subject.

APPENDIX C
FORMAT FOR PACKAGE TABLE OF CONTENTS

FORMAT AND INSTRUCTIONS FOR PACKAGE TABLE OF CONTENTS

Type name of originating organization here, centered

PACKAGE TABLE OF CONTENTS

TITLE:

Provide a succinct description to distinguish the package. Include the finished report number (if any) and the package completion date.

PAGES
(for each item)

FINISHED PRODUCT: Adequately describe the product, if there is one, by providing its full title, including the originating organization, the full names of all contributing authors, and the report number (if any).

APPROVAL AND REVIEW DOCUMENTS: (If included)

LETTERS OF APPROVAL:

List individually, so that the approving authority is clear.

DOCUMENT REVIEWS:

List the full name of each reviewer, so that a person's reviews may be found through text search.

RAW DATA:

List all of the line-items included in the package, individually or by group. Use consistent, unabbreviated terminology in describing them, to assist search and retrieval. Name the responsible sub-contractor if it has produced an item. Add dates if they improve understanding. When a non-imageable item is replaced by a surrogate form, add "(slip sheet)" to the description, which should include the specific type of data that the item contains, as well as the medium on which it is recorded.

TOTAL PAGES _____

I attest that this package is accurate and complete.

(signature)

(Typed name of Originator)

QUALITY AFFECTING DESIGNATION _____
(Either "QA" or "QA N/A")

Date of Transmittal

COMPLETED SAMPLE OF A PACKAGE TABLE OF CONTENTS

YMP/USGS

PACKAGE TABLE OF CONTENTS

TITLE: Geohydrologic and Drill-Hole Data for Test Well USW H-5, Yucca Mountain, Nye County, Nevada (OFR-85-155), October 12, 1985

PAGES

FINISHED PRODUCT:

U.S. Department of the Interior Geological Survey, Open File Report 85-155, Geohydrologic and Drill-Hole Data for Test Well USW H-5, Yucca Mountain, Nye County, Nevada, by William Tell, Felix Random, Newton Rainwater, and John Springfellow	49
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APPROVAL AND REVIEW DOCUMENTS:

LETTERS OF APPROVAL:

DOE Letter of Approval	1
USGS Letter of Approval	1

DOCUMENT REVIEWS:

Donald Critic	3
Richard Nitpicker	98
Manny Quarterback	1

RAW DATA:

Map depicting location of Test Well USW H-5	1
Photographs of Test Well USW H-5	8
Field notebook (July 13, 1984-March 10, 1985)	110
Fortran program to evaluate groundwater flow	9
Drilling reports by Fenix & Scisson	37
Lithologic log	59
Pumping test data - tables and graphs	45
Injection test data	74
Borehole geophysical log	1
Magnetic tape with injection test data (slip sheet)	<u>1</u>

Total Pages 498

I attest that this package is accurate and complete.

William Tell (signed)
William Tell

QUALITY AFFECTING DESIGNATION: QA

November 1, 1985
Date of Transmittal