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ABSTRACT

Magnetic tape format specifications for authority records distributed by the Library of Congress through the MARC Distribution Service--Subject and Name Authorities are described in this outline. Information is provided on segments and length of logical records, blocks, volume and file organization, and character set. (KP)

Specifications for Magnetic Tapes Containing Authority Record in the MARC Format

by

The Library of Congress

October 20, 1976

SPECIFICATIONS FOR MAGNETIC TAPES CONTAINING AUTHORITY RECORDS IN THE MARC FORMAT

The magnetic tape format specifications for authority records distributed by the Library of Congress through the MARC Distribution Service--Subject Authority and MARC Distribution Service--Name Authority are described below:

A. TAPE FORMAT

1. Nine-channel tapes are written in odd parity at 800 or 1600 bpi. each logical file is terminated by a tape mark (13_{16}).

2. Seven-channel tapes are written in odd parity at 556 bpi. Each logical file is terminated by a tape mark (17_{8}).

3. Logical records have a maximum of 99999 data characters. Physical records have a maximum of 2048 characters.
Note: A logical record may consist of one or more segments. A physical block may consist of more than one logical record.

4. All logical records or segments of logical records spanning physical blocks are preceded by a 5-character Segment Control Word (SCW) described as follows:

   a. Spanning indicator (1 character, decimal)

      0 = Record begins and ends in this segment
      1 = Record begins in this segment but does not end in this segment
      2 = Record does not begin or end in this segment
      3 = Record ends in this segment but does not begin in this segment

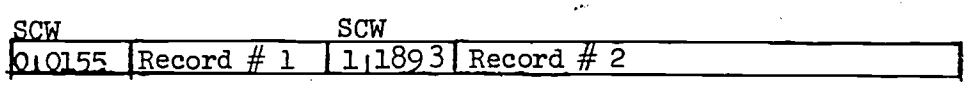
   b. Segment length (4 characters, decimal)

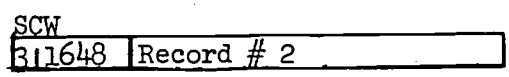
      This segment length includes the 5 characters of the SCW.

It is important to note that the SCW is not part of the communications format. This means that the length of the SCW for each physical segment of a logical record is not included in the computation of the length of the logical record carried in the Leader of the MARC record (bytes 0-4) nor in the computation of the variable field directory entries i.e., field length and relative address. Each SCW should be treated as a transparent entity in any user processing system.

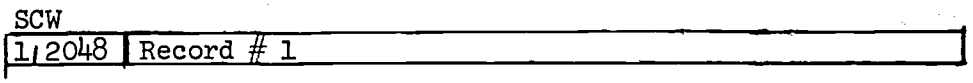
Regardless of whether or not a logical record is segmented, each logical record contains the leader, one series of record directories, and one series of variable fields.

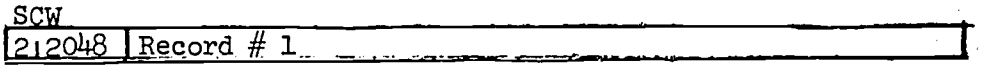
The following examples and additional information on the spanning and blocking technique used for authority records conform to the draft proposed revision to the appropriate ANSI standard (X3.27-1969):

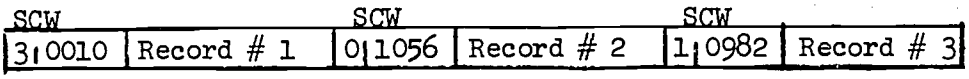


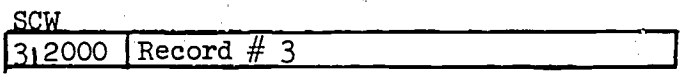


Example 1: Record # 1 contains 150 data characters plus 5 SCW characters
Record # 2 contains 3531 data characters plus two 5 SCW characters spanning two physical blocks, one of 2048 characters and one of 1648 characters.









Example 2: Record # 1 contains 4091 data characters plus three 5 SCW characters spanning three physical blocks.
Record # 2 contains 1051 data characters plus 5 SCW characters within one physical block.
Record # 3 contains 2972 data characters plus two 5 SCW characters spanning two physical blocks.

Additional comments on segments of logical records:
Only one segment of the same record may appear in a physical block.
Segments of a record are written in consecutive order, and do not have segments of other records interspersed.
Record length should be treated as unbounded, i.e., there is no limit to the number of segments for one logical record.
Records may span volumes.

Additional comments on maximum record length of logical records:
Although 8192 characters is the maximum number of characters currently specified in internal LC processing, this length should be treated as unlimited in communications records because the addition of character set escape code sequences may cause the record character count to exceed 8192.

5. All physical blocks are fixed length blocks containing 2048 characters. A padding character, which is a blank (20_{16} in 8-bit ASCII and 00_{16} in 6-bit ASCII), is used when five or less character positions remain in a physical block as it is being formatted. In all physical blocks with the exception of the last block on the file, the minimum number of data characters and segment control word characters is 2043. This means that the padding character may appear at the end of a physical block a maximum of five times. This also means that a segment control word may never occur at the end of a physical block unless it is followed by a least one character of data. In the last physical block on the file, the minimum number of data characters and segment control word characters is six (five segment control word characters and one data character) rather than 2043. This means that the padding character may appear at the end of the last physical block on the file a maximum of 2042 times rather than five times.

6. Volume and file organization are as follows:

Volume Header Label	File Header Label	T M	File of data records	T M	End of File Label	T M	T M

TM = Tape Mark

All labels conform to the specifications recommended in the American National Standard for Magnetic Tape Labels for Information Interchange (ANSI X3.27-1969). The structure and contents of each label used are described as follows:

a. Volume Header Label, nine-channel tapes

Element Name	Length	Contents
Label Identifier	3	VOL
Label Number	1	1
Volume Serial	6	AA yy nn
Accessibility	1	ø (blank)
Unused Characters	26	(blanks)
Owner Identification	14	LIBROFCONGRESS
Unused Characters	28	(blanks)
Label Standard Level	1	1

Where: AA=type of tape (MS=tape in current MARC Service year, MA=MARC Annual); yy=volume number of service year, beginning with ø1; nn=number within volume (quarterly issues of current volume: Q1-Q3; annual tapes: ø1)

b. File Header Label, nine channel tapes

Element Name	Length	Contents	
Label Identifier	3	HDR	
Label Number	1	1	
File Identifier	17	Z39.2-71MARC----- *	
Set Identifier	6	AA yy nn	Same as Volume Serial in Volume Header Label
File Section Number	4	ØØØ1	
File Sequence Number	4	ØØØ1	
Unused Characters	6	(blanks)	
Creation Date	6	ƀyyddd	Where: ƀ=blank; yy= year, e.g., 76; ddd= day of year, e.g., 175.
Expiration Date	6	(blanks)	
Accessibility	1	ƀ (blank)	
Block Count	6	ØØØØØØ	
System Code	13	IBM37Ø/135DOS	
Unused Characters	7	(blanks)	

c. End of File Label, nine-channel tapes

Element Name	Length	Contents	
Label Identifier	3	EOF	
Label Number	1	1	
File Identifier through Accessibility	5Ø	Same as corresponding characters in File Header Label	
Block Count	6	nnnnnn	Where: nnnnnn=number of physical records in the file
System Code and Unused Characters	2Ø	Same as corresponding characters in File Header Label	

*"MARC-----" portion of File Identifier varies with each distribution service:

Subject Authority = MARCSUBJC
Name Authority = MARCNAMES

d. Labels, seven-channel tapes

These labels are the same as those created for nine-channel tapes, except all alphabetic characters are in lowercase.

e. Tape Mark

The tape mark is a special block consisting of a gap of tape followed by a single byte containing the character 13_{16} for nine-channel tapes and 17_{8} for channel tapes.

B. CHARACTER SET

All data on the tapes are represented in the American Standard Code for Information Interchange (ASCII) adopted by the American National Standards Institute for information interchange on magnetic tape. This standard is for a 7-bit code; however, the MARC character set has been expanded to an 8-bit code for nine-channel tapes and a 6-bit code for seven-channel tapes. The full character set is defined in Appendix B of Books: A MARC Format, 5th ed., 1972, pages 62-88.